



A Randomized Controlled Study of Writing Interventions on College Women's Positive Body Image

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Abstract

College women are at risk for body dissatisfaction, but enhancing the positive aspects of body image can serve as a protective factor. Self-compassion has been associated with body appreciation and may protect against negative body image. This study tested the effect of a self-compassion writing intervention on positive body image and affect and explored self-compassion as a mediator between writing group and positive body image. We used a randomized controlled design to compare self-compassion writing ($n = 51$), traditional expressive writing ($n = 50$), and control writing ($n = 51$) interventions in college women. Participants were mostly European-American (82%) with a mean age of 19. Participants wrote online for 20 min once a week for three consecutive weeks. Results indicated that negative and positive affect decreased for all three groups. There were no differences between groups on positive body image or affect; however, the self-compassion writing group reported greater increases in self-compassion ($F = 3.48, p < 0.05, \eta_p^2 = 0.05$). Moreover, mediator models revealed that the effect of group (self-compassion vs. traditional/control writing) on body appreciation and body image quality of life was mediated by self-compassion. Overall, the findings indicate that self-compassion writing increased self-compassion, and greater increases in self-compassion were associated with greater increases in positive body image and positive affect.

Keywords Self-compassion · Body image · Body appreciation · Body image quality of life · Expressive writing · College women

College women are at risk for concerns with their body and eating-related problems, including body image disturbance (BID), body dissatisfaction, disordered eating behaviors, and eating disorder pathology (Cook and Hausenblas 2011). The literature has established late adolescence and early adulthood as the optimal period for body image interventions, as these age groups have shown significantly larger improvements in body image compared to other age groups (Muller and Stice 2013). While interventions have traditionally focused on reducing negative aspects of body image, recent research has pointed to the importance of enhancing positive aspects of body image, as this serves as a protective factor against body

image concerns (Tylka and Wood-Barcalow 2015a). Traditional expressive writing interventions focused on body image have demonstrated mixed results (Arigo and Smyth 2012; Earnhardt et al. 2002; Frayne and Wade 2006; Grasso 2007) and preliminary evidence suggests that self-compassion holds promise for enhancing body image (Albertson et al. 2014; Przedziecki and Sherman 2016). To date, self-compassion writing has not been compared to traditional expressive writing interventions in terms of positive body image.

Body appreciation has been identified as an important component of positive body image for college women (Avalos et al. 2005). Body appreciation includes three components: (a) acceptance of one's body regardless of size, shape, weight, and other imperfections; (b) showing respect for one's body by attending to its needs (e.g., engaging in health-promoting behaviors); and (c) protecting one's body by resisting unrealistic ideals portrayed in the media (Avalos et al. 2005). Research has supported the role of body appreciation both as a protective factor against aspects of negative body image, and as a factor associated with increased well-being (Avalos et al. 2005). Another indicator of positive body image is body image quality of life (Cash and Fleming 2002), defined as the

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impact of one's body image on different life contexts (e.g., interactions with friends, happiness in everyday life). Body image quality of life has been negatively associated with BID, and positively associated with social support, optimism, and self-esteem in college women (Cash et al. 2004). Interventions targeting factors such as body appreciation and body image quality of life have enhanced positive body image and emotional well-being, protecting at-risk college populations from the impact of body-related distress (Cash 2008).

Expressive writing (EW) interventions have proven to be an effective means of reducing psychological and physical health concerns in many populations (e.g., Frattaroli 2006; Smyth 1998), including college students (Arigo and Smyth 2012). EW interventions have typically involved writing about emotional experiences where participants explore their thoughts and feelings around a stressful event or topic (Pennebaker and Beall 1986). Findings regarding the effectiveness of EW on body image have been mixed. EW interventions that target body image have been associated with enhanced body image (Grasso 2007), less sleep difficulty, and less body-focused upward social comparison (Arigo and Smyth 2012). Conversely, Earnhardt et al. (2002) found evidence for body-related improvement in both EW and control conditions over time, though they failed to find differences between the EW and control conditions for body image, mood, and ED behavior. Further, Frayne and Wade (2006) found that individuals in a control condition experienced greater decreases in disordered eating, and feelings of insecurity, inadequacy, and worthlessness when compared to the EW condition. Differences in intensity and duration of the writing are unlikely to account for the inconsistent findings as the standard method of three separate writing sessions for 15–20 min were used in both the studies that produced significant findings and those that did not.

EW interventions targeting body image leave open the possibility for participants to focus on both positive and negative aspects of body image in writing interventions, and women with high levels of body image distress may tend to focus more on negative aspects in their writing. For instance, evidence indicates that individuals with low self-esteem actually have worse outcomes with interventions meant to elicit positive outcomes, such as repeating positive self-statements (Wood et al. 2009). EW interventions that enhance psychological constructs such as self-compassion may address the limitations of traditional EW interventions' effects on body image by prompting participants to cultivate a more accepting view of oneself. Additionally, Alleva et al. (2015) conducted a meta-analysis on body image interventions, including expressive writing, and found that participants who use more positive self-talk experienced less negative body image and psychological distress as compared to those who used negative, critical, or judgmental self-talk (e.g., "fat-talk"). The association between self-talk and effective body image interventions

may be a key factor in establishing whether a self-compassion EW intervention that encourages positive language proves most effective in enhancing aspects of body image, compared to traditional EW and control writing interventions.

Neff (2003) defined three interconnected components that comprise self-compassion: self-kindness (i.e., a tendency to show caring and understanding toward the self), common humanity (i.e., recognizing the imperfections and potential for failure in all people, connecting through common experience), and mindfulness (i.e., awareness of one's pain or suffering that does not amplify or judge the experience of pain). These aspects of self-compassion are theoretically connected to body image in several ways. Demonstrating kindness toward oneself could foster an appreciation of one's body. Similarly, common humanity and accepting imperfections could help individuals recognize that everyone has imperfections and encourage acceptance of one's body as-is. Finally, the mindfulness aspect of self-compassion could encourage women to hold a balanced, nonjudgmental view of their body. Empirical evidence has supported the link between self-compassion and body image. A systematic review of 28 studies found that self-compassion is consistently associated with lower levels of eating pathology and protective against poor body image (Braun et al. 2016). These findings applied to studies that focused on college women (Homan and Tylka 2015; Wasylikiw et al. 2012). Moreover, preliminary evidence has suggested that self-compassion is positively associated with positive aspects of body image including body appreciation (Homan and Tylka 2015; Wasylikiw et al. 2012) and body satisfaction (Pisitsungkagarn et al. 2013).

Self-compassion interventions have demonstrated potential for enhancing self-compassion, positive emotions, and positive body image, as well as reducing negative emotions. Research on writing interventions has found that a self-compassion writing group experienced reductions in depression and increases in happiness as compared to a control group (Shapira and Mongrain 2010). In addition, self-compassion writing increased self-compassion and reduced negative affect as compared to traditional expressive and control groups (Leary et al. 2007). Very few studies have employed self-compassion interventions targeting body image, but the preliminary results are promising. Albertson et al. (2014) tested a 3-week online self-compassion meditation intervention for women with body image concerns. They found that the intervention group experienced significantly greater gains in self-compassion and body appreciation as well as greater reductions in body dissatisfaction, body shame, and body-related self-worth relative to the wait-list control. Toole and Craighead (2016) tested a shortened version of the self-compassion meditation intervention and found that women still reported improvements in body appreciation, body-related self-worth, and body surveillance. Przewdziecki and Sherman (2016) employed a self-compassion writing

intervention focused on women's experiences of body image difficulties after receiving treatment for cancer. Participants in a self-compassion writing group experienced decreases in negative affect and increases in self-compassion during exposure to distressing body image memories compared to the control group.

Self-compassion writing has demonstrated promise for enhancing body image; however, it has not been compared to traditional expressive writing. In addition, while self-compassion writing has been shown to increase self-compassion (Albertson et al. 2014; Baker and McNulty 2011; Przedziecki and Sherman 2016; Zabelina and Robinson 2010), research has not explored this increase in self-compassion as a mediator between self-compassion writing and other positive outcomes. Increases in self-compassion have predicted increased well-being for other types of self-compassion interventions, such as a mindful self-compassion program (Neff and Germer 2013). Testing self-compassion as a mediator is important for determining whether the intervention is working as expected. Confirmation of self-compassion as a significant mediator would lend credibility to the intervention, whereas a null finding would signal the need for further investigation into the mechanism underlying the writing.

Given the role self-compassion may play as a protective factor against experiences of negative body image and as an enhancer of positive body image, the present study utilized a randomized controlled design to compare the effects of a self-compassion writing intervention to traditional expressive writing and control conditions in improving the positive body image of college women. We hypothesized the following: (a) the self-compassion intervention group would exhibit greater increases in self-compassion than traditional EW and control writing groups from baseline to posttest; (b) the self-compassion group would experience greater increases in body appreciation, body image quality of life, and positive affect, and greater decreases in negative affect compared to the traditional and control groups; and (c) changes in self-compassion would mediate the relationship between writing group and the outcome variables of body appreciation and body image quality of life.

Method

Participants

An a priori power analysis using an alpha level of 0.05, power of 0.80, and a medium effect size for an ANOVA indicated that 150 participants ($n = 50$ per condition) were needed. The medium effect size was based on previous literature that found a self-compassion intervention had a medium effect on body appreciation (Albertson et al. 2014). The final sample of

participants were 152 undergraduate women enrolled at one of two universities; 35% at a rural university in the mid-Atlantic, and 65% at an urban university in the mid-Atlantic USA. Participants were ages 18 to 28 years old ($M = 19$); the majority of participants self-identified as European-American (82%), although participants also identified as Asian (7%), African-American (6%), Hispanic (3%), and Multiracial (2%). Participants were mostly in their first year of college (41%), 30% had completed 1 year of college, 15% had completed 2 years of college, 10% had completed 3 years of college, and 4% had completed 4 years of college. Most of the participants had never received counseling or mental health treatment related to body image concerns (93%), and none were currently receiving treatment for body image concerns. Slightly over half (60%) had previous experience writing about their experiences (e.g., journaling, blogging), and about half (48%) of those with previous experience had last written at least 6 months ago.

Procedure

Participants were recruited from the undergraduate psychology pool at the two universities in the Fall 2015 semester. They were told during recruitment that the study concerned body image. They received \$3 for completing each survey or writing exercise and \$5 for completing the final survey (totaling \$20). The compensation was provided in gift cards and course credit was also given, when applicable. The inclusion criteria for this study included being female, over the age of 18, and enrolled at a college or university. Participants received information about the study and then gave informed consent. The study was approved by the Institutional Review Board at each included university.

After completing the informed consent, participants filled out the outcome measures so that baseline scores could be obtained. All portions of the study, including the writing intervention, were conducted online through Qualtrics. Participants were randomized using a random number generator to one of three writing conditions: (1) self-compassion, (2) traditional expressive, or (3) control. They were asked to write for 20 min once a week for three consecutive weeks which is a standard format in the expressive writing paradigm (Pennebaker and Chung 2007). The writing instructions were the same for each of the three writing sessions (see Appendix for the writing instructions). All survey and writing were completed online through Qualtrics, and participants were emailed the link for the writing intervention on the day of the week that they were scheduled. Participants received reminder emails if they did not complete the writing intervention within 24 h, and then again in 48 h. Participants were instructed to complete their responses in a quiet, comfortable, and private spot. Directly after the writing intervention, participants completed the Positive and Negative Affect Schedule and a subjective evaluation of the writing task.

One week after the final writing session, participants completed all baseline measures again (excluding the demographic questionnaire) as well as four follow-up questions.

Self-Compassion Writing The self-compassion writing intervention was based on previous studies that explored self-compassion writing (Shapira and Mongrain 2010). Participants assigned to the self-compassion writing condition were asked to write about their body image from a self-compassionate perspective for all three writing sessions. Self-compassion was defined in the instructions and participants were asked to write in a way that expressed understanding, kindness, and concern to themselves in the manner that a concerned friend may respond. They were also asked to write what they needed to not feel alone in their experiences related to body image and to accept the emotions they expressed.

Traditional Expressive Writing The traditional EW instructions were based on Pennebaker and Beall's (1986) original EW study. Participants assigned to the traditional writing condition were asked to write about their deepest feelings associated with their body image. They were encouraged to really let go and explore their thoughts and feelings about their body image, as well as consider how it related to their past, present, and future, identity, and relationship with loved ones.

Control Writing The control writing instructions were written to mirror the self-compassion and traditional writing instructions in length and format. Participants in the control writing condition were asked to describe the events of their day in a factual and detail oriented way. They were asked to focus their descriptions on information only rather than thoughts or feelings about the events.

Measures

Demographic information was collected on age and ethnicity. Additionally, participants were asked about past and current mental health treatment for body image concerns and previous experiences with expressive writing/journaling.

Body appreciation was assessed using the Body Appreciation Scale 2 (Tylka and Wood-Barcalow 2015b), which is an updated version of the original Body Appreciation Scale (Avalos et al. 2005). The Body Appreciation Scale 2 is a ten-item measure designed to assess the extent that people approve and accept their body. Participants rated items (e.g., "Despite its flaws, I accept my body for what it is") on a five-point scale (from 1 = *never* to 5 = *always*). Higher scores indicate higher levels of body appreciation. It has been found to have high validity and reliability in college student samples, with alpha coefficients ranging from 0.93 to 0.94 and test-retest reliability of 0.90 (Tylka and Wood-Barcalow 2015b). The average baseline body

appreciation scores in all three writing groups for the present study were similar to the average score reported by Tylka and Wood-Barcalow (2015b). Alphas in this sample were 0.92 and 0.93 for the pre- and post-measures.

The Body Image Quality of Life Inventory (Cash and Fleming 2002) was used to measure the effect that body image has on different domains of life (e.g., "My activities for physical exercise"). Participants rated 19 total items on a seven-point scale ($-3 = \textit{very negative effect}$ to $3 = \textit{very positive effect}$). Higher scores indicate greater body image quality of life. The inventory was developed and empirically evaluated with a sample of college women (Cash and Fleming 2002). The scale was found to have high internal consistency (Cronbach's alpha = 0.95) and adequate test-retest reliability of 0.79. Alphas in this sample were 0.90 and 0.94 for the pre- and post-measures.

The Positive and Negative Affect Schedule (PANAS; Watson et al. 1988) was used to measure positive and negative mood over the past week. The PANAS is a 20-item measure that is divided into positive affect (PA; e.g., excited, interested) and negative affect (NA; e.g., upset, distressed, and afraid). Participants rated each item on a five-point scale (from 1 = *very slightly or not at all* to 5 = *extremely*). Higher scores indicate higher positive and negative affect, respectively. The PANAS has demonstrated good validity and reliability in samples of the general population (Crawford and Henry 2004) as well as in college students, where alphas range from 0.84 to 0.90 (Watson et al. 1988). Alphas in this sample ranged from 0.82 to 0.87 for the NA scales and from 0.88 to 0.92 for the PA scales.

The 26-item Self-Compassion Scale (Neff 2003) was used to assess participants' overall level self-compassion as well as the six dimensions of self-compassion: self-kindness, common humanity, mindfulness, self-judgment, isolation, and over-identification. Participants rated items (e.g., "I try to be understanding and patient toward those aspects of my personality I don't like") on a five-point scale (from 1 = *almost never* to 5 = *almost always*). Higher scores indicate greater self-compassion. The overall self-compassion score, which sums the 6 dimension subscores, was used as recommended by Neff (2003). The scale was developed and empirically evaluated in a sample of college students and found to have high reliability (Cronbach's alpha = 0.92) and validity. Alphas in this sample were 0.92 for both baseline and posttest measures.

To determine participants' perception of the writing intervention, five questions adapted from previous EW studies were included (Earnhardt et al. 2002; Pennebaker and Beall 1986): (a) How personal were your essays? (b) To what degree did you reveal your emotions in your essays? (c) Do you believe that writing about this topic has affected how you think about this topic? (d) Do you believe facing this topic in your writing has improved the way you feel about it? and (e) To what degree did writing about this topic make you feel

understood and more accepting of your body? Participants responded on a Likert-type scale ranging from “not at all” (1) to “a great deal” (7). This scale was administered after each writing session.

Data Analyses

The pattern of missing responses was assessed using Little’s test. It should be noted that less than 2% of participant responses had one or more missing values on the survey, which represents a low percentage of missing values. The data were missing completely at random as indicated by a nonsignificant Little’s test, $\chi^2(1, N = 152) < 0.001, p = 1.00$ (Schlomer et al. 2010). Due to the low percentage of missing data, the expectation maximization function in IBM SPSS Statistics 23 was used to account for missing values at the item level. Each variable was checked for univariate outliers and five scores were found to be more than three standard deviations away from the mean (but no more than two on any given variable

and no more than two per participant). Analyses were conducted with and without the outliers. Removing the outliers did not influence the outcome of the analyses; therefore, these values were included in all analyses and no correction procedures were used. T-tests and chi-square analyses were conducted to explore differences between participants from the two universities as well as between completers and noncompleters on demographics and baseline measures. In addition, preliminary one-way ANOVAs and chi-square analyses were conducted to determine if there were any baseline differences between the three writing groups. The results are summarized in Table 1 and revealed no significant differences across conditions for any of the baseline measures and demographic variables (i.e., age, race).

Manipulation checks were conducted by comparing the three groups on their subjective perceptions of the task and the content of their writing using one-way ANOVAs. To test the effect of the intervention, two-way mixed ANOVAs were conducted. The outcome variable before and after the

Table 1 Descriptive statistics and comparison between writing groups on demographic variables and baseline measures

| | Control | Traditional | Self-compassion | χ^2 | p | Φ |
|----------------------------|---------------|---------------|-----------------|----------|----------|------------|
| Demographics | | | | | | |
| Ethnicity | | | | 12.48 | 0.25 | 0.29 |
| White | 43 | 39 | 43 | | | |
| African-American | 3 | 3 | 3 | | | |
| Asian | 1 | 7 | 2 | | | |
| Hispanic | 2 | 0 | 2 | | | |
| Other | 2 | 1 | 1 | | | |
| Location | | | | 3.40 | 0.18 | 0.15 |
| Rural college | 37 | 30 | 27 | | | |
| Urban college | 13 | 16 | 21 | | | |
| Past treatment | | | | 1.44 | 0.49 | 0.10 |
| Yes | 3 | 2 | 5 | | | |
| No | 48 | 48 | 46 | | | |
| Current treatment | | | | – | – | – |
| Yes | – | – | – | | | |
| No | 51 | 50 | 51 | | | |
| Previous journaling | | | | 2.77 | 0.25 | 0.14 |
| Yes | 40 | 33 | 33 | | | |
| No | 11 | 17 | 18 | | | |
| | <i>M (SD)</i> | | | <i>F</i> | <i>p</i> | η_p^2 |
| Age | 19.10 (.22) | 19.20 (.22) | 18.92 (.22) | 0.40 | 0.67 | < 0.01 |
| Baseline measures | | | | | | |
| Body appreciation | 3.54 (.69) | 3.41 (.75) | 3.31 (.66) | 1.37 | 0.26 | 0.02 |
| Self-compassion | 2.90 (.62) | 2.91 (.55) | 2.79 (.51) | 0.66 | 0.52 | < 0.01 |
| Body image quality of life | 19.43 (19.16) | 19.34 (19.51) | 17.46 (16.25) | 0.19 | 0.83 | < 0.01 |
| PANAS Pos | 34.22 (6.47) | 33.66 (7.28) | 33.80 (6.97) | 0.09 | 0.92 | < 0.01 |
| PANAS Neg | 22.10 (6.46) | 23.74 (6.94) | 22.06 (5.69) | 1.14 | 0.32 | 0.02 |

$N = 152$

CNL control writing group ($n = 51$), *TRAD* traditional writing group ($n = 50$), *SCS* self-compassion writing group ($n = 51$)

intervention served as the repeated measures variable and the three writing conditions (self-compassion, traditional expressive, and control) served as the between-groups variable. Five separate ANOVAs were conducted, one for each outcome variable: body image quality of life, body appreciation, self-compassion, positive affect, and negative affect. Body appreciation has been found to increase with age (e.g., Tiggemann and McCourt 2013); therefore, Pearson correlation analyses were conducted to assess whether age was associated with any of the outcome variables. Significant correlations were found between age and body appreciation ($r = 0.16$, $p = 0.045$) and age and positive affect ($r = 0.19$, $p = 0.02$). As such, age was controlled for in the analyses with body appreciation and positive affect as the outcome variables. Effect sizes were estimated using partial Eta squared (η_p^2). Tukey post hoc tests were used to assess for differences between the three groups.

Additional analyses looked at changes in self-compassion scores as a predictor of the outcome variables and as a mediator between writing group and the outcome variables. For the mediation analyses, we used the recommended bootstrapping procedure described by Preacher and Hayes (2008). To control for baseline scores, residual post scores for self-compassion, body appreciation, and body image quality of life were calculated by regressing out the respective baseline scores (MacKinnon 2008). Mediation models with residual self-compassion scores as the mediator were tested using Preacher and Hayes' (2008) process macro to create confidence intervals for indirect effects. The indirect effects were computed using 5000 randomly calculated bootstrap samples and 95% biased corrected confidence intervals.

Results

The total number of participants recruited for the study was 178. Twenty-six students did not complete the study and were thus not included in the analyses. The control condition had fewer noncompleters ($n = 6$) as compared to the traditional ($n = 10$) and self-compassion ($n = 10$) writing conditions; however, this difference was not statistically significant, $\chi^2(2, N = 178) = 1.12$, $p = 0.57$. The noncompleters also did not significantly differ from the completers on baseline measures or demographics. In addition, participants from the two universities did not significantly differ on any of the baseline measures or demographics. Therefore, participants from the two universities were analyzed as one sample.

Manipulation Checks

For the manipulation checks, two approaches were used to assess whether the writing interventions worked as expected: subjective perceptions of the task and content analysis of the

writing. The subjective evaluation of the writing task items were averaged across the three sessions. Significant differences were found between the groups on all subjective evaluation items. Participants in both the traditional (TRAD) and self-compassion (SC) groups reported that the writing resulted in a greater change in how they thought about their body image, $F(2,148) = 15.68$, $p < 0.001$, $\eta_p^2 = 0.2$, TRAD mean = 4.7 [SD = 1.2], SC mean = 4.4 [SD = 1.4], CNL mean = 3.2 [SD = 1.4], a greater improvement in how they feel about their body image, $F(2,149) = 18.62$, $p < 0.001$, $\eta_p^2 = 0.2$, TRAD mean = 4.5 [SD = 1.3], SC mean = 4.4 [SD = 1.5], CNL mean = 2.9 [SD = 1.5], and feeling more understanding and accepting about their body, $F(2,149) = 48.43$, $p < 0.001$, $\eta_p^2 = 0.4$, TRAD mean = 4.4 [SD = 1.2], SC mean = 4.5 [SD = 1.5], CNL mean = 2.1 [SD = 1.4] as compared to the control group (CNL). In addition, both the traditional and self-compassion groups reported that they wrote more personal essays, $F(2,148) = 29.64$, $p < 0.001$, $\eta_p^2 = 0.3$, TRAD mean = 5.7 [SD = 1.0], SC mean = 5.1 [SD = 1.1], CNL mean = 3.9 [SD = 1.4], and revealed their emotions more in their essays, $F(2,147) = 89.25$, $p < 0.001$, $\eta_p^2 = 0.5$ TRAD mean = 5.5 [SD = 1.0], SC mean = 4.7 [SD = 1.2], CNL mean = 2.5 [SD = 1.3] as compared to the control group. Differences also existed between the self-compassion and traditional groups, where the traditional group reported that their essays were more personal, $F(2,148) = 29.64$, $p < 0.001$, $\eta_p^2 = 0.3$, TRAD mean = 5.7 [SD = 1.0], SC mean = 5.1 [SD = 1.1] and they revealed their emotions more, $F(2,147) = 89.25$, $p < 0.001$, $\eta_p^2 = 0.5$, TRAD mean = 5.5 [SD = 1.0], SC mean = 4.7 [SD = 1.2] than the self-compassion group.

The Linguistic Inquiry and Word Count (LIWC; Pennebaker et al. 2001) software was used to analyze the content of the writing. The LIWC calculates the percentage of total words that fall into different psychosocial categories as determined by a semantic dictionary. Word categories that were theoretically relevant to the self-compassion construct were selected for analysis, including social process words (e.g., they, child, mate, talk), positive emotion words (e.g., love, nice, sweet), negative emotion words (e.g., hurt, ugly, nasty), first-person singular pronouns (e.g., I, me, mine), and first-person plural pronouns (e.g., we, us, our). More social process words and first-person plural pronouns, as well as fewer first-person singular pronouns, corresponded with the self-compassion component of common humanity. More positive emotion words and fewer negative emotion words corresponded with the self-compassion component of self-kindness. The results of the one-way ANOVAs indicate that the self-compassion essays had more social words, $F(2,149) = 18.21$, $p < 0.001$; more positive emotion words, $F(2,149) = 224.61$, $p < 0.001$; and fewer first-person singular pronouns, $F(2,149) = 7.46$, $p < 0.001$, than the

traditional and control essays. The self-compassion essays also had more first-person plural pronouns than the traditional essays, but not the control essays, $F(2,149) = 12.90$, $p < 0.001$. Both the self-compassion and traditional essays had more negative emotion words than the control essays, $F(2,149) = 70.45$, $p < 0.001$.

Intervention Effects

In comparison to the traditional expressive and control groups, the self-compassion group experienced significantly greater increases in self-compassion (medium effect size, see Table 2). Group differences were not significant for any of the other outcome variables. All three groups demonstrated significant decreases in positive affect (small effect) and negative affect (medium effect). The results of the ANOVAs are shown in Table 2.

Changes in Self-Compassion

Given the significant increase in self-compassion scores for the self-compassion writing group, a change score was calculated for the self-compassion group ($n = 51$). Change scores were not calculated for the traditional expressive or control groups since these groups did not demonstrate significant changes in self-compassion over time. The change score was calculated by subtracting the baseline self-compassion score from the post-intervention self-compassion score. Higher scores represent greater changes pre- to post-intervention for self-compassion scores. The mean self-compassion change score was 0.18 ($SD = 0.46$), with a range of -0.92 to 1.19. Negative scores indicated decreases in self-compassion from baseline, whereas positive scores indicated increases from baseline.

Linear regressions were conducted with the self-compassion change score (SCS change) and the baseline-

Table 2 Repeated measures ANOVA results for the main effects of writing group and time, and the time \times group interaction

| Outcome variable | Time | Mean (SD) | | | F | p | η_p^2 |
|--|-------|---------------|---------------|---------------|--------|---------|------------|
| | | CNL | TRAD | SCS | | | |
| Body appreciation ^a ($df = 149$) | Pre | 3.54 (0.69) | 3.41 (0.75) | 3.31 (0.66) | | | |
| | Post | 3.60 (0.68) | 3.50 (0.62) | 3.55 (0.73) | | | |
| | Time | | | | 0.03 | 0.875 | < 0.01 |
| | Group | | | | 0.63 | 0.533 | 0.01 |
| Time \times group | | | | 2.28 | 0.106 | 0.03 | |
| Self-compassion ($df = 149$) | Pre | 2.90 (0.62) | 2.91 (0.55) | 2.79 (0.51) | | | |
| | Post | 2.93 (0.62) | 2.87 (0.54) | 2.97 (0.56) | | | |
| | Time | | | | 2.96 | 0.088 | 0.02 |
| | Group | | | | 0.06 | 0.944 | < 0.01 |
| Time \times group | | | | 3.48 | 0.033* | 0.05 | |
| BIQL ($df = 149$) | Pre | 19.43 (19.16) | 19.34 (19.51) | 17.46 (16.25) | | | |
| | Post | 18.45 (19.15) | 18.30 (18.03) | 19.57 (16.17) | | | |
| | Time | | | | < 0.01 | 0.975 | < 0.01 |
| | Group | | | | < 0.01 | 0.992 | < 0.01 |
| Time \times group | | | | 1.04 | 0.356 | 0.01 | |
| PANAS PA ^a ($df = 149$) | Pre | 34.22 (6.47) | 33.66 (7.28) | 33.80 (6.97) | | | |
| | Post | 31.43 (8.46) | 32.48 (8.21) | 32.51 (7.82) | | | |
| | Time | | | | 6.53 | 0.012* | 0.03 |
| | Group | | | | 0.05 | 0.949 | < 0.01 |
| Time \times group | | | | 1.06 | 0.348 | 0.01 | |
| PANAS NA ($df = 149$) | Pre | 22.10 (6.46) | 23.74 (6.94) | 22.06 (5.69) | | | |
| | Post | 20.81 (6.90) | 22.34 (7.31) | 19.27 (6.90) | | | |
| | Time | | | | 11.45 | 0.001** | 0.07 |
| | Group | | | | 2.16 | 0.119 | 0.03 |
| Time \times group | | | | 0.80 | 0.451 | 0.01 | |

BIQL body image quality of life, CNL control writing group, TRAD traditional writing group, SCS self-compassion writing group

* $p < 0.05$; ** $p < 0.001$

^a Age was controlled for in these analyses

dependent variable as the predictor variables. Separate analyses were run for each dependent variable. Changes in self-compassion significantly predicted body appreciation (BAS) ($F(2,47) = 32.06$; $R^2 = 0.67$; pre-BAS $\beta = 0.86$, $CI = [0.67, 1.05]$, $p < 0.001$; SCS change $\beta = 0.47$, $CI = [0.20, 0.74]$, $p = 0.001$), body image quality of life (BIQL) ($F(2,48) = 43.09$; $R^2 = 0.64$; pre-BIQL $\beta = 0.76$, $CI = [0.58, 0.93]$, $p = 0.09$; SCS change $\beta = 10.91$, $CI = [4.84, 16.99]$, $p = 0.001$), and positive affect (PA) ($F(2,47) = 20.16$; $R^2 = 0.56$; pre-PA $\beta = 0.69$, $CI = [0.47, 0.91]$, $p < 0.001$; SCS change $\beta = 4.02$, $CI = [0.73, 7.31]$, $p = 0.02$). Specifically, greater increases in self-compassion predicted higher body appreciation, body image quality of life, and positive affect controlling for baseline scores of the dependent variables. Change scores were not a significant predictor of negative affect (NA) ($F(2,48) = 9.18$; $R^2 = 0.28$; pre-NA $\beta = 0.64$, $CI = [0.33, 0.94]$, $p < 0.001$; SCS change $\beta = -3.27$, $CI = [-7.02, 0.48]$, $p = 0.09$).

Self-Compassion as a Mediator

Theoretically, increases in self-compassion are the mechanism underlying the effectiveness of self-compassion writing interventions. We tested this theory empirically by evaluating whether self-compassion mediated the relationship between the writing interventions and positive body image. According to recent guidelines, a significant relationship between the independent and dependent variable is not necessary for conducting mediation (MacKinnon 2000; MacKinnon et al. 2000; Preacher and Hayes 2008; Shrout and Bolger 2002), especially if there is a strong theoretical rationale for conducting the mediation (Shrout and Bolger 2002).

As positive body image was the primary outcome of interest in this study, we tested two mediation models where residual body appreciation and residual body image quality of life served as the dependent variables, respectively. For each model, residual self-compassion scores served as the potential mediator and group (self-compassion vs other) served as the independent variable. Since self-compassion was the primary interest in this study, the traditional writing and control groups were combined to compare the impact of self-compassion writing to the other two types of writing. The two groups were then dummy coded, where 0 = combined control/traditional group and 1 = self-compassion group.

The mediation analyses revealed that the effect of group on body appreciation was significantly mediated by self-compassion, $F(3, 148) = 12.45$, $\beta = 0.07$, 95% $CI = [0.01, 0.15]$ (see Fig. 1). The effect of group on body image quality of life was also significantly mediated by self-compassion, $F(2, 149) = 7.14$, $\beta = 1.23$, 95% $CI = [0.16, 2.90]$. The direction of the *a* and *b* paths are consistent with the interpretation that self-compassion writing leads to increased self-compassion,

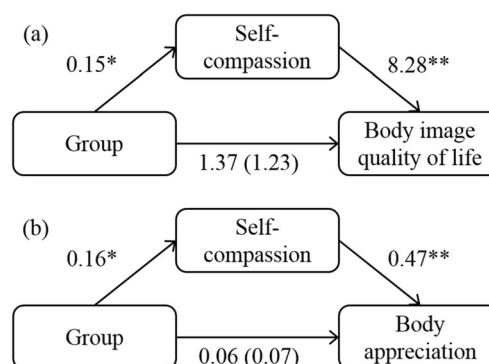


Fig. 1 Mediation models for the effect of group (self-compassion versus other [traditional and control]) on **a** body image quality of life and **b** body appreciation, mediated by self-compassion. For potential mediators and outcomes, residual post-scores were used. Values are unstandardized regression coefficients of direct effects. The indirect effects of group on the dependent variable are in parentheses. Age was controlled for in the body appreciation mediation model. * $p < 0.05$; ** $p < 0.001$

which in turn leads to increased body appreciation and body image quality of life.

Discussion

Body image concerns are highly prevalent in college women and there is a need for effective psychological interventions that enhance positive body image. Traditional expressive writing studies for body image have produced mixed findings (Earnhardt et al. 2002; Hiltunen 2008; Lafont and Oberle 2014); however, self-compassion writing holds potential as an intervention given past correlational findings and the current study's findings (Albertson et al. 2014; Homan and Tylka 2015). This is the first study to test the effectiveness of a self-compassion writing intervention focused on body image for college women. Our results indicate that only the self-compassion group reported significant increases in self-compassion. Moreover, for the self-compassion group, it was these increases in self-compassion that explained the increases in positive body image.

The hypothesis that the self-compassion group would experience increased levels of self-compassion relative to traditional and control writing was confirmed. This aligned with previous self-compassion writing intervention studies (Albertson et al. 2014; Baker and McNulty 2011; Zabelina and Robinson 2010) and provided evidence of validity for the writing intervention. Self-compassion has been linked to a number of positive outcomes in college women, including higher body appreciation, healthier eating behaviors, fewer body concerns, higher unconditional self-acceptance, and lower levels of distress (Adams and Leary 2007; Schoenefeld and Webb 2013; Toole and Craighead 2016; Wasylykiw et al. 2012; Webb and Forman 2013). Our findings suggested that a brief writing intervention can increase self-

compassion, and given the physical and psychological benefits of self-compassion, identifying accessible and cost-effective ways to increase self-compassion for college women is important. Moreover, the intervention was self-directed and less time-consuming than other interventions intended to increase self-compassion (e.g., 8-week mindfulness self-compassion trainings; Neff and Germer 2013), increasing the likelihood that college women will engage in the intervention.

The hypothesis that the self-compassion group would experience a greater increase in positive body image, positive affect, and a decrease in negative affect, compared to expressive writing and a control condition, was not supported. Instead, all three groups experienced a significant decrease in positive and negative affect at follow-up compared to baseline. As this is the first self-compassion writing intervention to focus on body image in college women, these results cannot be compared to other studies with the same intervention. However, these findings do align with other EW studies that have found decreases in negative affect across all writing conditions (Earnhardt et al. 2002; Lafont and Oberle 2014). It is important to note that the self-compassion intervention did not specify that participants should write positive things about their bodies.

Several potential reasons for the lack of differences between groups exist, as noted in prior studies (Earnhardt et al. 2002; Lafont and Oberle 2014). First, there may be beneficial aspects to any type of writing intervention. The self-compassion and traditional EW interventions may have reminded women to reflect on their level of affect and body appreciation, thereby prompting college women to feel better about themselves. Alternatively, the control writing intervention that directed women to write about their day in a factual way may have served as a distraction from rumination and may have encouraged them to view things in an objective way. Objective evaluation has been used to treat negative thoughts about body image (Earnhardt et al. 2002), indicating that the control writing may have had the unintended consequence of improving thoughts and feelings. Second, the lack of differences between groups may be due to ineffective experimental manipulation; however, several manipulation checks suggest that this is not the case. The self-compassion intervention appeared to work as intended since only this group reported increases in self-compassion. Participants' subjective evaluation of the writing also differed by groups in the expected ways. For instance, the self-compassion and traditional writing groups reported their writing to be more personal and emotional, sharing that it improved how they thought, felt, and understood their body as compared to the control group. Also, the LIWC analysis found that the content of the essays differed between the three writing groups in the expected ways. For example, the self-compassion group used more social process, positive emotion, and first-person plural

pronoun words, and fewer first-person singular pronouns, which fits with the writing instructions to write what is needed to not feel alone and to be kind to oneself.

Due to the lack of differences between the three groups, we explored the impact of increases in self-compassion for only the self-compassion group. Increases in self-compassion predicted increases in body appreciation, body image quality of life, and positive affect. This aligns with the literature that has found positive correlations between self-compassion and these constructs (Albertson et al. 2014; Kirkpatrick 2005; Neff 2003; Neff et al. 2005, 2007). By measuring self-compassion over time, the current study demonstrated that self-compassion is not only related to positive body image and affect, but dynamic changes in self-compassion also correspond to dynamic changes in body image and affect. In terms of negative affect, this variable was not significantly affected by changes in self-compassion. This finding fits with the writing instructions in that participants were encouraged to accept the emotions they expressed. Therefore, a participant could experience negative emotions, but still have high self-compassion by accepting these emotions. It is unclear whether the ability to acknowledge and accept negative emotions reduces their harmful impact on participants' well-being. Overall, these findings indicate that increasing self-compassion is important for promoting positive body image.

Finally, the hypothesis that self-compassion would mediate the relationship between the writing groups and positive body image was confirmed. This finding provided evidence that self-compassion is a mechanism through which participants in the self-compassion group, but not the traditional expressive or control groups, experienced greater body appreciation and body image quality of life. This aligned with previous research that self-compassion writing effectively increased levels of self-compassion (Albertson et al. 2014; Baker and McNulty 2011; Przedziecki and Sherman 2016; Zabelina and Robinson 2010). While self-compassion has been tested as a mediator in mindfulness-based interventions (Kuyken et al. 2010; Shapiro et al. 2005), this was the first study to test self-compassion as a mediator in a self-compassion writing intervention. Since participants in the two other writing groups (traditional expressive and control) also experienced increased body appreciation and body image quality of life, there may be other factors that mediated the effects for these groups. For instance, reductions in body-focused upward comparisons have partially accounted for the positive effect of traditional EW on eating disturbance for college women experiencing high stress Arigo and Smyth 2012).

Limitations and Future Research

This study has several limitations. First, there was a sampling bias in that participants were recruited from undergraduate psychology pools, only included women, and the majority of

participants (82%) were European American. As a result, this sample was not representative of all college students or all college women, and future research should include more diverse populations. The sample did, however, include participants attending college in both urban and rural areas. Second, the sample may have been skewed in that it attracted participants with heightened concerns about body image, although the large majority (93%) of the participants had not received counseling or mental health treatment for body image concerns. Moreover, fewer women in our study received counseling as compared to college women in a previous study who had a positive (15.6%) or a negative (14.1%) eating disorder screen (Eisenberg et al. 2011). The effectiveness of the intervention may differ in women with eating disorders and future research should test the intervention specifically with this population.

Third, because participants completed the intervention online, there was limited control over extraneous variables (e.g., distractions) and adherence to the treatment. To address this limitation, participants were asked to perform the writing task in a quiet, comfortable, and private setting. Participants also received an email on the specific days that they were expected to complete the writing to ensure that the writing sessions occurred approximately a week apart. Qualtrics did not allow for a timer to be included to measure the amount of time participants wrote. Future studies should consider using survey programs that may allow for this type of measurement. Fourth, the study did not include long-term follow-up measures. Other self-compassion interventions have demonstrated long-term gains (Neff and Germer 2013; Shapira and Mongrain 2010), and this may also be the case for self-compassion writing interventions for body image.

In terms of future research, there may be other aspects of well-being that are impacted by the writing intervention. For example, other variables that were not included in this study, such as body mass index, may influence the outcomes. Future research should also consider testing additional potential mediators, such as body appreciation and linguistic content, between writing and positive body image outcomes.

Author Contributions KSZ: co-designed and implemented the study, assisted with the data analyses, and collaborated in the writing of the paper. BRL: managed participant data/study completion, analyzed the data and collaborated with the writing of the paper. TLRB: co-designed and implemented the study, and collaborated in the writing of the study. CKS: collaborated in the writing and editing of the final manuscript.

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Compliance with Ethical Standards

The study was approved by the Institutional Review Board at Virginia Tech University and Towson University.

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Conflict of Interest The authors declare that they have no conflict of interest.

Informed Consent Informed consent was obtained from all individual participants included in the study.

Appendix

Writing Intervention Instructions

General Writing Intervention Instructions

You have been randomly assigned to one of three types of writing exercises. Please write for 20 min in a quiet, comfortable, and private spot. Do not worry about grammar, spelling, or style. Don't worry about deleting. The only rule is that once you begin writing, please continue to write until the 20 min has passed. If you run out of things to say, just repeat what you have already written. Your writing will be kept confidential and only members of the research team will review the writing. Please note that no one on the research team will be reading your writing on a regular basis. If for any reason you feel you need to contact the researchers, please do so at trisha.raquebogdan@du.edu.

[For second and third writing sessions] Even though the directions are the same as your previous writing session, we know that you may have thought of other things that you might want to include. You can write in a way that builds upon your previous writing sessions.

Self-Compassion Instructions

For the three writing sessions, we would like you to write about your body image from a self-compassionate perspective. Self-compassion means to be kind to yourself and to be less self-critical or self-blaming. Try to write in a way that expresses understanding, kindness, and concern to yourself the way you might express concern to a friend who has expressed similar feelings. Write about the many ways you can think of in which other people also experience similar feelings to the ones you describe. We would like you to write whatever comes to you, but make sure the writing provides you with what you need in order to feel understood and not alone in your experiences related to your body image. We realize that individuals may feel a wide range of emotions about their bodies, and we want you to write from the perspective of someone who is accepting of these emotions.

Traditional Expressive Writing Instructions

For the three writing sessions, we would like you to write about your deepest feelings associated with your body image. Really let go and explore your feelings and thoughts about it, and how it relates to your past, present, and future, to relationships with loved ones, and your identity. Write whatever comes to you.

Control Condition Writing Instructions

For this writing session, please describe your events of the day in a factual and detail oriented way. Your description should focus on information only, and should not include comments regarding your thoughts or feelings about these events. Do not pay attention to spelling or grammar. Please be as detailed as possible, and write for the full 20 min.

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