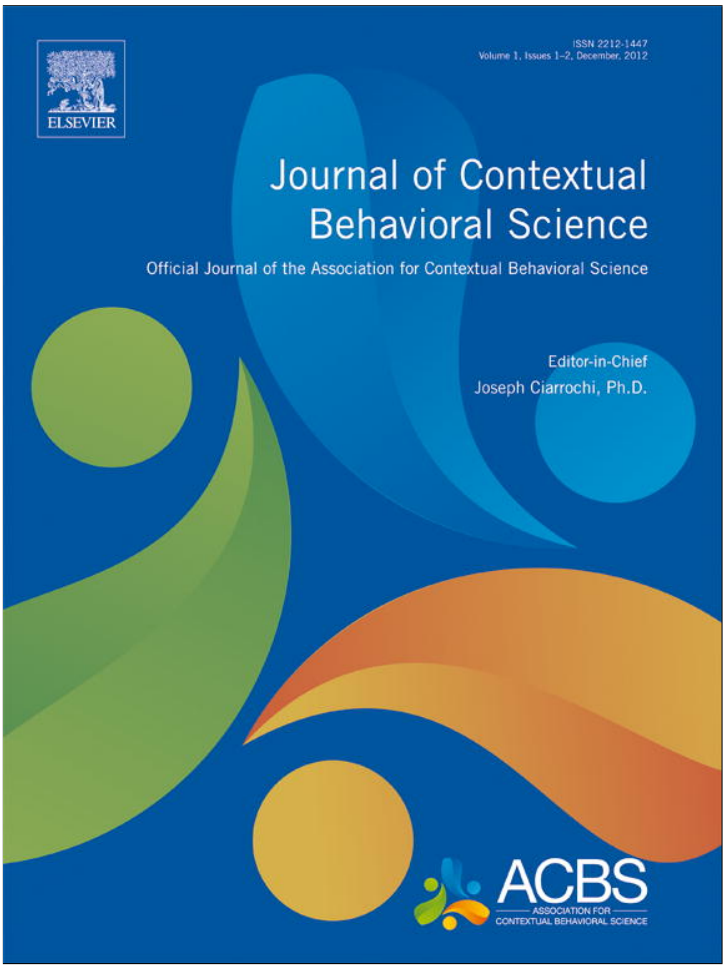
Provided for non-commercial research and education use.
Not for reproduction, distribution or commercial use.



This article appeared in a journal published by Elsevier. The attached copy is furnished to the author for internal non-commercial research and education use, including for instruction at the authors institution and sharing with colleagues.

Other uses, including reproduction and distribution, or selling or licensing copies, or posting to personal, institutional or third party websites are prohibited.

In most cases authors are permitted to post their version of the article (e.g. in Word or Tex form) to their personal website or institutional repository. Authors requiring further information regarding Elsevier's archiving and manuscript policies are encouraged to visit:

http://www.elsevier.com/copyright

Author's personal copy

Journal of Contextual Behavioral Science 1 (2012) 49–54

Contents lists available at SciVerse ScienceDirect

Journal of Contextual Behavioral Science

journal homepage: www.elsevier.com/locate/jcbs

Basic Empirical Research

Psychological flexibility and self-concealment as predictors of disordered eating symptoms

Akihiko Masuda*, Robert D. Latzman

Department of Psychology, Georgia State University, Atlanta, GA 30303, USA

ARTICLE INFO

Article history:
Received 25 April 2012
Received in revised form
18 July 2012
Accepted 25 September 2012

Keywords:
Psychological flexibility
Disordered eating
Self-concealment

ABSTRACT

The present cross-sectional study investigated whether self-concealment and psychological flexibility were uniquely associated with different facets of disordered eating (DE; i.e., dieting, bulimia/food preoccupation, and oral control) and whether these associations varied across gender. Participants included 621 female and 212 male college students, ages 18–24 years old. After controlling for age, ethnicity, and BMI, both self-concealment and psychological flexibility were uniquely related to dieting. Controlling for these demographic variables, psychological flexibility, but not self-concealment, was uniquely associated with bulimia/food preoccupation. Neither self-concealment nor psychological flexibility was uniquely associated with oral control. Finally, gender moderated the association between self-concealment and dieting, suggesting that self-concealment was relevant to dieting in the female group, but not in the male group. Limitations of the study and future directions are discussed.
© 2012 Association for Contextual Behavioral Science. Published by Elsevier Inc. All rights reserved.

1. Introduction

Disordered eating (DE) is multifaceted (Fairburn, Cooper, & Shafran, 2003; Garner, Olmsted, Bohr, & Garfinkel, 1982) and pervasive among adolescents and young adults in the United States (Striegel-Moore & Bulik, 2007; Vohs, Heatherton, & Herrin, 2001). Although only a small number of these individuals meet diagnostic criteria for an eating disorder (Hudson, Hiripi, Pope, & Kessler, 2007), many endorse some facets of DE, such as dieting, negative body image, and compensatory behaviors (e.g., excessive exercise, purging, laxative use; Mintz & Betz, 1988). Research also shows that DE is pervasive across gender (Lavender & Anderson, 2010; Striegel-Moore & Bulik, 2007) and ethnic background (Mintz & Kashubeck, 1999; Rogers Wood & Petrie, 2010).

Many factors are theorized to contribute to the onset and maintenance of DE (Fairburn et al., 2003; Striegel-Moore & Bulik, 2007). One such factor that has been of great interest in recent years is emotion/behavior regulation (Aldao & Nolen-Hoeksema, 2010; Gross, 2002; Hayes, Luoma, Bond, Masuda, & Lillis, 2006). The construct of emotion/behavior regulation parallels a recent focus in cognitive behavioral therapy (CBT) models of psychopathology. These models suggest that diverse forms of psychopathology, including DE, are attributable not only to the presence of negative internal experiences (e.g., emotion, cognition, and bodily sensation), but also to how one responds to or relates to them. Emotion/behavior regulation abilities can be roughly defined as the processes by which individuals influence the psychological experiences they have, and how emotions are experienced and expressed accordingly (Gross, 1998; Rawal, Park, & Williams, 2010). Maladaptive regulation processes, such as, rumination, experiential avoidance, and thought suppression, are found to be associated with a broad range of distress, including DE (Aldao & Nolen-Hoeksema, 2010; Aldao, Nolen-Hoeksema, & Schweizer, 2010; Rawal et al., 2010).

1.1. Self-concealment

Self-concealment reflects an underlying maladaptive regulation process in diverse clinical phenomena, including DE. Self-concealment is construed as a general and stable behavioral tendency to keep distressing and potentially embarrassing personal information from others. This behavioral pattern involves the processes of: (a) possessing a negatively evaluated secret, (b) keeping it from others, and (c) avoiding or feeling apprehensive about self-disclosure (Larson & Chastain, 1990). Extant literature has reported that individuals who endorse DE tend to distort or withhold personal information, such as their problematic eating, drive for thinness, and negative body image (Pryor, Johnson, Wiederman, & Boswell, 1995; Vandereycken & Van Humbeeck, 2008). Research has also shown that self-concealment is in fact positively associated with general DE symptoms (i.e., diet, bulimia/food preoccupation, and oral control combined) and DE cognitions (Masuda, Boone, & Timko, 2011).

1.2. Diminished psychological flexibility

Another behavioral process that has been widely studied in recent years is psychological flexibility (Hayes et al., 2006; Hayes, Villatte, Levin, & Hildebrandt, 2011). The construct of psychological

* Corresponding author.
E-mail address: amasuda@gsu.edu (A. Masuda).

2212-1447/$ - see front matter © 2012 Association for Contextual Behavioral Science. Published by Elsevier Inc. All rights reserved.
http://dx.doi.org/10.1016/j.jcbs.2012.09.002

Author's personal copy

flexibility is derived from an acceptance- and mindfulness-based CBT, Acceptance and Commitment Therapy (ACT; Hayes, Strosahl, & Wilson, 2012). ACT emphasizes open and flexible ways of experiencing internal and external environments to promote greater vital living. Psychological flexibility is conceptualized as a process of (a) experiencing the present moment as it is without judgment and avoidance and (b) persisting or changing behavior when doing so serves valued-ends (Hayes et al., 2006). According to an ACT theory, greater psychological flexibility is theorized to be a cornerstone of behavioral health (Kashdan & Rottenberg, 2010). Conversely, many forms of psychopathology are marked by diminished psychological flexibility, which reflects the domination of maladaptive affect/behavior regulations (e.g., thought suppression and avoidance) and the deficits of contingency-sensitive and value-directed behaviors. Indeed, a growing body of evidence has demonstrated diminished psychological flexiblity is associated with a wide range of behavioral problems (Hayes et al., 2006), including general DE problems (Masuda, Price, & Latzman, 2012; Rawal et al., 2010).

1.3. Self-concealment and psychological flexibility as predictors of disordered eating

Preliminary findings with non-clinical college samples suggest that self-concealment and psychological flexibility are related but distinct processes uniquely and separately associated with a range of psychological distress (Masuda, Anderson, & Sheehan, 2009; Masuda et al., 2011), including DE (Masuda et al., 2011). In regards to the associations among self-concealment, psychological flexibility, and DE symptoms, several questions still remained unanswered. First, as DE is multifaceted (Garner et al., 1982), it is important to investigate whether self-concealment and psychological flexibility are associated with specific aspects of DE, but not with other facets of DE. As a given form of DE symptoms may be qualitatively different from other DE symptoms (Williamson, Gleaves, & Stewart, 2005), it is possible that the association among self-concealment, psychological flexibility, and DE may vary, depending on the type of DE symptoms (e.g., diet, bulimia/food preoccupation, and oral control). Second, previous studies have not examined whether the associations among self-concealment, psychological flexibility, and DE symptoms vary across gender. As gender is found to be a major predictor of DE (Striegel-Moore & Bulik, 2007) and gender differences are found in associations between regulation process and internalizing problems (Cramer, Gallant, & Langlois, 2005), it seems worthwhile to investigate whether gender moderates these associations. Given the pervasive nature of DE in adolescents and young adults, investigating these associations has practical value for case conceptualization and assessment, and perhaps for the treatment of DE.

1.4. Present study

Given these emerging questions, the present study first investigated whether self-concealment and psychological flexibility were uniquely associated with specific sets of DE symptoms (i.e., diet, bulimia/food preoccupation, and oral control). Subsequently, the study investigated whether these associations varied by gender. Given previous findings (e.g., Masuda et al., 2011), it was predicted that, after controlling for gender, ethnicity, and BMI, both self-concealment and psychological flexibility would be related to all aspects of DE. Given the dearth of evidence, we did not make any a priori hypotheses regarding whether gender would moderate the associations between self-concealment and DE symptoms or the links between psychological flexibility and DE symptoms.

2. Method

2.1. Participants

The current cross-sectional study was conducted at a large, urban, public 4-year university in the Southeastern United States. Participants were recruited from undergraduate psychology courses through a web-based research survey tool. Nine hundred and eighty-seven participants (75%, $n_{Female}=738$) completed a survey package that contained multiple self-report measures. Of those individuals, 39 participants (92%, $n_{Female}=36$) were excluded from the study because their self-reported information of weight and height was not available to compute Body Mass Index (BMI) scores. BMI scores were calculated using the following formula, (weight (lb)/[height (in.)]$^2 \times 703$). An additional 114 individuals (70%, $n_{Female}=80$) younger than18 years old or 25 years old or older were excluded from the present study to establish a representative college sample. Finally, four participants were removed from the analysis due to the outlier analysis on BMI. The final sample consisted of 830 participants ($n_{Female}=618$; $n_{Male}=212$) ages 18–24 years old ($M=19.48$, $SD=1.50$) with an average BMI of 23.57 ($SD=4.87$).

The mean age of women was 19.41 years old ($SD=1.44$). Their BMI scores ranged from 15.12 to 48.42 ($M=23.55$, $SD=5.02$). Using the standard weight status categories; "underweight" (BMI < 18.5), "normal" (BMI between 18.5 and 24.9), "overweight" (BMI between 25 and 29.9) and "obese" (BMI > 30.0), 8% ($n=51$) qualified as being "underweight", 64% ($n=397$) "normal", 18% ($n=110$) "overweight", and 10% ($n=60$) "obese". The female group was diverse in ethnic background with 37% ($n=230$) identifying as "European American", 32% ($n=197$) identifying as "African American", 15% ($n=93$) identifying as "Asian American/Pacific Islander", 6% ($n=34$) identifying as "Hispanic American", 10% ($n=64$) identifying as "bicultural" or "other", and one identifying as "Native American."

The mean age of men was 19.68 years old ($SD=1.66$). The BMI scores ranged from 15.96 to 45.03 ($M=23.68$, $SD=4.42$). Six percent ($n=12$) of men fell within the underweight range, 64% ($n=136$) normal, 25% ($n=52$) overweight, and 6% ($n=12$) obese. The male group was also diverse in ethnic background with 39% ($n=82$) identifying as "European American", 27% ($n=57$) identifying as "African American", 21% ($n=45$) identifying as "Asian American/Pacific Islander", 5% ($n=11$) identifying as "Hispanic American", 8% ($n=16$) identifying as "bicultural" or "other", and one identifying as "Native American."

2.2. Measures and procedure

The current study was approved by the Institutional Review Board of the university. Participants completed an anonymous web-based survey. Prior to the survey, the purpose of the study and instructions for responding were presented to the participants. The following measures were administered to assess self-concealment, psychological flexibility, and DE symptoms.

2.2.1. Self-concealment

The *Self Concealment Scale* (SCS; Larson & Chastain, 1990) is a self-report inventory designed to measure a person's tendency to conceal personal information that is distressing (e.g., "There are lots of things about me that I keep to myself"). The SCS contains 10 items and employs a 5-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*) for each item. The total score is derived from the sum of responses to all items, with greater values indicating greater self-concealment. The SCS is a reliable measure of self-concealment, with test–retest (over

Author's personal copy

4 weeks) and inter-item reliability estimates of 0.81 and 0.83, respectively (Larson & Chastain, 1990). In the present study, Cronbach's alpha of this measure was 0.88.

2.2.2. Psychological flexibility

The *Acceptance and Action Questionnaire-16 item* (AAQ-16; Bond & Bunce, 2003) was used to measure psychological flexibility. The AAQ-16 is a 16-item questionnaire designed to assess willingness to accept undesirable thoughts and feelings (e.g., "It is OK to feel depressed or anxious") and acting in a way that is consistent with one's values and goals (e.g., "I am able to take action on a problem even if I am uncertain of the right thing to do"). The measure uses a 7-point Likert scale, ranging from 1 (*never true*) to 7 (*always true*). Total scores range from 16 to 112, with higher scores indicating greater psychological flexibility. Research has indicated that the AAQ has adequate psychometric properties (Bond & Bunce, 2003). In a previous study conducted with a non-clinical sample (Bond & Bunce, 2003), Cronbach's alpha for this measure ranged from 0.72 to 0.79. The Cronbach's alpha of this measure was 0.62 in the present study.

2.2.3. Disordered eating

The 26-item version of the *Eating Attitudes Test* (EAT-26; Garner et al., 1982) is a self-report inventory for assessing general eating disorder pathology (e.g., "I am terrified about being overweight," and "I vomit after I have eaten"). Each of the 26 items is scored on a 6-point Likert scale: *never* (0), *rarely* (0), *sometimes* (0), *often* (1), *very often* (2), or *always* (3). The measure also forms three subscales: (a) dieting, (b) bulimia and food preoccupation, and (c) oral control. The Dieting subscale consists of 13 items to detect negative body image and avoidance of fattening foods (e.g., "particularly avoid food with high carbohydrate content"). The Bulimia and Food Preoccupation subscale consists of six items, designed to measure obsessive thoughts toward food as well as bulimic behaviors (e.g., "have gone on eating binges where I feel that I may not be able to stop"). The oral control subscale, which consists of seven items, measures food restriction and pressure felt from others to gain weight (e.g., "avoid eating when I am hungry"). Higher scores in each subscale reflect greater eating disorder pathology in the specific symptomatic domain. In the current study, Cronbach's alphas of dieting, bulimia and food preoccupation, and oral control subscales were 0.85, 79, and 0.64, respectively.

2.3. Data analysis

In the present set of analyses, gender was dummy coded as 1 = male and 2 = female, and ethnicity as 1 = ethnic minority and 2 = Caucasian American. We first examined zero-order correlations among all study variables. Then hierarchical multiple regressions were used to examine how self-concealment and psychological flexibility were uniquely associated with DE outcomes and whether these associations varied by gender. Three regressions were performed in a three-step procedure. The first step included gender, ethnicity, and BMI as covariates. The second step included self-concealment and psychological flexibility. The two-way interactions of self-concealment and psychological flexibility by gender were separately entered in step three.

Preliminary analyses revealed that all DE outcomes (i.e., dieting, bulimia/food preoccupation, and oral control) were positively skewed. Additionally, 28% of men (n = 60) and 19% of women (n = 117) did not endorse any symptoms in dieting, 72% of men (n = 153) and 67% of women (n = 414) in bulimia/food preoccupation, and 31% of men (n = 67) and 33% of women (n = 208) in oral control. As such, all DE outcomes were log 10 transformed after adding a constant (i.e., 1); transformed data were used in all subsequent analyses. Self-concealment and psychological flexibility scores were standardized (i.e., z-scored) and standardized scores were used to compute interaction terms and used for all regression analyses.

3. Results

3.1. Associations among study variables

Descriptive statistics and correlations among study variables are presented in Table 1. Self-concealment was significantly and positively associated with dieting (i.e., avoidance of fattening foods and a preoccupation with being thinner) and bulimia/food preoccupation (i.e., thoughts about food as well as those indicative of bulimia). Conversely, psychological flexibility was significantly and inversely related to diet and bulimia/food preoccupation. Neither self-concealment nor psychological flexibility was associated with oral control (i.e., food intake restriction and the perceived pressure from others to gain weight). There was a significant inverse association between self-concealment and psychological flexibility. BMI was positively associated with dieting and bulimia/food preoccupation and inversely related to oral control. Finally, being female was significantly associated with greater dieting and lower psychological flexibility.

3.2. Role of self-concealment and psychological flexibility on DE symptoms

The final steps of three hierarchical regression analyses are presented in Table 2. The results of the first hierarchical regression

Table 1
Means, standard deviations and zero-order relations between all variables.

	1	2	3	4	5	6	7
1. Diet	–						
2. Bulimia and food preoccupation	0.52**	–					
3. Oral control	0.20**	0.29**	–				
4. Self-concealment	0.20**	0.13**	0.04	–			
5. Psychological flexibility	−0.26**	−0.22**	−0.02	−0.42**	–		
6. Gender	0.12**	0.02	−0.02	−0.03	−0.10**	–	
7. Ethnicity	0.01	−0.03	−0.04	−0.08*	0.09*	−0.01	–
8. BMI	0.20**	0.08*	−0.10**	−0.03	−0.03	−0.01	−0.07*
M	5.22[a]	1.19[a]	2.27[a]	28.95[a]	70.62[a]		23.58[a]
SD	6.24[a]	2.51[a]	2.87[a]	8.55[a]	9.06[a]		4.87[a]

Note: N = 830.

* $p < 0.05$.

** $p < 0.01$.

[a] Value was calculated based on raw data.

Author's personal copy

Table 2
Final Step of a hierarchical linear regression examining the role of self-concealment, psychological flexibility, and gender on psychological distress.

	b	*SE*	*β*
Diet			
Intercept	−0.03	0.20	
Gender	0.11	0.03	0.11
Ethnicity	0.05	0.03	0.11
BMI	0.02*	0.00	0.19
Self-concealment	−0.09	0.06	−0.22
Psychological flexibility	−0.05	0.07	−0.12
Self-concealment × gender	0.09*	0.04	0.36
Psychological flexibility × gender	−0.02	0.04	−0.07
Bulimia and food preoccupation			
Intercept	0.08	0.07	
Gender	0.00	0.03	0.00
Ethnicity	0.00	0.02	0.00
BMI	0.01*	0.00	0.07
Self-concealment	−0.06	0.05	−0.20
Psychological flexibility	−0.10	0.05	−0.30
Self-concealment × gender	0.04	0.03	0.25
Psychological flexibility × gender	0.02	0.03	0.11
Oral control			
Intercept	0.63	0.08	
Gender	−0.04	0.03	−0.06
Ethnicity	−0.03	0.03	−0.04
BMI	−0.01**	0.00	−0.10
Self-concealment	0.05	0.05	0.15
Psychological flexibility	0.06	0.05	0.17
Self-concealment × gender	−0.02	0.03	−0.13
Psychological flexibility × gender	−0.04	0.03	−0.20

Note: $N=830$.
* $p<0.05$.
** $p<0.01$.

suggested that, after controlling for the effects of gender, ethnicity, and BMI (Step 1; $R^2=0.05$, $p<0.01$), self-concealment ($\beta=0.13$, $p<0.01$) and psychological flexibility ($\beta=-0.19$, $p<0.01$) were related to dieting (Step 2; $R^2_\Delta=0.07$, $p<0.01$). Furthermore, the association between self-concealment and dieting was found to vary by gender ($\beta=0.36$, $p<0.05$; Step 3 $R^2_\Delta=0.01$, $p<0.05$). To examine the specific form of this significant self-concealment by gender interaction, the slope of the final equation was computed at points that corresponded to high and low levels of the predictor variables (± 1.0 SD) (Aiken & West, 1991). The positive association between self-concealment and dieting was significantly more likely in the female group than in the male group (Fig. 1).

The results of the second hierarchical regression suggested that, after controlling for the effects of gender, ethnicity, and BMI (Step 1; $R^2=0.01$, $p>0.05$), psychological flexibility ($\beta=-0.20$, $p<0.01$), but not self-concealment ($\beta=0.04$, $p>0.05$), was related to bulimia/food preoccupation (Step 2; $R^2_\Delta=0.05$, $p<0.01$). Gender did not moderate the association between self-concealment and bulimia/food preoccupation or the link between psychological flexibility and bulimia/food preoccupation (Step 3; $R^2_\Delta=0.00$, $p>0.05$).

The third regression revealed that after controlling for the key demographic variables (Step 1; $R^2=0.02$, $p<0.01$), neither self-concealment nor psychological flexibility were significantly associated with oral control (Step 2; $R^2_\Delta=0.00$, $p>0.05$). Furthermore, gender did not moderate the association between self-concealment and bulimia/food preoccupation or the link between psychological flexibility and bulimia/food preoccupation (Step 3 $R^2_\Delta=0.00$, $p>0.05$). Finally, after controlling for other demographic and process variables as well as interaction terms, greater BMI was found to be associated with greater dieting, greater bulimia/food preoccupation, and lower oral control.

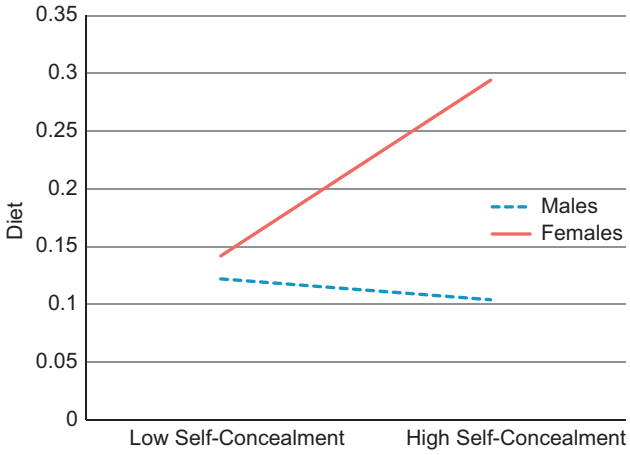


Fig. 1. Gender moderates the association between self-concealment and dieting. High and low values of self-concealment correspond to ±1SD from the mean. Dieting scores were long-transformed, $M=0.60$, $SD=0.42$.

4. Discussion

The present study investigated whether self-concealment and psychological flexibility were uniquely associated with different facets of DE and whether these associations varied across gender. As expected, both self-concealment and psychological flexibility were uniquely associated with dieting after controlling for gender, ethnicity, and BMI. However, contrary to our prediction, psychological flexibility, but not self-concealment, was uniquely associated with bulimia/food preoccupation. Furthermore, neither self-concealment nor psychological flexibility was uniquely related to oral control after controlling for these key demographic variables. Finally, gender was found to moderate the association between self-concealment and dieting; the association between the two variables was found for women, but not men. In sum, the present study has shown that self-concealment and psychological flexibility are relevant to some facets of DE, but not to others, and that self-concealment is a useful construct in understanding dieting in women, but not in men.

Conceptually, our findings also suggest that different facets of DE may function differently from one another and that topographically identical DE symptoms (e.g., diet) may be qualitatively and functionally distinct across gender. For example, while dieting and bulimia/food preoccupation seem to reflect rigid and avoidant patterns, oral control does not. Similarly, while dieting seems to involve secretiveness in women, dieting does not seem to be relevant to the behavioral tendency of secrecy in men. Although it is beyond the scope of the present study, the gender difference can be attributable to differential psychosocial contingencies operating across gender; while dieting is socially acceptable practice in men, behavior of dieting may be linked to negative psychosocial connotations in women, such as the signs of negative body image and feelings of insecurity.

Given previous findings (Masuda et al., 2011), the lack of significant associations between the present process variables (i.e., self-concealment and psychological flexibility) and oral control was somewhat surprising. As mentioned above, this set of findings can be attributable to the qualitatively unique nature of oral control. In particular, contrary to other facets of DE symptoms (diet, bulimia/food preoccupation), which are likely to be negatively reinforced (Lillis, Hayes, & Levin, 2011; Rawal et al., 2010), oral control may function differently across individuals (Mizes et al., 2000; Slade, 1982). While oral control may be negatively reinforced in some individuals, it may be positively reinforced in others. The present findings may parallel with

Author's personal copy

extant literature suggesting food intake restriction, a behavior pattern captured by the construct of oral control, to be qualitatively distinct from other DE symptoms (dieting, binging, and purging) (Wonderlich, Joiner Jr., Keel, Williamson, & Crosby, 2007).

The present study also has implications for practice. Our findings suggest investigating self-concealment and psychological flexibility and their associations with different facets of DE may be useful to elucidate the functional nuances of these DE symptoms. This practical implication parallels the recent acceptance- and mindfulness-based cognitive behavioral therapies (Hayes, Follette, & Linehan, 2004), which target affect/behavioral regulation for the amelioration of human struggles. Preliminary evidence indicates that these treatment modalities are effective in decreasing DE and in improving psychological health (Berman, Boutelle, & Crow, 2009; Juarascio, Forman, & Herbert, 2010; Martín-Murcia, Díaz, & Gonzalez, 2011; Masuda, Muto, Hayes, & Lillis, 2008; Pearson, Follette, & Hayes, 2011). Our study supports these treatments by elucidating a potential relevance of psychological flexibility and self-concealment to specific facets of DE symptoms across gender.

The present study had several notable limitations. First, the associations among self-concealment, psychological flexibility, and DE symptoms, while statistically significant, were small. As such, interpreting the present findings as well as deriving conceptual and theoretical implications requires extra cautions. Our findings suggest that other factors are likely to contribute to the onset and maintenance of DE symptoms. To investigate this possibility, future studies should investigate the roles of self-concealment, psychological flexibility, and gender while controlling for other well-known correlates, such as neuroticism (Tylka & Subich, 2004), perfectionism (Brannan & Petrie, 2008), and body image dissatisfaction and disturbance (Stice, Hayward, Cameron, Killen, & Taylor, 2000). Alternatively, the lack of associations or small associations between the process variables of interest and DE symptoms might have been due to the limited variance across DE symptoms measured by the subscales of EAT-26 to examine the present research hypotheses. As such, further study is warranted, particularly in a sample of males and females with eating disorder diagnoses.

Second, the external validity of our findings is limited as they were derived exclusively from undergraduate students attending an urban area university in the southeastern United States. As such, sociocultural factors specific to the present sample, such as religious and political climates, ethnic group compositions, and university culture, are likely to influence the variables of interest. Psychometrically, the scales used in the present study have not been fully tested and validated in individuals from diverse ethnic backgrounds. Additionally, the coefficient alphas of the AAQ-16, a measure of psychological flexibility, and the Oral Control subscale of EAT-26 were lower than a conventionally acceptable level. Future studies should employ more psychometrically sound measures of psychological inflexibility, such as the Acceptance and Action Questionnaire-II (AAQ-II) (Bond et al., 2011) and DE, such as the Eating Disorder Examination Questionnaire (EDE-Q) (Fairburn, 2008).

Finally, the most notable limitation was that the present study was a cross-sectional investigation with the exclusive reliance on self-report measures. The study did not permit any causal inferences or functional associations among the variables of interest. Given the present methodology (i.e., web-based survey study), it is unclear whether the scores, including the BMI, were subject to errors, although the anonymous nature of a web-based study might have decreased biases. From a functional and contextual perspective, the variables of our interest (e.g., psychological flexibility and dieting) are ongoing behavioral processes in a given context. As such, the use of behavioral observation methods, if possible, seems suitable for investigating the present research questions.

Limitations notwithstanding, the present study adds additional evidence regarding associations among self-concealment, psychological flexibility, gender, and specific facets of DE. Our findings suggest that the associations among self-concealment, psychological flexibility, and DE vary depending on gender and specific facets of DE.

References

Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. Thousand Oaks, CA US: Sage Publications, Inc.

Aldao, A., & Nolen-Hoeksema, S. (2010). Specificity of cognitive emotion regulation strategies: a transdiagnostic examination. *Behaviour Research and Therapy*, *48*(10), 974–983, http://dx.doi.org/10.1016/j.brat.2010.06.002.

Aldao, A., Nolen-Hoeksema, S., & Schweizer, S. (2010). Emotion-regulation strategies across psychopathology: a meta-analytic review. *Clinical Psychology Review*, *30*(2), 217–237, http://dx.doi.org/10.1016/j.cpr.2009.11.004.

Berman, M. I., Boutelle, K. N., & Crow, S. J. (2009). A case series investigating acceptance and commitment therapy as a treatment for previously treated, unremitted patients with anorexia nervosa. *European Eating Disorders Review*, *17*(6), 426–434, http://dx.doi.org/10.1002/erv.962.

Bond, F. W., & Bunce, D. (2003). The role of acceptance and job control in mental health, job satisfaction, and work performance. *Journal of Applied Psychology*, *88*(6), 1057–1067, http://dx.doi.org/10.1037/0021-9010.88.6.1057.

Bond, F. W., Hayes, S. C., Baer, R. A., Carpenter, K. M., Guenole, N., Orcutt, H. K., et al. (2011). Preliminary psychometric properties of the Acceptance and Action Questionnaire–II: a revised measure of psychological inflexibility and experiential avoidance. *Behavior Therapy*, *42*(4), 676–688, http://dx.doi.org/10.1016/j.beth.2011.03.007.

Brannan, M. E., & Petrie, T. A. (2008). Moderators of the body dissatisfaction-eating disorder symptomatology relationship: replication and extension. *Journal of Counseling Psychology*, *55*(2), 263–275, http://dx.doi.org/10.1037/0022-0167.55.2.263.

Cramer, K. M., Gallant, M. D., & Langlois, M. W. (2005). Self-silencing and depression in women and men: comparative structural equation models. *Personality and Individual Differences*, *39*(3), 581–592, http://dx.doi.org/10.1016/j.paid.2005.02.012.

Fairburn, C. G. (2008). *Cognitive behavior therapy and eating disorders*. New York, NY US: Guilford Press.

Fairburn, C. G., Cooper, Z., & Shafran, R. (2003). Cognitive behaviour therapy for eating disorders: a 'transdiagnostic' theory and treatment. *Behaviour Research and Therapy*, *41*(5), 509–528, http://dx.doi.org/10.1016/s0005-7967(02)00088-8.

Garner, D. M., Olmsted, M. P., Bohr, Y., & Garfinkel, P. E. (1982). The Eating Attitudes Test: psychometric features and clinical correlates. *Psychological Medicine: A Journal of Research in Psychiatry and the Allied Sciences*, *12*(4), 871–878, http://dx.doi.org/10.1017/s0033291700049163.

Gross, J. J. (1998). The emerging field of emotion regulation: an integrative review. *Review of General Psychology*, *2*(3), 271–299, http://dx.doi.org/10.1037/1089-2680.2.3.271.

Gross, J. J. (2002). Emotion regulation: affective, cognitive, and social consequences. *Psychophysiology*, *39*(3), 281–291, http://dx.doi.org/10.1017/s0048577201393198.

Hayes, S. C., Follette, V. M., & Linehan, M. M. (2004). *Mindfulness and acceptance: Expanding the cognitive-behavioral tradition*. New York, NY US: Guilford Press.

Hayes, S. C., Luoma, J. B., Bond, F. W., Masuda, A., & Lillis, J. (2006). Acceptance and commitment therapy: model, processes and outcomes. *Behaviour Research and Therapy*, *44*(1), 1–25, http://dx.doi.org/10.1016/j.brat.2005.06.006.

Hayes, S. C., Strosahl, K. D., & Wilson, K. G. (2012). *Acceptance and commitment therapy: The process and practice of mindful change* (2nd ed.). New York, NY US: Guilford Press.

Hayes, S. C., Villatte, M., Levin, M., & Hildebrandt, M. (2011). Open, aware, and active: contextual approaches as an emerging trend in the behavioral and cognitive therapies. *Annual Review of Clinical Psychology*, *7*, 141–168, http://dx.doi.org/10.1146/annurev-clinpsy-032210-104449.

Hudson, J. I., Hiripi, E., Pope, H. G., Jr., & Kessler, R. C. (2007). The prevalence and correlates of eating disorders in the national comorbidity survey replication. *Biological Psychiatry*, *61*(3), 348–358, http://dx.doi.org/10.1016/j.biopsych.2006.03.040.

Juarascio, A. S., Forman, E. M., & Herbert, J. D. (2010). Acceptance and commitment therapy versus cognitive therapy for the treatment of comorbid eating pathology. *Behavior Modification*, *34*(2), 175–190, http://dx.doi.org/10.1177/0145445510363472.

Kashdan, T. B., & Rottenberg, J. (2010). Psychological flexibility as a fundamental aspect of health. *Clinical Psychology Review*, *30*(4), 467–480, http://dx.doi.org/10.1016/j.cpr.2010.03.001.

Larson, D. G., & Chastain, R. L. (1990). Self-concealment: conceptualization, measurement, and health implications. *Journal of Social and Clinical Psychology*, *9*(4), 439–455.

Lavender, J. M., & Anderson, D. A. (2010). Contribution of emotion regulation difficulties to disordered eating and body dissatisfaction in college men. *International Journal of Eating Disorders*, *43*(4), 352–357.

Author's personal copy

Lillis, J., Hayes, S. C., & Levin, M. E. (2011). Binge eating and weight control: the role of experiential avoidance. *Behavior Modification*, *35*(3), 252–264, http://dx.doi.org/10.1177/0145445510397178.

Martín-Murcia, F., Díaz, A. J. C., & Gonzalez, L. P. (2011). A case study of anorexia nervosa and obsessive personality disorder using third-generation behavioral therapies. *Clinical Case Studies*, *10*(3), 198–209, http://dx.doi.org/10.1177/1534650111400899.

Masuda, A., Anderson, P. L., & Sheehan, S. T. (2009). Mindfulness and mental health among African American college students. *Complementary Health Practice Review*, *14*(3), 115–127, http://dx.doi.org/10.1177/1533210110363893.

Masuda, A., Anderson, P. L., Wendell, J. W., Chou, Y. Y., Price, M., & Feinstein, A. B. (2011). Psychological flexibility mediates the relations between self-concealment and negative psychological outcomes. *Personality and Individual Differences*, *50*(2), 243–247, http://dx.doi.org/10.1016/j.paid.2010.09.037.

Masuda, A., Boone, M. S., & Timko, C. A. (2011). The role of psychological flexibility in the relationship between self-concealment and disordered eating symptoms. *Eating Behaviors*, *12*(2), 131–135, http://dx.doi.org/10.1016/j.eatbeh.2011.01.007 (S1471-0153(11)00008-0 [pii]).

Masuda, A., Muto, T., Hayes, S. C., & Lillis, J. (2008). Acceptance and commitment therapy: application to a Japanese client. *Japanese Journal of Behavior Therapy*, *34*, 137–148.

Masuda, A., Price, M., & Latzman, R. D. (2012). Mindfulness moderates the relationship between disordered eating cognitions and disordered eating behaviors in a non-clinical college sample. *Journal of Psychopathology and Behavioral Assessment*, *34*(1), 107–115, http://dx.doi.org/10.1007/s10862-011-9252-7.

Mintz, L. B., & Betz, N. E. (1988). Prevalence and correlates of eating disordered behaviors among undergraduate women. *Journal of Counseling Psychology*, *35*(4), 463–471, http://dx.doi.org/10.1037/0022-0167.35.4.463.

Mintz, L. B., & Kashubeck, S. (1999). Body image and disordered eating among Asian American and Caucasian college students: an examination of race and gender differences. *Psychology of Women Quarterly*, *23*(4), 781–796, http://dx.doi.org/10.1111/j.1471-6402.1999.tb00397.x.

Mizes, J. S., Christiano, B., Madison, J., Post, G., Seime, R., & Varnado, P. (2000). Development of the Mizes Anorectic Cognitions Questionnaire—Revised: psychometric properties and factor structure in a large sample of eating disorder patients. *International Journal of Eating Disorders*, *28*(4), 415–421, http://dx.doi.org/10.1002/1098-108x(200012)28:4 < 415::aid-eat9 > 3.0.co;2-z.

Pearson, A. N., Follette, V. M., & Hayes, S. C. (2011). A pilot study of acceptance and commitment therapy as a workshop intervention for body dissatisfaction and disordered eating attitudes. *Cognitive and Behavioral Practice*, http://dx.doi.org/10.1016/j.cbpra.2011.03.001.

Pryor, T. L., Johnson, T., Wiederman, M. W., & Boswell, D. L. (1995). The clinical significance of symptom denial among women with anorexia nervosa: another disposable myth? *Eating Disorders: The Journal of Treatment and Prevention*, *3*(4), 293–303, http://dx.doi.org/10.1080/10640269508250059.

Rawal, A., Park, R. J., & Williams, J. M. G. (2010). Rumination, experiential avoidance, and dysfunctional thinking in eating disorders. *Behaviour Research and Therapy*, http://dx.doi.org/10.1016/j.brat.2010.05.009.

Rogers Wood, N. A., & Petrie, T. A. (2010). Body dissatisfaction, ethnic identity, and disordered eating among African American women. *Journal of Counseling Psychology*, *57*(2), 141–153, http://dx.doi.org/10.1037/a0018922.

Slade, P. D. (1982). Towards a functional analysis of anorexia nervosa and bulimia nervosa. *British Journal of Clinical Psychology*, *21*(3), 167–179.

Stice, E., Hayward, C., Cameron, R. P., Killen, J. D., & Taylor, C. B. (2000). Body-image and eating disturbances predict onset of depression among female adolescents: a longitudinal study. *Journal of Abnormal Psychology*, *109*(3), 438–444, http://dx.doi.org/10.1037/0021-843x.109.3.438.

Striegel-Moore, R. H., & Bulik, C. M. (2007). Risk factors for eating disorders. *American Psychologist*, *62*(3), 181–198, http://dx.doi.org/10.1037/0003-066x.62.3.181.

Tylka, T. L., & Subich, L. M. (2004). Examining a multidimensional model of eating disorder symptomatology among college women. *Journal of Counseling Psychology*, *51*(3), 314–328, http://dx.doi.org/10.1037/0022-0167.51.3.314.

Vandereycken, W., & Van Humbeeck, I. (2008). Denial and concealment of eating disorders: a retrospective survey. *European Eating Disorders Review*, *16*(2), 109–114, http://dx.doi.org/10.1002/erv.857.

Vohs, K. D., Heatherton, T. F., & Herrin, M. (2001). Disordered eating and the transition to college: a prospective study. *International Journal of Eating Disorders*, *29*(3), 280–288, http://dx.doi.org/10.1002/eat.1019.

Williamson, D. A., Gleaves, D. H., & Stewart, T. M. (2005). Categorical versus dimensional models of eating disorders: an examination of the evidence. *International Journal of Eating Disorders*, *37*(1), 1–10, http://dx.doi.org/10.1002/eat.20074.

Wonderlich, S. A., Joiner, T. E., Jr., Keel, P. K., Williamson, D. A., & Crosby, R. D. (2007). Eating disorder diagnoses: empirical approaches to classification. *American Psychologist*, *62*(3), 167–180, http://dx.doi.org/10.1037/0003-066x.62.3.167.