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Disordered Eating-Related Cognition and Psychological Flexibility as Predictors of Psychological Health among College Students

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Abstract

The present cross-sectional study investigated the relation among disordered eating-related cognition, psychological flexibility, and poor psychological outcomes among a non-clinical college sample. As predicted, conviction of disordered eating-related cognitions was positively associated with general psychological ill-health and emotional distress in interpersonal contexts. Disordered eating-related cognition was also inversely related to psychological flexibility, which was inversely related to poor psychological health and emotional distress in interpersonal contexts. The combination of disordered eating-related cognition and psychological flexibility accounted for the proportion of variance of these poor psychological outcomes greater than disordered eating-related cognition alone. Finally, psychological flexibility accounted for the proportion of variance of these negative psychological variables greater than did disordered eating-related cognition.

Key Words: disordered eating-related cognition; psychological distress, general psychological ill-health, psychological flexibility, experiential avoidance

Disordered Eating-Related Cognition and Psychological Flexibility as Predictors of Psychological Health among College Students

Because Western society has come to place greater emphasis on physical appearance, people in society generally endorse disordered eating-related cognitions, such as perceived importance of having an ideal weight and shape as a means of achieving self-acceptance, self-control over diet and weight, and acceptance by others (Cooper, Cohen-Tovee, Todd, Wells, & Tovee, 1997; Fairburn, 2008; Fairburn, Cooper, & Shafran, 2003; Mizes et al., 2000). Among clinical samples with an eating disorder, the set of these cognitions is linked to significant distress and functional impairment (Bohn et al., 2008; Fairburn, 2008). Additionally, a number of studies with non-clinical samples have shown that conviction of disordered eating-related cognitions is associated with negative psychological outcomes, such as emotional distress, depression, and anxiety (Cooper, 2006; Cooper et al., 1997; Stice, Killen, Hayward, & Taylor, 1998).

Despite its role as a significant predictor, disordered eating-related cognition does not necessarily lead to greater psychological distress or psychopathology (Brannan & Petrie, 2008). Recent research findings suggest that psychological suffering (e.g., psychopathology) is associated not only with the presence of dysfunctional private events (e.g., negative emotions, self-defeating thoughts, etc.), but also with how a person responds to or relates to these events (e.g., Segal, Teasdale, & Williams, 2004).

Psychological flexibility (Hayes, Luoma, Bond, Masuda, & Lillis, 2006) seems particularly relevant for the link between disordered eating-related cognition and poor psychological outcomes. According to Hayes et al. (2006), psychological flexibility is “the ability to contact the present moment fully as a conscious human being, and to

change or persist in behavior when doing so serves valued ends" (p. 7). In other words, it is an overall behavior pattern of experiencing private events without trying to judge, evaluate, avoid, fix, down-regulate, or change them, while spontaneously engaging in value-directed activities at the same time.

Theoretically, a behavior pattern characterized as being psychologically flexible is incompatible with control/avoidance-based attempts for negative private events, which could produce paradoxical outcomes (e.g., Wegner, 1994). Because the pattern of psychological flexibility allows a person to experience even seemingly "negative" thoughts and feelings as mental events without judgment and avoidance, the person is less likely to be entangled with them (Segal et al., 2004; Teasdale et al., 2002). In turn, the alternative way to respond and relate to negative private events promotes a context where constructive and value-directed activities are likely to be strengthened. For example, a person who is low in psychological flexibility and has the thought "I am ugly, and I must be thin to be accepted" may have difficulty experiencing the thought as a mental event. As a result, the person is likely to act along with that thought, such as avoiding a social gathering in order to down-regulate anxiety and fear accompanied with the thought. Conversely, the person high in psychological flexibility is less likely to act along with the thought because the disordered eating-related thought is construed as a mental event more than as an undeniable truth (Heffner & Eifert, 2004). Despite presence of this thought, the person is likely to attend the social gathering if it is the manifestation of her own personal value.

An increasing body of evidence suggests that psychological flexibility is inversely associated with various forms of negative psychological problems (Hayes et al., 2006).

These negative outcomes include emotional distress, depression, anxiety, interpersonal distress, deliberate self-harm, substance use problems, posttraumatic stress disorder symptoms, and several others (e.g., Bond & Bunce, 2003; Chapman, Gratz, & Brown, 2006; Chawla & Ostafin, 2007; Greco et al., 2005). Because of its pervasive nature across diverse psychological problems, lower psychological flexibility is also theorized as a generalized diathesis and toxic process of human suffering (Kashdan, Barrios, Forsyth, & Steger, 2006).

Present Study

The link between disordered eating-related cognitions and poor psychological outcomes is well established (e.g., Cooper et al., 1997; Fairburn, 2008). Recent research suggests that this link may be explained by a person's response style. The primary purpose of the current study was to determine if and how a psychologically flexible response style contributes to the link between disordered eating- related cognitions and poor psychological outcomes. In the present study, general psychological ill-health and emotional distress in stressful interpersonal contexts were used as measures of poor psychological outcomes. General psychological ill-health is a good indicator of general psychological functioning (e.g., Bond & Bunce, 2000). Emotional distress in stressful interpersonal situations is also suitable to the present study because issues around disordered-eating spectrum concerns are often interpersonal in nature (Bohn et al., 2008; Fairburn, 2008). Based on prior research findings (e.g., Cooper et al., 1997; Stice et al., 1998), it was hypothesized that conviction of disordered eating-related cognitions would be positively related to general psychological ill-health and emotional reaction in stressful interpersonal contexts, and that psychological flexibility would be negatively

related to these poor psychological outcomes. Furthermore, it was predicted that the combination of psychological flexibility and disordered eating-related cognitions would account for a greater portion of variance in these negative psychological outcomes than disordered eating-related cognition. Finally, it was hypothesized that psychological flexibility would account for a greater portion of variance in negative psychological outcomes than the conviction of disordered eating-related cognitions.

Method

Participants

The study was conducted at a large, public 4-year university in Georgia. Participants were recruited from undergraduate psychology courses through a web-based research participant pool. Four hundred forty participants completed the survey, with a mean completion time for the instrument of 30 minutes (*SD* = 15.19). Those who completed the survey in less than 15 minutes or more than 60 minutes were removed from the sample because of the questionable validity of their responses. The sample used in the current study consisted of 375 participants (77%, n_{Female} = 288). The age of the participants ranged from 17-49 (*M* = 20.42, *SD* = 4.14). The ethnic composition of the sample was representative of the city where the university is located, with 42% (*n* = 158) identifying as “European American,” 28% (*n* = 106) identifying as “African American,” 13% (*n* = 47) identifying as “Asian American/Pacific Islander,” 8% (*n* = 30) identifying as “Hispanic American,” and 9% (*n* = 34) identifying as “bicultural” or “other.”

Measures

The following measures were used to assess disordered eating-related cognitions, poor general psychological health, personal distress in an interpersonal setting, and psychological flexibility.

Mizes Anorectic Cognitions Questionnaire-Revised (MAC-R; Mizes et al., 2000). The MAC-R is a 24-item self-report questionnaire designed to assess distorted cognitions related to all eating disorders. These cognitions are the fear of weight gain (e.g., "If I don't establish a daily routine, everything will be chaotic, and I won't accomplish anything"), the importance of being thin or attractive to be socially accepted ("No one likes fat people; therefore, I must remain thin to be liked by others"), and self-esteem based on controlled eating habits and weight gain ("If my weight goes up, my self-esteem goes down"). Each item is scored on a 5-point Likert scale, ranging from 1 (*strongly disagree*) to 5 (*strongly agree*), with a total score derived from the sum of all responses. Total scores range from 24 to 120 with higher scores indicating greater disordered eating-related dysfunctional cognitions. In a previous study conducted with clinical samples of various eating disorders (Mizes et al.), an alpha coefficient for the MAC-R total was .90.

Acceptance and Action Questionnaire (AAQ-16; Bond & Bunce, 2003). The AAQ-16 was used to measure psychological flexibility for this study. The AAQ 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"), while acting in a way that is congruent 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 employs 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 good psychometric properties (see Hayes, Strosahl et al., 2004). In a previous study conducted with a non-clinical sample (Bond & Bunce, 2003), alpha coefficients for this measure ranged from .72 to .79.

General Health Questionnaire-12 (GHQ-12; Goldberg, 1978). The GHQ-12 is a measure of overall general psychological health. Participants are asked to rate frequency with which they experience common behavioral and psychological stressors. Using a Likert-scale format (Banks et al., 1980), items are scored on a 4-point scale, ranging from 0 (*not at all*) to 3 (*much more than usual*), with a total score derived from the sum of all responses. Total scores range from 0 to 36, with higher scores indicating poorer psychological health. Previous studies conducted in a work setting reported that the GHQ-12 has good psychometric properties. A recent study in a worksite setting has shown adequate levels of internal consistency, ranging from .73 to .76 (Bond & Bunce, 2000).

Interpersonal Reactivity Index – Personal Distress (IRI-PD; Davis, 1983). This 7-item subscale measures feelings of personal anxiety and uneasiness during tense interpersonal contexts on a 5-point scale, ranging from 0 (*does not describe me well*) to 4 (*describes me very well*). Higher scores indicate greater degrees of personal distress in interpersonal and emergency situations. The IRI has good psychometric properties (Davis, 1980). All subscales of the IRI, including the IRI-PD, have satisfactory internal consistency (Cronbach's α ranging from .71 to .77) and test-retest reliabilities, ranging from .62 to .71.

Procedure

Participants who enrolled in the study were asked to complete an anonymous web-based survey. Prior to beginning the survey, information relevant to the present study was presented on a computer screen explaining the purpose of the study and providing instructions regarding how to respond to the survey. Participants anonymously provided demographic information and completed the measures.

Results

A large body of evidence suggests that gender is a crucial factor in understanding disordered variables and relationship among predictors and these variables (Striegel-Moore & Bulik, 2007). For the current study, gender was examined as a potential moderator of the relations among disordered eating-related cognition, psychological flexibility, and negative psychological outcomes. However, results failed to support gender as a moderating variable, suggesting that gender did not play an important role in the current study. For this reason, despite the gender specific nature of ED spectrum issues, gender was omitted from data analyses.

Descriptive statistics and correlations among the variables are shown in Table 1. Disordered eating-related cognitions (MAC-R) were positively related to general psychological ill-health (GHQ-12; $r = .34$, $p < .01$) and emotional distress in stressful interpersonal contexts (IRI-PD; $r = .28$, $p < .01$). Psychological flexibility (AAQ-16) was negatively related to general psychological ill-health ($r = -.46$, $p < .01$) and emotional distress in stressful interpersonal contexts ($r = -.46$, $p < .01$). Furthermore, the conviction of disordered eating-related cognitions was negatively correlated with psychological flexibility ($r = -.32$, $p < .01$).

The predictive impact of psychological flexibility and disordered eating-related cognitions on general psychological ill-health and emotional distress in interpersonal contexts was tested with separate hierarchical regressions for each predicted variable (Table 2). Results revealed that both the conviction of disordered eating-related cognitions and psychological flexibility were significant predictors of general psychological ill-health and emotional distress in stressful interpersonal contexts. When psychological flexibility was added to the equation in the second step, it was found to account for a significant portion of variance in these negative psychological outcomes above and beyond disordered eating-related cognition alone (GHQ: $R^2_{\Delta} = .14$, $p < .001$; IRI-PD: $R^2_{\Delta} = .15$, $p < .001$).

Discussion

Recently, researchers and theorists have paid greater attention to the impact of disordered eating-related cognition on general psychological functioning (Bohn et al., 2008; Fairburn, 2008). Along with this trend, acceptance- and mindfulness-based clinical literature suggests that how an individual responds to negative psychological events is crucial for understanding and treating psychological struggles and psychopathology (Segal et al., 2004). Incorporating these focal concerns collectively, the present study investigated the role of disordered eating-related cognitions and psychological flexibility on general psychological ill-health and emotional distress in stressful interpersonal contexts.

As predicted, the present study revealed that both the conviction of disordered eating-related cognitions and psychological flexibility were predictors of general psychological ill-health and emotional distress in stressful interpersonal contexts.

Whereas conviction of disordered eating-related cognitions was positively and significantly related to these poor psychological outcomes, psychological flexibility was inversely related to them. Our findings also revealed the combination of psychological flexibility and disordered eating-related cognition accounted for more variance of these poor psychological outcomes than disordered eating-related cognition alone. Although preliminary, the present study revealed that when the two were taken into account together, relations between psychological flexibility and criterion variables were greater than those between disordered eating-related cognition and criterion variables.

Conceptually speaking, the present study seems to suggest the importance of adding a functional-based account into the link between disordered eating-related cognition and poor psychological outcomes. Typically, in understanding psychological problems, how a person responds or relates to unwanted and perhaps symptomatic private events is less emphasized than the presence of these events (e.g., Wilson, Hayes, & Gifford, 1997). The present study supports the premise of recent acceptance- and mindfulness-based cognitive behavior therapy (Hayes, Follette, & Linehan, 2004) and suggests that how a person responds to these events, such as non-attachment and psychological openness to negative psychological events, extends our understanding of how negative psychological outcomes are developed and maintained. Because of its cross-sectional nature, the present study does not suggest any causal inference, but the results seem to suggest that it is worthwhile to continue to investigate the role of psychological flexibility in the link between poor psychological outcomes and disordered eating-related cognition.

The present findings have several clinical implications. Strategically, our study suggests that it may be beneficial to assess not only disordered eating-related cognitions, but also how a person responds or reacts to difficult private events in order to understand how negative psychological events are maintained. This position is consistent with the recent acceptance- and mindfulness-based clinical psychology (e.g., Hayes, Follette et al., 2004), where the focus is often placed in altering the behavior pattern of how a person responds to difficult private events. More specifically, these therapies are designed to increase a client's acceptance-based behavior, such as simply noticing or being open to unwanted psychological events, rather than attempting to control or down-regulate them (e.g., Segal et al., 2004; Teasdale et al., 2002). In recent years, acceptance- and mindfulness-based interventions have been applied to individuals with a range of ED spectrum problems. Preliminary results have shown that these interventions undermine ED symptoms or/and promote psychological health (e.g., Baer, Fischer, & Huss, 2005; Heffner & Eifert, 2004; Masuda, Muto, Hayes, & Lillis, 2008; Safer, Telch, & Agras, 2001; Telch, Agras, & Linehan, 2001). Although these studies have shown promising results, mechanisms of change in acceptance-based interventions are not fully investigated yet. Combined with these clinical outcome studies, the present study seems to suggest that it is worthwhile to investigate whether positive outcomes of psychosocial intervention are achieved in part through the increase of psychological acceptance as well as commitment to value-congruent activities.

The present investigation has several notable weaknesses. The current study is a theoretical investigation, which was designed to gain a preliminary understanding of the relations among disordered eating-related cognitions, psychological flexibility, and poor

psychological outcomes, using a non-clinical sample of college undergraduates. Therefore, this study should not be treated as a report on ED psychopathology or other psychopathologies. In addition, the present study is limited in scope. It is extremely likely that other variables, such as neuroticism (Tylka, 2004), social perfectionism (Brannan & Petrie, 2008; Tylka, 2004), and ED-specific psychiatric symptoms (Bohn et al., 2008), are associated with or influence general psychological ill-health and emotional reaction in stressful interpersonal settings.

It is important to acknowledge that some of the self-report measures used in the present study are not the ones that are widely used to assess ED-spectrum issues or negative psychological variables of non-clinical college undergraduates. With respect to disordered eating-related cognition, the present study employed the MAC-R, in part because other ED measures often include behavioral aspects of ED-related issues in addition to ED-related cognition, which was of our focal interest. Regarding a measure of general psychological ill-health, the present study used the GHQ, which is often administered in psychology studies conducted in vocational settings. The GHQ was selected for this study in part because our previous study suggested that the measure is also appropriate for a non-clinical college sample (Masuda, Price, Anderson, Schmertz, & Calamaras, in press). Nevertheless, it is important that future studies use more conventional self-report measures to investigate the link between disordered eating-related cognition and negative psychological outcomes.

Yet, another notable limitation is that research participation was limited to college students. With respect to the present research participants, some demographic and regional factors, such as expected gender role, ethnicity, regional context, and university

culture, are likely to account for some of the variance of disordered eating-related cognitions, poor psychological outcomes, and/or psychological flexibility.

Finally, perhaps the largest limitation was the reliance on a cross-sectional and correlational design with the use of self-report measures exclusively. As mentioned above, the analytic strategy of the present study did not allow us to derive any causal inferences or functional link among the events of our interest (i.e., disordered eating-related cognition, psychologically flexible behavior, and negative behavioral consequence). To date, the development and refinement of appropriate method for capturing the functional link among these events is challenging. This is, in part, because, from a behavioral perspective, the notion of psychological flexibility and related behavior phenomena, such as acceptance, is somewhat unclear. A potential alternative method may be the repeated behavioral assessment of well-defined psychologically flexible coping behavior, disordered eating-related cognition, and negative behavioral outcomes in the context of analogue experiment and perhaps treatment intervention. Although the application of such behavioral measurement seems challenging, the effort should be warranted.

Despite these limitations, the present study adds additional evidence regarding the associations among disordered eating-related cognition, psychological flexibility, general psychological ill-health, and emotional reaction in stressful interpersonal contexts. The present investigation also suggests that it is beneficial to consider not only disordered eating-related cognition, but also psychological flexibility in understanding psychological health among college students. This study also suggests that the investigation of psychological flexibility for understanding psychological suffering, perhaps including ED spectrum issues, can be fruitful.

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Table 1

Means, Standard Deviations, Coefficient Alphas, and Zero-Order Relations between all Variables

	1	2	3	4
1. MAC-R	--	-.32*	.34*	.28*
2. AAQ-16		--	-.46*	-.46*
3. GHQ-12			--	.28*
4. IRI-PD				--
M	61.81	70.49	12.72	12.70
SD	15.78	9.89	6.43	4.74
α	.89	.68	.88	.72

Note: $N = 375$, $*p < .01$, MAC-R = Mizes Anorectic Cognition Questionnaire-Revised, AAQ = Acceptance and Action Questionnaire, GHQ = General Health Questionnaire, IRI-PD = Interpersonal Reactivity Index-Personal Distress.

Table 2

Linear Regression Models exploring Disordered Eating-Related Cognition and Psychological Flexibility as Predictors of Negative Psychological Outcomes.

Variable	*β*	*B*	*SE B*	*t*	*p*
General Psychological Health (GHQ-12)					
Step 1					
DE-related Cognition (MAC-R)	.34	.14	.02	7.07	.000
$R^2 = .12$					
Step 2					
DE-related Cognition (MAC-R)	.22	.09	.02	4.65	.000
Psychological Flexibility (AAQ-16)	-.39	-.26	.03	-8.35	.000
$R^2_{\Delta} = .14$					
Emotional Distress (IRI-PD)					
Step 1					
DE-related Cognition (MAC-R)	.28	.09	.02	5.67	.000
$R^2 = .08$					
Step 2					
DE-related Cognition (MAC-R)	.15	.05	.01	3.17	.002
Psychological Flexibility (AAQ-16)	-.41	-.20	.02	-8.54	.000
$R^2_{\Delta} = .15$					

Note. *N* = 375, All *p*-values were two-tailed. MAC-R = Mizes Anorectic Cognition Questionnaire-Revised, AAQ = Acceptance and Action Questionnaire, GHQ = General Health Questionnaire, IRI-PD = Interpersonal Reactivity Index-Personal Distress. DE = Disordered Eating.