DIFFERENCES AMONG BULIMIC-PURGING; NON-PURGING, NON-BINGEING, WEIGHT AND BODY SHAPE OBSESSED; AND NON-BULIMIC FEMALES

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Currently, the Anglo-American societal preference for the female physique is thin. This, in turn, has spawned a societal preoccupation with dieting and weight loss (Polivy & Herman, 1987). Consequently, it may now be accurate to regard dieting and its attendant diet mentality as normative. In short, it is now "normal" for individuals in our society to express concern about their weight and to engage in attempts to change it. This drive for thinness is reflected by the emergence of eating disorders and their continuing rise in incidence over the last 40 years (Streigel-Moore, Silberstein, & Rodin, 1986; Szmuckler, 1987).

One of the two major eating disorders, bulimia nervosa, has been estimated to occur in 5-15% of the college female population (Halmi, Falk, & Schwartz, 1981; Mangialetti, 1982; Nevo, 1984). According to the Diagnostic and Statistical Manual of Mental Disorders, Third Edition, Revised - DSM-III-R (American Psychiatric Association, 1987), bulimia

nervosa is characterized by the following symptoms: a) recurrent episodes of binge-eating (rapid consumption of large amounts of food in a discrete period of time); b) a feeling of lack of control over eating behavior during the eating binges; c) regularly engaging in either self-induced vomiting, use of laxatives or diuretics, strict dieting or fasting, or vigorous exercise in order to prevent weight gain; d) a minimum average of two binge-eating episodes a week for at least three months; and e) persistent overconcern with body shape and weight.

Research on Bulimics

The literature has identified possible variables characteristic of bulimics. These are: a) fears of expressing anger, loss of control, eating high calorie food, obesity, and rejection (DeVilliers & Holloway, 1987; Smith & DeVilliers, 1986); b) depression (Krueger & Bornstein, 1987; Mitchell, J., Specker, S. & de Zwaan, M., 1991; Mizes, 1988; Prather & Williamson, 1988); c) low self-esteem (Lehman, A. & Rodin, J., 1989; Mizes, 1988; Rossiter, E., Wilson, G. & Goldstein, L., 1989; Vanderheyden & Boland, 1987; Wagner, Halmi, & Maguire, 1987; Willmuth, Leitenberg,

Rosen, & Cado, 1988); and d) a low internal locus of control (Wagner, Halmi, & Maguire, 1987).

First, consider fears. Smith and DeVilliers (1986) developed a slide assessment measure to empirically investigate the hypothesized fears of bulimics. Fears studied included those of eating high calorie foods, becoming obese, expressing anger, being rejected, and losing control. These fear themes were depicted in slides which were presented to normal-weight bulimics and normal-weight non-bulimics. Compared to non-bulimics, bulimics reported significantly greater anxiety and depression when observing slides depicting these fears. DeVilliers and Holloway (1987) incorporated the use of auditory narratives to the slide presentation. The auditory narratives were similar in theme to the slides, and were presented simultaneously with the slides. These more salient stimuli were found to further clarify and enhance the identification of the underlying issues and confirm that these fears were critical elements in bulimia.

Second, consider depression. It has been well documented in the eating disorder literature that

bulimia is often correlated with depression (Krueger & Bornstein, 1987; Mizes, 1988; Prather & Williamson, 1988; Vanderheyden, Fekken, & Boland, 1988; Willmuth, et. al., 1988.) Mizes (1988) administered a variety of standardized psychological questionnaires to 20 bulimic women including the Beck Depression Inventory - BDI (Beck, et al., 1961), a self-report measure of depression. The mean score obtained indicated that the bulimic subjects were experiencing moderate levels of depression. The BDI was also administered to 20 purging bulimics in a study by Willmuth, et al. (1988). Again, the mean score indicated that the subjects were experiencing moderate levels of depression. Depression appears to be associated with bulimia.

Third, consider self-esteem. There are a substantial amount of scientific data which support the notion that bulimics have low self-esteem (Mizes, 1988; Vanderheyden & Boland, 1987; Wagner, Halmi, & Maguire, 1987; Willmuth, Leitenberg, Rosen, & Cado, 1988). Low self-esteem may contribute to the onset of the disorder as well as perpetuate its existence.

Lastly, consider locus of control. Clinical lore

and several studies (Thompson, Berg, & Shatford, 1987; Vanderheyden, Fekken, & Boland, 1988) suggest bulimics typically have an external locus of control. Wagner, Halmi, and Maguire (1987) found that bulimic subjects experienced a sense of ineffectiveness regarding control of their eating behavior and their ability to handle typical life problems. These researchers suggested that the subjects' self-confidence in being able to deal with their eating was especially low and seemed to be the most salient variable. Furthermore, they suggested that an external locus of control can affect the bulimic in several other ways. For example, bulimics believe others are more effective in solving their problems than they are. Therefore, bulimics might seek the opinions of others about how they should think, feel, and behave before they proceed. These data and interpretations suggest that the source of locus of control is a relevant issue for bulimics.

Females who partially fulfill the criteria for Bulimia Nervosa diagnosis -- "Semi-bulimics"

The literature reveals that bulimia nervosa exists in varying degrees among females. There exists

a group of women who fulfill the DSM-III-R criteria for bulimia, but there also exists a group of women who partially fulfill the criteria and experience psychological distress as well (Hawkins & Clement, 1980; Katzman, Wolchik, & Braver, 1984). Several researchers have investigated this group of women specifically focusing on how they differ from bulimics. Studies addressing differences between these two groups have focused upon the following variables: eating attitudes and behaviors, demographic information, and personality and affective correlates (Mintz & Betz, 1988; Pumariega & LaBarbera, 1986; Thompson, Berg, & Shatford, 1987; Willmuth, Leitenberg, Rosen, & Cado, 1988; Vanderheyden & Boland, 1987). The literature demonstrates that the two groups are similar in characteristics, but typically the bulimics have more pathology. However, studies comparing the two groups have limited value because the focus has been on women who are very similar to bulimics and share, to varying degrees, the behaviors of bingeing and purging.

Weight and Body Shape Obsessed Females

The literature focusing upon the body image and

weight concerns of college females is extensive (Garner & Garfinkel, 1980; Garner, Olmstead, & Garfinkel, 1983; Hadigan & Walsh, 1991; Hawkins & Clement, 1980; Mintz and Betz, 1988; Polivy & Herman, 1987; Wooley & Wooley, 1982). Research clearly shows that the majority of college females are dissatisfied with their weight and body shape and that dieting is becoming the normative behavior (Polivy & Herman, 1987). The literature has identified a group of women who, although they are non-bingers and non-purgers, are like bulimics in that they experience substantial psychological discomfort over body shape, weight, and eating (Katzman, Wolchik & Braver, 1984; Kagan & Squires, 1984; Thompson, Berg, & Shatford, 1987).

The existing literature identifies the specific population but does not explore possible common characteristics. Additionally, several problems exist with research focused upon weight and body shape obsessed females. One, generally only descriptive data are provided (Shapiro, 1988). Two, the criteria used to define the bulimic and bulimic-like "subgroups", including the weight and body shape obsessed subgroup, has been inconsistent across

studies. Three, researchers have violated the DSM-III-R criteria for bulimia, defining subjects as bulimics who were not bulimic.

Comparison of Bulimics and Weight and Body Shape Obsessed Females

Bulimics and the "semi" bulimics exhibit behavioral characteristics that are different from controls. Research to date has not clearly delineated whether these characteristics are also exhibited by the non-purging, non-bingeing weight and body shape obsessed (WBSO) females. The descriptive information available in the literature on the bulimic and "semi" bulimic groups is insufficient in helping the investigator or therapist understand the underlying issues of the WBSO female.

The purpose of the present study is to empirically identify variables associated with a weight and body shape obsession in order to better understand and therefore, treat WBSO females. Also, the purpose is to identify differences between bulimic purgers, WBSO females who are non-purging, non-bingeing, and a comparison group. As the variables of depression, locus of control, self-esteem, fear of

expressing anger, fear of rejection, fear of eating high calorie food, fear of becoming obese, and fear of loss of control have been found to be characteristic of bulimics, it is logical to compare bulimic and WBSO female groups using these variables. Careful attention to methodology and use of accurate and strict definitions of bulimia nervosa and non-purging, non-bingeing WBSO females must be employed.

The present study will investigate levels of depression, internal locus of control, and self-esteem; anxiety responses to slides depicting the themes of anger expression, rejection, high calorie foods, obesity, and loss of control; and the subject's reported emotional states before and after slide presentation. Three groups will be studied: a) normal-weight bulimic purgers, b) normal-weight non-purging, non-bingeing WBSO females, and c) comparison subjects -- normal-weight non-bulimic, non-WBSO females. Subjects will be administered three questionnaires measuring depression, locus of control, and self-esteem respectively. The subjects' self-reported anxiety to a slide presentation accompanied by relevant auditory narratives will then be assessed.

Finally, a pre- and post-slide presentation measure of emotional reactivity (depression, anger, and anxiety) will be compared.

Based upon the literature cited above delineating characteristics of bulimics and "semi" bulimics, and based upon the assumption that WBSO females will be more similar to bulimics than non-bulimics, the following hypotheses will be tested:

a) Hypothesis I -- the bulimic-purgers will report significantly greater depression than the non-purging, non-bingeing WBSO females and comparison subjects;

b) Hypothesis II --the non-purging, non-bingeing WBSO females will report significantly greater depression than the comparison subjects;

c) Hypothesis III -- the bulimic-purgers will have significantly lower self-esteem than the non-purging, non-bingeing WBSO females and comparison subjects;

d) Hypothesis IV -- the non-purging, non-bingeing WBSO females will have significantly lower self-esteem than the comparison subjects;

e) Hypothesis V -- the bulimic-purgers will exhibit significantly lower internal locus of control than the non-purging, non-bingeing WBSO females and comparison

subjects;

f) Hypothesis VI -- the non-purging, non-bingeing WBSO females will exhibit significantly lower internal locus of control than the comparison subjects;

g) Hypothesis VII -- the bulimic-purgers will report significantly more anxiety to three of the five slide-script categories- expression of anger, loss of control, and rejection than the non-purging, non-bingeing WBSO females;

h) Hypothesis VIII -- the bulimic-purgers and non-purging, non-bingeing WBSO females will report significantly greater anxiety to all five slide-script categories than the comparison subjects;

i) Hypothesis IX -- the bulimic-purgers and the non-purging, non-bingeing WBSO females will have no differences in reports of anxiety to the obesity and high calorie food slide themes;

j) Hypothesis X --as compared to the comparison subjects, the bulimic-purgers and the non-purging, non-bingeing WBSO females will report significantly greater increases in anxiety, depression, and anger pre and post slide presentation; and

k) Hypothesis XI --the independent variables of

depression, internal locus of control, and self-esteem will significantly predict subject group membership.

Method

Subjects

Forty-three females between the ages of 18 and 25 years served as subjects. These subjects were categorized into three groups: bulimic-purgers (n=13), WBSO subjects (n=15), and comparison group subjects (n=15). Subjects in the bulimic-purger, WBSO, and comparison groups were recruited from Introductory Psychology and Home Economics classes at Oklahoma State University (OSU) and by way of poster announcements on the campus. The bulimic-purgers were also recruited from inpatient or outpatient treatment facilities. Five of the thirteen were recruited from three OSU campus counseling centers. These females, participating in either outpatient individual or group therapy, were focusing upon treatment of their eating disorder. Four of the thirteen were recruited from the Hillcrest Medical Center Inpatient Eating Disorder Unit, Tulsa, Oklahoma. These females were receiving inpatient individual and group therapy. Volunteers who were not within the 25% range for normal weight

for their height and frame (based upon the Metropolitan Life Insurance Co. Standards, 1983) were not used as subjects. The means and standard deviations for weight and height for the three subject groups were as follows: 117.67(14.92) lbs. and 65.17(2.49) inches for the comparison group; 125.83(12.53) lbs. and 65.63(2.47) inches for the WBSO subjects; and 125.42(13.24) lbs. and 65.08(1.78) inches for bulimic-purgers. The means and standard deviations for age for the three subject groups were as follows: 19.38(.65) years for the comparison group; 19.08(1.08) years for the WBSO subjects; and 21.09(3.33) years for the bulimic-purgers. The range in education for the subjects was high school graduates to college graduates. The subject groups did not differ significantly on weight, height, or age. The groups appeared to be similar on education.

Screening Measure and Subject Assignment

The Eating Disorder Inventory - EDI (Garner, D.M., Polivy, J., & Olmstead, M., 1984) is a 64-item, self-report questionnaire designed for the assessment of psychological and behavioral traits common in bulimia nervosa and anorexia nervosa. It has eight

scales which measure the eating and dieting attitudes and behavior similar to that of bulimia nervosa and anorexia nervosa. The EDI scales used for this study were "Drive for Thinness", "Bulimia", and "Body Dissatisfaction." The subscales have coefficients of internal consistency (Cronbach's alpha) above .80. The average item-total correlation was .63 (SD=.13). Criterion-related validity was established with subscales scores and clinicians' ratings. The correlations were statistically significant: Drive for Thinness (r=.53), Bulimia (r=.57), and Body Dissatisfaction (r=.44).

Scores on the EDI were tentatively used to categorize subjects as follows: a) bulimic-purger subjects fell within the bulimic ranges, as defined by the EDI manual, on the three scales of "Drive for Thinness", "Bulimia", and "Body Dissatisfaction", b) non-purging, non-bingeing WBSO subjects fell within the bulimic ranges on the "Drive for Thinness" and "Body Dissatisfaction" scales, but not within the bulimic range for the "Bulimic" scale, and c) non-bulimic, non-WBSO subjects (comparison) fell within the normal ranges on the scales of "Drive for

Thinness", "Bulimia", and "Body Dissatisfaction." Furthermore, none of these scores for the comparison group were higher than two, the upper cut-off score for the normal range. Confirmation of placement was done with a brief structured interview of each subject. If the subject was recruited through a class, the interview was done by phone. Subjects were told they were to participate in the study based on their scores on the EDI questionnaire. They were asked if they had an eating disorder or had a history of an eating disorder. Their height and weight was also confirmed during the interview.

Subjects were assigned to one of 3 groups: a) normal-weight female bulimic-purgers, b) normal-weight female non-purging, non-bingeing WBSO females, and c) normal-weight non-bulimic, non-weight and body shape obsessed comparison females. The bulimic-purgers met the DSM-III-R criteria for bulimia. The non-purging, non-bingeing WBSO females did not meet a sufficient number of DSM-III-R criteria to be diagnosed with bulimia nervosa but did meet the DSM-III-R single criteria of "persistent overconcern with body shape and weight." Additionally, they did not exhibit

anorexia nervosa or bulimia nervosa for at least one year previous to testing. The comparison group subjects did not meet the DSM-III-R criteria for bulimia, anorexia nervosa, nor meet the criteria of "persistent overconcern with body weight and shape".

Materials

Beck Depression Inventory (BDI)

The Beck Depression Inventory - BDI (Beck, et. al., 1961) is a 21-item test designed to measure the level of depressive symptoms. The dependent measure used was the total score. The range of scores falls between 0 and 63 with low scores indicating little or no depressive symptoms, and high scores indicating serious depressive symptoms. High scores are also a possible indicator of suicide potential. Beck, et. al. (1961) cite split-half reliabilities ranging from .78 to .93, indicating good to excellent internal consistency. Research has shown significant correlations with a number of other depression measures indicating strong concurrent validity (Corcoran & Fischer, 1987). In addition, the BDI correlates significantly with clinicians' ratings of depression and has been shown in several studies to be

sensitive to clinical changes (Corcoran and Fischer, 1987).

Internal Control Index (ICI)

The Internal Control Index - ICI (Duttweiler, P.C., 1984) is a 28-item instrument designed to measure to whom a person looks for, or expects to obtain, reinforcement. The dependent measure used was the total score. Duttweiler (1984) reports the ICI has very good internal consistency with alphas of .84 and .85, and it has fair concurrent validity: a low but significant correlation with Mirels' Factor I of the Rotter I-E Scale. Scores range from 28 to 140 with higher scores indicating a higher internal locus of control.

Index of Self-Esteem (ISE)

The Index of Self-Esteem - ISE (Hudson, W.W., 1982) is a 25-item scale designed to measure the extent of problems the client has with self-esteem. The dependent measure used was the total score. Hudson (1982) reports the following reliability and validity data: the ISE has a mean Cronbach's alpha of .93, indicating excellent internal consistency, and an excellent low S.E.M. of 3.70. It also has excellent

test-retest reliability (r=.92). It has good known-groups validity, significantly distinguishing between clients judged by clinicians to have problems in the area of self-esteem and those clients who do not have self-esteem problems. The ISE has very good construct validity, correlating poorly with measures with which it should not and correlating well with a range of measures with which it should correlate highly, e.g. depression, happiness. Scores range from -6 to 6 with higher scores indicating lower self-esteem and low scores indicating higher self-esteem.

Profile of Mood States (POMS)

The Profile of Mood States - POMS (McNair, Lorr, & Droppleman, 1972) is a 65-item, five point, likert type adjective rating scale which is scored into six mood scales. The three scales used in this study are Depression-Dejection, Anger-Hostility, and Tension-Anxiety. Each score is derived by adding the ratings over 7 to 15 adjectives; there is no item overlap. The dependent measure used for each of these three scales was the total score for that scale. The range of scores for the Depression-Dejection scale is 0 to 60 with a high score indicating severe depression.

The range of scores for the Anger-Hostility scale is 0 to 48 with a high score indicating strong feelings of anger. The range of scores for the Tension-Anxiety scale is 0 to 36 with a high score indicating severe anxiety. Buros (1978) reports "acceptably high reliability" and states that the scales have considerable face validity: K-R 20 values range from .84 to .95 in two samples of psychiatric patients. Buros (1978) also reports test-retest correlations range from .65 to .74, with a median of .69. There is considerable redundancy in these scales, and the internal consistency is high.

Slides and Narratives

The slide presentation consisted of 36 slides, which break down into six thematic categories. All 36 slides were accompanied by a verbal narrative: the six verbal narratives correspond to the six slide theme categories. The six slides chosen to represent each category were previously validated with 150 college students (Smith, 1985). Slide selection was based on singular nomination of a theme, majority selection by students, and high clarity. Subjects were given a list of themes and asked to choose which themes they

felt each slide depicted. In addition, they were asked to rate how well the slide depicted the theme. The six categories of slides and narratives included themes reflective of: a) high calorie foods, b) losing control, c) obesity, d) being rejected, e) expressing anger, and f) neutral situations. Subjects viewed the slide/narrative presentation and reported their anxiety to each slide/narrative.

Scores for the scales used to measure anxiety ranged from 0 to 10; with 10 signifying that the slide had made the subject feel extremely anxious, and 0 indicating that anxiety was completely absent. Six dependent measures were obtained, each reflecting the subject's average reported anxiety to all slides in a single theme group. A score of less than 5 was interpreted as indicating little to no anxiety. A score of 6-7 was interpreted as indicating moderate anxiety, and a score of 8-10 was interpreted as indicating great anxiety.

Procedure

Informed consent was obtained from the subjects. Refer to Appendix A for a copy of the consent form. If a subject was recruited from a Home Economics

or Psychology class, the EDI was given during class and the remainder of the procedure was carried out in the experimental setting, a set of laboratory rooms on campus. If a subject volunteered after reading or hearing about the study, all of the procedure was carried out in the experimental setting. All of the procedure for the Hillcrest subjects was carried out in a private testing room on the Eating Disorder Unit at the Hillcrest Medical Center. After placement into subject groups, for all subjects, the order of presentation of questionnaires was as follows: BDI, ICI, and ISE. The subjects were then seated, the experimenter placed headphones on them, dimmed the light in the room, and instructed them to sit quietly for 5 minutes. Subjects then completed the POMS questionnaire.

The slide viewing phase then began. Subjects viewed 20 second presentations of each one of the 36 slides. The order of presentation of 36 slides was randomized. The slides were mixed in a bag, then one at a time randomly pulled and placed into the slide carousel. Each 20-second slide exposure was followed by a 40-second intertrial interval. During the first

seconds of the intertrial interval, the subject indicated her level of anxiety on a rating sheet. The remainder of the intertrial interval was used to allow the subject to relax prior to the next slide presentation.

Immediately after the slides-script presentation, the subject was asked to complete the POMS for a second time. The session ended with a combination debriefing/feedback period. Total session lasted approximately 2 hours per subject.

Results

Questionnaire Data

The BDI, ISE, and ISE scores were analyzed with 3 X 1 (subject group X questionnaire score) one-way analyses of variance. In cases where there was significance, a post hoc Student-Newman-Keuls multiple range test was done. Refer to Table 1 for means and standard deviations for the BDI, ISE, and ICI scores.

Insert Table 1 about here

Beck Depression Inventory data -- BDI scores for the three subject groups were significantly different,

F (2, 40) = 16.343, p<.00001. The post hoc Student-Newman-Keuls Multiple Range Test indicated significant differences between the three subject groups on reported levels of depression (p<.05). The comparison subjects reported significantly lower depression than the WBSO subjects and the bulimic subjects. The WBSO subjects reported significantly lower depression than the bulimic subjects.

Index of Self-esteem data -- ISE scores for the three subject groups were significantly different, F (2, 40)= 12.90, p<.00001. On the post hoc Student-Newman-Keuls multiple range test, the comparison subjects' level of self-esteem was not significantly different from that of the WBSO subjects. However, the WBSO subjects and comparison group had significantly greater self-esteem than the bulimic subjects (p<.05).

Internal Control Index data -- Locus of control scores for the three subject groups were significantly different, F (2, 40)= 15.61, p<.00001. On the post hoc Student-Newman-Keuls multiple range test, the comparison subjects had a significantly higher internal locus of control than the WBSO subjects and

the bulimic subjects ($p<.05$). However, the WBSO subjects did not differ significantly from the bulimic subjects.

Slide data

The reports of anxiety to the slides were analyzed with 3 X 1 (subject group X mean anxiety score for each theme) one-way analyses of variance. When significance occurred, post hoc Student-Newman-Keuls multiple range tests were done. Refer to Table 2 for a summary of means and standard deviations for anxiety responses to slides for the three groups.

Insert Table 2 about here

Significant differences were found among the three subject groups in the anxiety responses to five of the six themes. These were as follows: anger, $F(2, 40) = 3.56$, $p<.05$; loss of control, $F(2, 40) = 15.76$, $p<.00001$; rejection, $F(2, 40) = 7.06$, $p<.005$; obesity, $F(2, 40) = 14.45$, $p<.00001$; and high calorie food, $F(2, 40) = 19.24$, $p<.00001$. Post hoc Student-Newman-Keuls multiple range tests indicated: a) that the WBSO and bulimic subjects reported more anxiety than

the comparison subjects for loss of control, rejection, obesity, and high calorie food themes ($p<.05$) and b) that the bulimic subjects reported significantly greater anxiety than the WBSO subjects for loss of control and high calorie food themes ($p<.05$).

Pre- and Post-Slides Emotionality data

Change pre- and post-slide Profile of Mood States (POMS) scores for anger, anxiety, and depression were analyzed using a multiple analysis of covariance (MANCOVA), covarying for the pre-scores. To localize the source of the group difference, univariate analyses of covariance (ANCOVA) were then done. Refer to Table 3 for a summary of means and standard deviations for the change scores pre-and post-POMS.

Insert Table 3 about here

The MANCOVA yielded significance, L ratio = 0.42, $F(2, 37) = 6.39$, $p<.00001$. The ANCOVA for the anger change score was significant, $F(2, 39) = 34.86$, $p<.00001$. The ANCOVA for the anxiety change score was significant, $F(2, 39) = 15.10$, $p<.00001$. The ANCOVA

for the depression change score was significant, $F(2, 39) = 26.90$, $p<.00001$. Post hoc Student-Newman-Keuls multiple range tests indicated: significant differences between the three subject groups on anxiety change scores ($p<.05$), on depression change scores ($p<.05$), and on anger change scores ($p<.05$.) For anxiety, significantly less pre-post change occurred for WBSO subjects than for bulimic-purgers and significantly greater pre-post change occurred for WBSO subjects than for comparison subjects. For depression, significantly less pre-post change occurred for WBSO subjects than for bulimic-purgers and significantly greater pre-post change occurred for WBSO subjects than for comparison subjects. For anger, significantly greater pre-post change occurred for bulimic-purgers than for both the WBSO and comparison subjects.

Predictor Variables for Group Membership data

A step-wise multiple regression analysis was employed to determine which independent variables would significantly predict subject group membership. The predictor variables were: BDI score; ISE score; ICI score; and mean anxiety responses to anger, loss

of control, rejection, obesity, high calorie food, and neutral slide themes. Refer to Table 4 for a summary of the analyses. Four variables were found to be significant predictors. The slide theme of high

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Insert Table 4 about here

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calorie food accounted for 70% of the variance in group membership. The ISE score accounted for 9% of the variance in group membership. The neutral slide theme accounted for 4% of the variance in group membership. The ICI score accounted for 3% of the variance in group membership.

Discussion

Results supported all of the Hypotheses (I, III, V, VIII, and X) predicting significant differences between the bulimic-purger group and the comparison group. Bulimic-purgers reported significantly greater depression than the comparison subjects. The bulimic-purgers' mean score fell in the moderate to severe range of depression, while the comparison subjects' mean score fell in the mild to no depression range. The bulimic-purgers reported significantly lower self-

esteem and significantly lower internal locus of control than the comparison subjects. These results were consistent with the literature demonstrating: a) depression as a characteristic of bulimics (Vanderheyden, Fekken, & Boland, 1988; Willmuth, et. al., 1988) and b) the low self-esteem of bulimic-purgers (Mizes, 1988; Willmuth, et. al., 1988). Several studies have found that bulimic-purgers have an external locus of control (Thompson, Berg, & Shatford, 1987; Wagner, Halmi, & Maguire, 1987). A low internal locus of control is consistent with such findings.

When compared to comparison subjects, bulimic-purgers reported significantly more anxiety to the five slide themes of loss of control, expression of anger, rejection, obesity and high calorie food. These results are consistent with previous studies demonstrating that the slide themes are anxiety-provoking to bulimic-purgers (DeVilliers & Holloway, 1987; Smith & DeVilliers, 1986).

The bulimic-purgers showed significantly greater increases in anger, anxiety, and depression pre and post-slide presentation on measures of the POMS than

did the comparison subjects. These subjects were more anxious, more depressed and more angry after the slide presentation than before the presentation. The slide/narrative presentation has been previously shown to cause great anxiety in samples of bulimic-purgers (DeVilliers & Holloway, 1987; Smith & DeVilliers, 1986).

Based upon the assumption that the WBSO subjects would be less pathological than bulimic-purgers but more pathological than comparison subjects, hypotheses I - VIII predicted: a) levels of depression, self-esteem, and locus of control for the WBSO subjects would fall midway between those for bulimic-purgers and comparison subjects and b) WBSO subjects would report less anxiety to the slide themes of anger, loss of control, and rejection than the bulimic-purgers and more anxiety to all the slide themes than the comparison subjects. Only some of these hypotheses (I, II, IV, VI, VII, and VIII) were supported.

Non-bingeing, non-purging WBSO subjects reported significantly more depression than the comparison subjects and significantly less depression than the bulimic-purgers. The non-purging, non-bingeing WBSO

subjects's mean score fell into the mild range of depression. WBSO subjects also reported significantly greater self-esteem than bulimic-purgers and presented a significantly lower internal locus of control than did the comparison subjects.

By definition, the WBSO group are overly concerned about certain aspects of their appearance. This "overconcern" could be one example of a general style of looking for external validation. Thus, this behavior is logically consistent with the exhibition of a low internal locus of control. Although the locus of control scores for the bulimic-purgers and WBSO subjects were not significantly different, the levels of self-esteem were different. This difference could explain why WBSO subjects do not go to such great lengths to lose weight, i.e., engaging in the bingeing and purging behavior typical of bulimic-purgers. Although the WBSO subjects have adopted the American societal value that thinness is more attractive and buy into external control, they appear to have more self-confidence and thus, do not engage in drastic behaviors to lose weight. The bulimic-purgers, on the other hand, are not as self-confident

and therefore go to greater lengths to alter their body shape and lose weight.

The similarity in locus of control and the difference in levels of self-esteem might also explain why WBSO subjects were not as depressed as bulimic-purgers, yet were more depressed than the comparison subjects. By definition, the WBSO subjects were more concerned about, and dissatisfied with, their physical appearance than were the comparison subjects. Their exhibited lower level of internal self control could partially explain why they were more depressed than the comparison subjects. By definition the WBSO subjects were as concerned and dissatisfied with their physical appearance as were bulimic-purgers. Their exhibited greater level of self-esteem could partially explain why they were not as depressed as the bulimic-purgers.

The WBSO subjects reported significantly less anxiety than the bulimic-purgers to the slide theme of loss of control but not to the slide themes of rejection and anger. The WBSO subjects reported significantly more anxiety than the comparison subjects to the slide themes of loss of control and

rejection but not the anger slide theme.

It is logical that the WBSO subjects reported less anxiety than the bulimic-purgers to the loss of control slide theme because they do not engage in the behaviors associated with loss of control, i.e., bingeing and purging. It is also logical that the WBSO subjects reported more anxiety than the comparison subjects to the loss of control slide theme. The loss of control slides depicted females bingeing on "junk food", drinking alcoholic beverages, and self-induced vomiting into a toilet. The "mid-level" anxiety observed in the WBSO subjects might be related to fears of succumbing to the bingeing and purging behaviors exhibited in the slides.

No significant difference was found in reports of anxiety to the rejection slide theme by the WBSO subjects and bulimic-purgers. One reason might be that since both have an external locus of control and desire external validation, for both groups being rejected by others is equally painful and distressing. In contrast, the WBSO subjects reported more anxiety than the comparison subjects to the rejection slide theme. Here again, one explanation might be that

because of a lower internal locus of control, the WBSO subjects are more sensitive to rejection and disapproval from others than the comparison subjects.

Another assumption was that the WBSO females would be similar to the bulimic-purgers and not similar to the comparison subjects in attitudes toward obesity and high calorie foods. Hypothesis IX was partially supported. The WBSO subjects exhibited significantly more anxiety to themes of obesity and high calorie food than did comparison subjects and exhibited significantly less anxiety to the theme of high calorie food than did bulimic-purgers. It appears that high calorie food is a differentiating factor between the three groups. One explanation might be that since the WBSO subjects do not binge and/or purge high calorie foods, the high calorie food slide theme would not have been as anxiety-provoking to them as it was to the bulimic-purgers. The fact that obesity is of greater concern to both the bulimic-purgers and the WBSO subjects than to the comparison subjects is consistent with the subject selection criteria.

Hypothesis X, predicting that WBSO subjects would

show greater increases in anger, depression, and anxiety pre-post slide presentation than would the comparison subjects, was partially supported. The WBSO subjects reported significantly greater changes in depression and anxiety pre-post slide presentation but not greater changes in anger. The WBSO subjects were more depressed and anxious after the slide presentation. The bulimic-purgers demonstrated significantly greater increases in depression, anxiety, and anger pre-post slide presentation than the WBSO subjects. These subjects were more depressed, anxious, and angry after the slide presentation.

Themes in the slide presentation appeared to have greater emotional impact for the WBSO females than for the comparison females. One possible explanation might be that the level of identification/emotional involvement was more intense for the WBSO subject. The content of the slides for each slide theme was designed to elicit emotional responses from females who have bulimia nervosa and/or are obsessed about their weight and body shape. The slides graphically depict people yelling at each other, young female

adults bingeing and purging, young female adults being left out of a group activity, obese females, and high calorie food.

Results from the present study begin to provide a picture of the WBSO female. WBSO subjects would appear to have problems with depression and a low internal locus of control. Seeking validation from others for one's appearance, opinions, and emotions would appear to be a significant characteristic of WBSO females. They would seem to value and trust what others think more than what they think, even when it comes to their own feelings. The slide presentation proved to be anxiety-provoking to the WBSO subjects; they were sensitive to rejection and expression of anger. Finally, the WBSO subjects exhibited significant increases in depression and anxiety pre-post slide presentation. These data are consistent with the author's clinical experience with bulimic-like females. In work with these clients, common goals in psychotherapy were to increase self-esteem and decrease the importance of physical appearance.

Hypothesis XI had predicted that the independent variables of levels of depression, self-esteem, and

internal locus of control would be the best predictors of group membership. This prediction was only partially supported. The following variables accounted for the most variance in group membership in order of greatest accountability: response to high calorie food slide theme, self-esteem score, neutral slide theme, and internal locus of control score. The response to the high calorie food theme accounted for an enormous amount of variance (70%). The total amount of variance accounted for was 86%.

Results pertaining to the self-esteem variable are consistent with the work of Vanderheyden and Boland (1987). These authors found that negative self-image was one of three variables which predicted group membership among eating disordered females. It is difficult to explain why the neutral slide theme became a predictor variable for group membership. There were no significant differences in anxiety responses to the neutral slide theme between the three subject groups, and the mean scores for the three groups were very similar. That the locus of control variable was found to be a predictor variable is consistent with other results in the present study:

the WBSO subjects and bulimic-purgers exhibited significantly lower internal locus of control scores than did the comparison subjects.

It is not surprising that the high calorie food slide theme accounted for the largest amount of variance. The high calorie foods represented in the slides were ice cream, cakes, donuts, and candy (every weight watcher's nightmare). The three subject groups were significantly different from each other in reports of anxiety in this slide theme. Moreover, this variable is also associated with, in unique and common ways, other issues related to the WBSO subject's weight and body shape concern and the bulimic-purger's eating disorder. To the WBSO subject, eating high calorie food could reflect a tendency to look outward for a sense of control or pleasure, which is consistent with an external locus of control. Also, the high calorie food theme could be anxiety-provoking because of a fear of losing control and being unable to resist the temptation of eating the food, which could cause them to become obese. To the bulimic-purger, the food could have a negative association of bingeing and/or purging, and

feelings of guilt and self-loathing. Afterall, to the WBSO subject and bulimic-purger, food is a nemesis.

It is appropriate here to consider limitations to this study. A larger sample of subjects in each subject group would have been an improvement in this study. Group comparability was also a problem. Four of the 13 bulimic-purgers were recruited through an inpatient facility. Furthermore, nine of the subjects in this group were recruited through means other than the classroom. This differential recruitment, along with the screening procedures, might have created a different experimental pull for subjects in the three groups. Although all subjects were given information about what was being measured by the questionnares and slides (through the consent form), the bulimic-purgers knew they were being recruited because they had bulimia-nervosa. There exists the possibility they felt compelled to respond as a bulimic-purger during the study. The WBSO and comparison subjects were asked during the brief structured interview if they were concerned about their weight and body shape, and if they had a history of an eating disorder. This also might have clued them into how to respond or made

them feel they should commit to a specific role during the study. However, though the subject selection and recruitment procedures may have influenced the subjects' approach to the study, there were subjects who responded quite differently than expected, i.e., bulimic-purgers who appeared in "denial" and responded like the comparison group.

Future studies should continue to narrowly define the subject groups as this study did. However, as already stated, new studies could further improve the homogeneity of the subject groups by using only bulimic-purgers who are in outpatient treatment and recruiting all groups through the same procedures. Thus, comparison between bulimic-purgers and WBSO females would be "cleaner." Bulimic-purgers in inpatient treatment are likely to be more "in crisis", potentially adding additional variance between the groups.

Although the present study provided some information on the WBSO female, this population merits further scientific exploration so that appropriate and efficacious preventive and therapeutic programs can be developed. Future studies might explore other

predictor variables which have been associated with bulimia nervosa, i.e., fear of social and sexual intimacy, family dysfunction, misinformation about dieting, or perfectionism. These themes could be depicted in slides or appropriate questionnaires could be used to measure the variables. Future studies could also compare WBSO samples with females who do not fulfill the DSM-III-R criteria for bulimia nervosa but engage in either bingeing or purging behavior on an occasional basis (the "semi-bulimics"). Finally, it would be interesting to explore ethnic cultural factors related to eating disorders. Anglo females could be compared to minority females, i.e., african-american, hispanic, etc. female samples. Further exploration of both bulimia nervosa and WBSO subjects would increase knowledge in the field of eating disorders and help mental health professionals to better treat these complicated clinical populations.

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Table 1

Beck Depression Inventory, Index of Self-Esteem, and Internal Control Index Data for the Bulimic, Weight and Body Shape Obsessed, and Comparison Groups -- Means and Standard Deviations

	Bulimic-Purgers	Weight and Body Shape Obsessed	Comparison
Beck* Depression Inventory	23.85(10.88)[a]	13.00(7.37)	7.13(4.16)
Index of* Self-Esteem	0.23(3.32)	-3.27(2.89)	-4.67(1.23)
Internal* Control Index	83.61(16.46)	91.53(15.69)	112.27(9.71)

a M(S.D.)
* $p<.00001$

Table 2

Anxiety Responses to Slides for the Bulimic, Weight and Body Shape Obsessed, and Comparison Groups -- Means and Standard Deviations

	Bulimic	Weight and Body Shape Obsessed	Comparison
Themes			
Anger*	8.23(1.98)[a]	7.28(1.98)	5.81(3.09)
Loss of Control***	8.86(1.07)	6.09(2.90)	4.03(2.31)
Rejection**	7.96(2.12)	6.38(2.38)	4.26(3.17)
Obesity***	9.65(.69)	9.22(1.36)	6.01(3.02)
High Calorie food***	8.17(2.16)	5.44(2.61)	2.53(2.38)
Neutral	1.50(1.80)	1.03(1.21)	0.64(1.53)

a M(S.D.)
* $p<.05$
** $p<.005$
*** $p<.00001$

Table 3

Change Scores: Pre and Post Slide Profile of Mood States -- Unadjusted and Adjusted Means and Standard Deviations

	Bulimic	Weight and Body Shape Obsessed	Comparison
Depression			
*	a		
	19.92(12.11)	4.67(5.14)	-1.20(3.00)
	20.70	4.41	-1.61
Anger			
*			
	19.69(10.54)	3.20(4.51)	-1.73(4.73)
	19.68	3.26	-1.79
Anxiety			
*			
	10.69(6.48)	5.80(6.18)	-0.60(3.29)
	11.13	5.48	-0.66

a unadjusted cell M(S.D.)
adjusted cell M
* $p < .00001$

Table 4

Stepwise Regression Analysis for Dependent Variable of Eating Disorder Subject Group Membership Using Independent Variables of 3 Questionnaires and 6 Slide Themes

		r	Multiple R	Adj R Square	F	p<
Step						
1	High Calorie Food theme	.66	.70	.48	39.42	.00001
2	Index of Self-Esteem	.61	.79	.61	33.34	.0002
3	Neutral theme	.23	.83	.67	29.59	.0035
4	Internal Control Index	-.64	.86	.72	27.69	.0097

Appendix

Consent Form

Principal Investigator: Diana DeVilliers

Sponsor: Vicki Green, Ph.D.

Your signature on this form acknowledges that the following points have been explained to you, and that you understand them. If you have any questions, please have them answered before you sign the form. In signing, you are not in any way committing yourself to continue or complete the research project, nor are you waiving any of your legal rights. This is simply a statement that you are aware of the nature of the project, and that you understand all that is involved. All information collected will be kept strictly confidential.

Statement of Informed Consent

I,_____,
hereby authorize or direct Diana DeVilliers, or assistants of her choosing to perform the following treatment or procedure:

1. I will be participating in a one session study concerning eating habits, and it will last approximately 1 1/2 hours.

2. I will be completing two eating habits questionnaires and four standard psychological tests (Beck Inventory, which measures depression; Internal Control Inventory, which measures how much other people influence you; Profile of Mood States, which measures current mood; and Index of Self-Esteem, which measures how you feel about yourself). I understand results of the tests will be made available to me upon request by a qualified professional. The information from all of the tests/questionnaires data will be kept strictly confidential.

3. I will be viewing slides depicting a number of different "themes" or categories, and will be rating how comfortable and/or uncomfortable the slides make me feel. These slides depict interpersonal scenes, and eating and diet related scenes. As mentioned above, the slides may

cause slight discomfort to some subjects, but the element of risk in participating in the study is low.

4. I am 18 years or older.

5. Students in Introduction to Psychology classes will receive 2 extra credit points for their participation. Non-students and students from Home Economic classes will not be compensated for their participation.

This is done as part of an investigation entitled "Eating Attitudes and Habits."

The purpose of the procedure is to gain pertinent information about factors related to a preoccupation with dieting and body shape. I understand that participation is voluntary, that there is no penalty for refusal to participate, and that I am free to withdraw my consent and participation in this project at any time without penalty after notifying the project director.

I may contact Diana DeVilliers at telephone number (213) 463-7183 should I wish further information about the research. I may also contact Terry Maciula, University Research Services, 001 Life Sciences East, Oklahoma State University, Stillwater, OK 74078 Telephone: (405) 744-5700.

I have read and fully understand the consent form. I sign it freely and voluntarily.

Date:_____Time_____(a.m./p.m.)

Signed _____

Witness_____
I certify that I have personally explained all elements of this form to the subject before requesting the subject to sign it.

Signed_____

If you would like the results of the study once it is completed and put in manuscript form, please leave your address in the space below, and we will mail you the paper when the study is completed.

_____

_____

_____

VITA

Diana E. DeVilliers

Candidate for the Degree of

Doctor of Philosophy

Thesis: DIFFERENCES AMONG BULIMIC-PURGING; NON-PURGING, NON-BINGEING, WEIGHT AND BODY SHAPE OBSESSED; AND NON-BULIMIC FEMALES

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