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ABSTRACT

The hypothesis that negative emctional life states accompanying life stresses are asscciated with overeating and weight gain cannot be adequately tested solely by laboratory analogue studies. Naturalistic, short-term longitudinal designs are needed in which individuals susceptible to mood eating can be identified prior to a stressful event and followed up to determine weight changes. College students in two samples completed questionnaires on height, weight, restraint, eating habits, self-image, and life events. Mood eating tendencies, which were more frequently reported by both overweight and normal-weight females than males, were associated with self-monitored dysphoric moods and negative self-evaluations. Subjects with high scores on the Mood Eating Scale were likely to be restrictive dieters reporting binge-eating tendencies and dissatisfaction with weight-related appearance. Results suggest that the Mood Eating Scale is a viable measure of a mediating variable, a cognitive appraisal process intervening between life and weight changes. (Author/HLM)

Stress related overeating among college students: Development of a Mood Eating Scale

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Stress related overeating among college students: Development of a Mood Eating Scale

According to the psychosomatic theory of obesity (Kaplan & Kaplan, 1957), obese individuals overeat in response to emotional states (e.g., anxiety, boredom, anger, depression) and this eating alleviates the dysphoric mood. This pattern of "mood eating" has been viewed as a learned coping response usually established in childhood (Bruch, 1961). Clinical reports of mood eating are abundant (Atkinson & Ringuete, 1967; Bruch, 1964; Clancy, 1965; Holland, Masling, & Copley, 1970; Leckie & Withers, 1967; Leon & Chamberlain, 1973; Silverstone, 1968; Sjoberg & Persson, 1979; Stunkard, 1976; Weintraub & Aronson, 1969), but experimental tests of the theory have yielded contradictory findings (Abramson & Stinson, 1977; Abramson & Wunderlich, 1972; Antelman & Rowland, 1976; Herman & Polivy, 1975; Leon & Chamberlain, 1973a, 1973b; McKenna, 1972; Meyer & Pudel, 1972; Schacter, Goldman, & Gordon, 1968; Slochower, 1976). In general, overweight and normal weight subjects not exhibiting "restraint" (i.e., restrictive dieting efforts) eat less when rendered anxious through threat of electric shock or unfavorable social comparisons, while overweight and restrained subjects tend to eat more (e.g., Herman & Polivy, 1975). Abramson and Stinson (1977) found boredom to increase consumption for both obese and normals. Although Ely, Goolkasian, Frost, & Blanchard (1979) have reported that "restrained" female subjects in the "depressed" mood induction condition ate more candy but reported less depression than their unrestrained counterparts, there is no conclusive experimental evidence that overeating in response to life stress ameliorates dysphoric moods (cf., Rodin, 1977).

The mixed and inconclusive findings of these laboratory studies should be viewed within the context of recent systematic clinical investigations of the relapse patterns of participants of weight control programs. Leon & Chamberlain (1973a & b) found that regainers reported a greater number of emotional arousal states eliciting eating. Rosenthal, Marx, & Adams (1979), following Marlatt & Gordon's (1980) relapse model for addictive behaviors, noted that regainers experienced more guilt during an initial dietary "slip". One third of all slips were categorized as due to "copying with negative emotional states." Setty & Hawkins (Note 1.) found that regainers reported higher anger-hostility scale scores on the SCL-90 at pretreatment; while binge eaters were more likely to drop out of treatment.

The hypothesis that negative emotional states accompanying life stresses are associated with overeating and weight gain cannot be adequately tested solely by laboratory analogue studies. Naturalistic, short-term longitudinal designs are needed in which individuals susceptible to mood eating can be identified prior to a stressful event (e.g., exams, divorce) and then followed up subsequently to determine weight changes. Preliminary correlational studies have suggested that arousable persons are particularly susceptable to psychosomatic and psychological dysfunctions following life stress (Mehrabian & Ross, 1979).

In the present study we propose an alternative version of the psychosomatic hypothesis to describe stress related eating in college students of varying body weights. Furthermore, we describe the development of a self-report measure of emotional eating tendencies (the "Mood Eating Scale") and examine the relationship between mood eating, restrictive dieting tendencies, binge eating, and weight fluctuation during one academic semester.

A reformulation of the psychosomatic hypothesis for overeating:

There appears to be a subpopulation of individuals, both those ostensibly overweight and those of normal weight, who have the tendency to eat under stress or emotional arousal. "Mood eaters" who try to conform to ideal weight standards will exhibit strong dietary "restraint" in an effort to both compensate for mood eating and to lose weight if they believe that they are overweight. Despite daily emotional fluctuations, then, these persons will most likely be able to maintain their weight or even lose weight on a day-to-day basis. However, periods of substantial life stress should serve to disinhibit restrained eating as well as augment the intensity of their emotional states. Life stress may also increase the tendency for a dominant response such as eating to occur more frequently (Antelman & Rowland, 1976). At any rate, mood eating is predicted at such times to become more frequent and uncompensated by restrictive dieting efforts. The mood eater, in effect, overeats and gains weight until the stressful period is over.

Certain parts of this formulation require additional comments. First, we have maintained that most mood eaters will be restrained dieters. We predict this assuming that the majority of mood eaters wish to achieve and maintain "ideal" weight standards. As a group, normal weight mood eaters are probably more likely to be restrained than they are to be unrestrained because they must compensate for minor "mood eating - overeating" tendencies. Overweight mood eaters should be even more characterized by restraint because they must restrain their intake enough to actually lose weight in addition to compensating for mood eating. However, we do not believe that all restrained individuals are mood eaters. Mood eating would have to be the sole determinant of overeating for this to be the case.

From this preliminary model several specific hypotheses were derived. First, individuals scoring high on the state measure of mood eating should report more frequent negative moods associated with self-monitored meals and snacks, as well as a greater frequency of negative self-evaluations. Mood eating tendencies were predicted to be more frequently reported by females than by males. Mood eating scores were predicted to be positively correlated with restrictive dieting tendencies (although not isomorphic with this "restraint" measure) and positively correlated with each individual's percentage deviation from his/her "ideal" weight (i.e., as defined by the individual, not as defined by the desirable weights for given heights in insurance tables). Binge eating was hypothesized to be a more severe variant of mood eating, involving stress related eating and degree of dissatisfaction with weight-related physical appearance (i.e., with body image disturbance). High mood eaters were predicted to differ from non-mood-eaters in their self-reported age of onset of concern about being overweight. Finally, restrained mood eaters were expected to maintain a relatively stable body weight or even lose weight during the semester, unless they reported experiencing periods of life stress, which would disinhibit their restraint thereby triggering stress related eating and subsequent weight gain.

Method

Subjects

Two samples of college undergraduates of varying body weights participated in this study. The first sample comprised 145 females and 55 males from the second author's abnormal psychology class, who completed the questionnaires for extra credit. The second sample contained 188 females from several introductory psychology classes who completed the questionnaires to fulfill a course

requirement for research participation. Body weight percentages were calculated as a deviation percentage from the desirable weight for males or females with a medium body frame (Metropolitan Life Insurance Company, 1959; Wollersheim, 1970). Five women and eight men in the second sample were at least 20% overweight, while 14 of the females in the second sample were overweight to this degree.

Procedure

Subjects in both samples received a packet of questionnaires which included a Height-Weight Survey (Hawkins, unpublished) eliciting information about current height and weight, desired "ideal" weight, age of onset of concern about being overweight (if applicable) and other demographic information. The packet also contained the 20-item Mood Eating Scale (Table 1) which was developed to assess the tendency to report eating in response to various emotions as well as the belief that eating under these circumstances offers comfort. Additional measures included the revised Restraint Scale (Herman, Pliner, Threlkeld & Munic, 1978), which measures restrictive dieting tendencies, the Binge Scale (Hawkins & Clement, in press), the Negative Self-Image Scale (Hawkins & Clement, in press), which is a measure of dissatisfaction with weight related appearance, and a Life Events Scale (Price & Price, 1974). Both the Binge Scale and the Negative Self-Image Scale have been found to have adequate internal consistency reliability (Cronbach alphas of .68 and .96, respectively).

In addition to completing these questionnaires subjects in the first sample self-monitored their eating behavior for two week days and two weekend days (cf., Hawkins, 1979). Weight change during the month subsequent to filling the surveys was also obtained. The procedure was slightly different for the women in the second sample. During pretesting two months prior to their participation

in this survey most of these subjects had completed the Height-Weight Questionnaire. Thus for the second sample the weight change measure was retrospective.

Results

Quantifying self-perceived stress related eating tendencies

The internal consistency of the 20-item Mood Eating Scale was satisfactory for a pilot instrument (Cronbach's alpha =.88, for the sample of 188 women). Examination of the relationship between the total score on the Mood Eating Scale and the emotional and attitudinal measures from the self-monitored food records kept by the male and female subjects in the first sample revealed significant positive correlations between mood eating and the percentage of negative self-evaluations associated with ingestions (r = .36, $p < .001$), and a trend for mood eating to be correlated with the percentage of dysphoric moods during ingestions (r = .18, p = .06). Mood eating was not significantly correlated with self-reported body weight percentage or with the percentage of positive self-statements.

The Mood Eating Scale scores of 145 females in the first sample (M = 33.99, SD = 15.15) were significantly higher than those of the 55 males (M = 26.59, SD = 12.34), $t(208) = 3.44$, $p < .001$). Subjects who were at least 20% in excess of their desirable weight percentage did not obtain significantly higher mood eating scores relative to those of their normal weight counterparts, when gender and restrictive dieting tendencies were statistically controlled. Reported age of onset of overweight concern (childhood, adolescence) was not significantly correlated with mood eating scores for either the first or the second samples.

Psychological correlates of Mood Eating

The interrelationship among total scores on the Mood Eating Scale, the Restraint Scale, the Binge Scale, the Negative Self-Image Scale and the Life

Changes Scale, along with current body weight percentage, weight percentage change during the semester, and the percentage deviation between current weight and each individual's self-determined "ideal" weight are presented in Table 2 (for the first sample) and Table 3 (for the second sample). Degree of mood eating was significantly positively correlated with restrictive dieting tendencies, binge eating, dissatisfaction with weight related appearance and the degree to which body weight percentage exceeded self-determined ideal weight (r = .37, $p < .01$ for the first sample, a trend for the second sample). The pattern of correlations was similar across the two samples, in most instances.

A double median split procedure was next carried out on the data from the 188 women in the second sample to investigate the relationship between mood eating and dieting "restraint". The median score for the Mood Eating Scale was 39, while that for the Restraint Scale was 15. Fifty-eight women's scores exceeded the medians on both scales. Sixty-four percent of the mood eaters were restrained dieters, while 67% of the restrained dieters were mood eaters. As predicted, most mood eaters were engaged in restrictive dieting efforts, and many---but not all---restrained dieters were mood eaters. All nine overweight (+20%) mood eaters were restrained, as were the other 5 overweight women whose scores did not exceed the median on the Mood Eating Scale.

A series of hierarchical multiple regression analyses (Nie et al., 1975) was then performed to provide some preliminary tests for the hypotheses derived from our model of stress related eating. The results of each analysis are reported first for the sample of male and female students, and second, for the sample of college women.

With Mood Eating Scale scores as the dependent, or criterion, measure, the linear combination of the predictor variables "Restraint Scale score" and "per-

centage deviation from self-determined 'ideal' weight" was expected to account for significant amounts of variance, while the addition of current body weight was not expected to produce a significant increment in R^2. Table 4 provides descriptive statistics for the regression of mood eating scores on these predictor variables for each sample. Equations 1 and 2 summarize the regression analyses of the mood eating measure for the first and second samples, respectively. The "Beta" coefficients in these and subsequent equations have been computed for standardized variables; thus the magnitudes of the coefficients for the various significant effects are indicative of the relative strength of these predictor variables.

(1) Mood Eating = +.42 Restraint + .11 Percentage discrepancy from ideal weight
+.02 Body weight percentage

(2) Mood Eating = +.13 Restraint +.15 Percentage discrepancy from ideal weight
-.07 Body weight percentage

The R^2 values for Equations 1 and 2, adjusted for sample size and number of predictors, were .23 and .02. Of the predictor variables, dieting restraint showed the strongest association with mood eating, while body weight percentage did not add significantly to the explained variation in this criterion.

Binge eating was hypothesized to be a more severe variant of mood eating, involving both stress related eating and degree of dissatisfaction with weight related appearance. Table 5 provides descriptive statistics for the regression of binge eating scores on the predictor variables for each sample. Equations 3 and 4 summarize the regression analyses of this dependent measure for the first and second samples, respectively.

(3) Binge eating = +.35 Mood eating +.29 Negative self-image

(4) Binge eating = +.08 Mood eating +.80 Negative self-image

The R^2 values for Equations 3 and 4, adjusted for sample size and number of predictors were .43 and .32. Both predictor variables, mood eating and negative self-image, separately accounted for significant proportions of variance in the criterion measure.

"Restrained mood eaters" were hypothesized to maintain a relatively stable body weight or even lose weight during the semester, unless they reported experiencing many major life changes. For the first sample of males and females the criterion measure was the difference between the body weights reported before and after the one month interval subsequent to the subjects' completion of the self-report questionnaires and their self-monitoring of meals and snacks. For the second sample, however, the dependent measure was the difference in body weights reported before and after the two month interval prior to completion of the self-report questionnaires. In this latter case, body weights had been obtained during pretesting, before the subjects participated in the survey. Table 6 provides descriptive statistics for the regression of this weight change measure on several predictor variables for the first sample. Equation 5 summarizes these regression analyses. A "dummy" variable to encode for gender classification was entered into the hierarchical multiple regression equation on the first inclusion step, since women reported significantly greater weight loss during the subsequent one month period than did the men, $t(24) = -2.60$, $p = .01$.

(5) Prospective Wgt. Change (%) = -.28 Sex (males=0, females=1) -.40 Mood eating +.36 Restraint -.10 Binge eating -.17 Life Change total score +.50 Life Change X Moodeating - .20 Percentage discrepancy from ideal weight -.24 Preweight percentage

A negative (-) sign for the standardized regression coefficients indicates that the higher the score on the predictor variables the more weight was lost during the one month follow-up interval. The adjusted R^2 value for Equation 5 was .27.

The dummy variable, "sex", and the "percentage discrepancy from ideal weight" accounted for significant variance in the criterion ($p < .01$), while Life changes (during the past month) and the interaction between mood eating and life changes accounted for additional variance (p's < .10).

Subjects in the first sample who wanted to lose weight (i.e., for whom there was a deviation from self-determined ideal weight) lost more weight in the subsequent month, while subjects who reported many recent life changes along with more mood eating tended not to lose weight. To clarify this interaction between mood eating tendencies and reported life changes a discriminant function analysis (Nie et al., 1975) was performed for subjects grouped as follows: those losing at least 4 pounds (n=7), those gaining at least 4 pounds (n=5), and those in between (n=49). Table 7 presents the means ($\pm$ SD), the univariate F values, and the p values for the several predictor variables as a function of this post-hoc grouping. A weight fluctuation of 4 pounds was approximately equal to $\pm$ 1 SD (see Tables 2 and 3). Inspection of this table reveals the same pattern of relationships that obtained in the multiple regression analyses: subjects who lost the most weight had beforehand reported more mood eating, more restrictive dieting tendencies, more binge eating, more dissatisfaction with weight related appearance, had wanted to lose more weight, and had experienced more negative self-evaluations associated with meals and snacks than had the subjects who had subsequently gained weight. The first discriminant function enabled a significant separation of the group centroids (Wilk's Lambda = .43, Chi-Square (24) = 44.5, $p < .01$). The variables contributing most to the function (loading at least .5) were life changes, ideal weight discrepancy, percentage of negative self-evaluations and negative moods associated with eating and snacking percentage. There were significant sex differences in the proportion of subjects

whose weight change exceeded four pounds, Chi-square (2) = 6.0, $p < .05$, with females more likely to have lost 4 pounds than were males.

Table 8 provides the descriptive statistics for the regression of prior weight change upon the predictor variables in the second sample of women. Equation 6 summarizes the hierarchical multiple regression analysis:

(6) Retrospecitve Weight change % = -.10 Mood eating -.03 Restraint +.18 Binge eating +.32 Life changes -.25 Life changes X Mood eating +.29 Percentage deviation from ideal weight -.08 current body weight percentage

A positive (+) sign for the standardized regression coefficients indicates that the higher the score on the predictor variable the more weight gain had been reported during the preceding two months. The adjusted R^2 value for Equation 6 was .08. The predictor variables accounting for significant amounts of variance in the criterion measure included: dieting restraint ($p < .01$), binge eating tendencies ($p < .05$), and percentage deviation from ideal weight ($p < .05$).

A discriminant function analysis was also performed for subjects grouped into three categories: those who had lost at least 4 pounds (n=11), those who had gained at least 4 pounds (n=15), and those in between (n=112). Table 9 presents the means (± SD), the univariate F's, and the p values for several predictor variables as a function of this post-hoc grouping. Women who reported they had gained weight also reported more current binge eating behavior and more deviation from their ideal weight. The first and second discriminant functions enabled significant separation of the group centroids (Wilk's Lambda = .55, Chi-square (14) = 77.8, $p < .001$; Wilk's Lambda = .83, Chi-square (6) = 25, $p < .001$).

The hypothesis that restrained mood eaters would lose weight except during periods of life stress, at which time disinhibition of mood eating would occur, implies the occurrence of an interaction between reported life changes and mood eating in jointly determining weight change. Regression Equation 5, for the first sample, revealed a trend for this interaction. Further 2 X 2 ANOVAs were conducted on the weight change dependent measures in both samples. Four groups of subjects were formed on the basis of median splits on mood eating scores and reported life changes. For the first sample, the interaction between life changes and mood eating attained statistical significance, $F(1,66) = 6.13$, $p < .02$. (The triple interaction, Life changes X Mood eating X Subject's sex, was found to be non-significant ($p < .9$) in a preliminary analysis). Similarly, for the second all female sample the life changes and mood eating interaction was also significant, $F(1,146) = 4.10$, $p < .05$. The cell means for weight change represented in these two-way interactions are presented, separately for the two samples, in Table 10. For the first sample, subjects reporting high mood eating tendencies and few life changes subsequently lost the most weight (Mean = 3.94 pounds). For the second sample, subjects who reported having experienced many major life changes, but little mood eating, gained the most weight (Mean = 2.1 pounds).

Discussion

These findings suggest that self-perceptions of mood eating may be reliably measured and demonstrably related to measures of eating behavior, other attitudes of interest, and to weight changes reported both retrospectively and prospectively. Mood eating tendencies, which were more frequently reported by college women (both overweight and normal weight) than by college men, were associated with self-monitored dysphoric moods and negative self-evaluations during daily ingestions

in naturalistic settings. Subjects obtaining high scores on the Mood Eating Scale were likely to be restrictive dieters reporting binge eating tendencies and dissatisfaction with weight related appearance, but not all dieters or overweight subjects reported stress related eating.

A preliminary model of stress related eating among college students is proposed, which postulates that restrained mood eaters would be expected to maintain their weight or even lose weight on a day to day basis. During periods of substantial life stress, however, restrictive dieting efforts would lessen or cease and weight would be gained. Preliminary findings showing that mood eating and dieting tendencies were associated with subsequent weight loss during the semester, unless the individual reported many concurrent life stresses, were consistent with this formulation. The Mood Eating Scale thus shows promise as a measure of a mediating variable, a cognitive appraisal process intervening between life changes and weight changes. The predictive validity of the Mood Eating Scale needs replication and extension to longitudinal studies using both normative and clinical samples, in addition to experimental investigations using laboratory analogues of individual differences in arousal induced eating.

Of immediate interest is verifying that the apparently different patterns of relationships between the self-report measures of stress related eating and weight change depends upon whether the weight fluctuation criterion is prospective or retrospective. The well-known reactive effects of self-monitoring have been found to have adaptive functions (cf., Hawkins, 1979; Doell & Hawkins, unpublished paper). Self-awareness and willingness to self-attribute loss of control of health habits may constitute a cognitive preparation for a change of phase in the alternating cycle of weight loss and regain. Awareness of weight gain, perhaps related to stressful life events, may increase self-attribution of feelings of

loss of control over eating, yet the acknowledgment of these dissatisfactions with behavior and self may facilitate subsequent weight loss efforts, provided that alternative stress-coping resources are available to aid adjustment to major life changes.

Reference Notes

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2. Setty, R. M., & Hawkins, R. C. II. Relevance of mood eating patterns to maintenance of weight loss after treatment. Paper presented at the Annual Convention of the Southwestern Psychological Association, Oklahoma City, April, 1980.

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Footnotes

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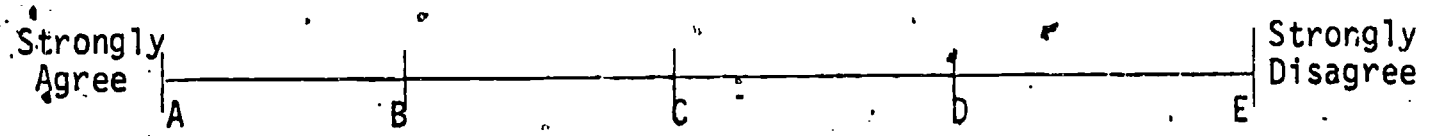
Table 1

The E-Scale: A Measure of Moodeating Tendencies

Instructions: Indicate how strongly you agree or disagree with each of the following statements by choosing the appropriate letter on the scale A, B, C, D, or E:



For example, if you strongly agree with a statement you would mark down choice A on your answer sheet. If you strongly disagree you would choose E, while if you agree somewhat you might choose C, and so forth. Blacken the letter A, B, C, D, or E on your answer sheet for each question, depending on your choice.

1. Eating can make me feel somewhat relieved when I am overwhelmed with things to do.
2. When I am nervous, eating something will not help calm me down. (R)
3. When someone important does something that clearly shows their dislike for me, I find myself eating after it happens.
4. Eating something does not help soothe me when I'm feeling frustrated. (R)
5. When I am extremely happy, eating something seems to add to the good feeling.
6. If I eat a certain food and I feel very guilty about eating it, I continue to eat more of that food or other foods.
7. I find myself eating more than usual during periods of great stress (e.g., breaking up with a lover, final exam week, starting college or a new job, getting married, etc.).

8. If I was upset because of an argument I had with someone special to me, eating would not help soothe me. (R)
9. I rarely find myself eating to pass the time when I am bored. (R)
10. When I feel inferior to someone, it makes me want to eat.
11. I seem to eat more than usual when I feel things are out of control.
12. When I am angry with someone, eating won't help calm me down. (R)
13. I feel like eating when I am disgusted with myself.
14. On days where everything seems to go wrong, I do not tend to eat any more than usual. (R)
15. I snack a lot while studying for an exam.
16. If someone makes fun of my physical appearance, I find myself eating after it happens.
17. When I keep my feelings to myself for so long that I feel like exploding, I sometimes eat to try to feel better.
18. I do not tend to eat any more than usual after failing at something important to me. (R)
19. I feel like eating to make myself feel better after someone has clearly taken advantage of me.
20. When I am under pressure, I find myself eating more often.

Note. Score A = 0, B = 1, C = 2, D = 3, and E = 4. Items marked "(R)" are reverse-scored. Higher scores indicate more mood-eating tendencies than lower scores.

Table 2

Measure	1	2	3	4	5	6	7	8
Mood Scale		.51**	.48**	.52**	.26*	.17	-.24*	.37**
Binge Scale			.61**	.57**	.08	.06	-.14	.29*
Restraint				.62**	.26*	.27*	-.05	.55**
Neg. Self-Image					.13	.17	-.01	.48**
Life Changes						.11	.20	.14
Initial Wgt.							-.30*	.73**
Weight Chg.								-.36**
Ideal Wgt.								
Means (n=65)	31.9	4.5	14.7	5.7	94.3	102.6	-.7	3.8
(±SD)	13.8	4.7	6.6	4.4	76.2	13.4	5.2	9.0

** p < .01
* p < .05

Table 3

Measure	1	2	3	4	5	6	7	8
Mood Scale		.21**	.16*	.31**	.10	.08	-.06	.13
Binge Scale			.68**	.58**	.10	.42**	.26**	.55**
Restraint				.62**	.06	.51**	.21**	.61**
Neg. Self-Image					.11	.49**	.12	.63**
Life Changes						.18*	.10	.12
Initial Wgt.							.22**	.83**
Weight Chg.								.30**
Ideal Wgt.								
Means (n=149)	39.7	5.9	16.1	7.8	86.0	100.3	.7	6.9
(SD+)	6.0	5.2	5.8	6.1	88.4	11.7	3.7	8.0

** p < .01
* p < .05

Table 4

Dependent Variable. EMOTTS

Sample #1

Summary Table

STEP	VARIABLE ENTERED	VARIABLE REMOVED	F TO ENTER OR REMOVE	SIGNIFICANCE	MULTIPLE R	R SQUARE	R SQUARE CHANGE	Beta	OVERALL F
1	RSTOT		28.73726	.000	.49196	.24202	.24202	.42	28.73726
2	NID		1.29807	.258	.50291	.25292	.0109	-.11	15.06525
3	PREWGT		.02581	.873	.50313	.25314	.00022	.02	9.94227

Adjusted R^2 = .23

Sample #2

Dependent Variable.. EMOTTS

Summary Table

STEP	VARIABLE ENTERED	VARIABLE REMOVED	F TO ENTER OR REMOVE	SIGNIFICANCE	MULTIPLE R	R SQUARE	R SQUARE CHANGE	Beta	OVERALL F
1	CRS		5.31331	.023	.18496	.03421	.03421	.13	5.31331
2	NID		.77744	.379	.19805	.03922	.00501	.15	3.14144
3	CWP		.25649	.613	.20220	.04089	.00166	-.07	2.10300

Adjusted R^2 = .02

Table 5

Dependent Variable. BSTOT

Sample #1

Summary Table

STEP	VARIABLE ENTERED	VARIABLE REMOVED	F TO ENTER OR REMOVE	SIGNIFICANCE	MULTIPLE R	R SQUARE	R SQUARE CHANGE	Beta	OVERALL F
1	EMOTTS		97.24241	.000	.57488	.33048	.33048	.35	97.24241
2	SITS		38.52919	.000	.66368	.44047	.10999	.29	77.14831
3	SISEM (Interaction between SIS & EMOTTS)		.42468	.515	.66460	.44169	.00122	.12	51.42280

Adjusted R^2 = .43

Sample #2

Dependent Variable. BS

Summary Table

STEP	VARIABLE ENTERED	VARIABLE REMOVED	F TO ENTER OR REMOVE	SIGNIFICANCE	MULTIPLE R	R SQUARE	R SQUARE CHANGE	Beta	OVERALL F
1	EMOTTS		7.28379	.008	.21588	.04661	.04661	.08	7.28379
2	SIS		63.38342	.000	.57661	.33248	.28588	.80	36.85839
3	SISEM		.31814	.574	.57786	.33392	.00144	-.26	24.565101

Adjusted R^2 = .32

Table 6: Regression analysis: Prospective weight change.

Dependent Variable. NFP (Weight change-prospectively)

Sample #1

Summary Table

STEP	VARIABLE ENTERED	REMOVED	F TO ENTER OR REMOVE	SIGNIFICANCE	MULTIPLE R	R SQUARE	R SQUARE CHANGE	Beta	OVERALL F
1	D1(Dummy for "sex" 0=females 1=males)		7.42482	.008	.32470	.10543	.10543	-.28	7.42402
2	EMOTTS		1.13007	.292	.34849	.12144	.01601	-.40	4.28511
3	RSTOT		1.91698	.171	.38498	.14821	.02677	.36	3.53798
4	BSTOT		.06417	.801	.38616	.14912	.00091	-.10	2.62882
5	LCU		3.29947	.074	.44066	.19418	.04506	-.17	2.84355
6	LCUEM (LCU X Emotts)		2.64757	.109	.47892	.22936	.03518	.50	2.87706
7	NID		9.84569	.003	.58555	.34287	.11351	-.20	4.24868
8	PREWGT		1.69464	.198	.60181	.36217	.01930	-.24	3.97473

Adjusted R^2 = .27

Table 7

MEANS	Lost > 4 lbs. Group 1 (n = 7)	Group 2 (n = 49)	Gained > 4lbs. Group 3 (n = 5)
EMOTTS	43.85714	30.55102	34.00000
RSTOT	21.28571	14.63265	13.00000
BSTOT	8.85714	4.42857	3.00000
SITS	10.14286	5.42857	4.60000
LCU	79.00000	92.69388	163.60000
PREWGT	110.57143	102.53061	95.20000
NID	13.57143	3.26531	-3.00000
SNACPERC	.34821	.44889	.56718
NMOODPER	.33759	.29943	.22756
NEGSSPER	.26316	.11512	.05087
POSSSPER	.55029	.61636	.70225

STANDARD DEVIATIONS

	GROUP 1	GROUP 2	GROUP 3
EMOTTS	12.23967	12.93906	18.26198
RSTOT	6.84871	6.09540	4.30116
BSTOT	4.94734	4.56435	4.24264
SITS	4.05909	4.29146	1.94936
LCU	46.23130	69.45298	143.31888
PREWGT	13.48897	13.24151	11.38859
NID	9.98093	8.09263	10.48809
SNACPERC	.09432	.16618	.12749
NMOODPER	.25324	.17443	.26806
NEGSSPER	.09275	.13691	.06318
POSSSPER	.19320	.33948	.16754

WILKS LAMBDA (U-STATISTIC) AND UNIVARIATE F

VARIABLE	WILKS LAMBDA	F (2,58 df.)
EMOTTS	.9033	3.1039
RSTOT	.8774	4.0539
BSTOT	.8982	3.2872
SITS	.8729	4.2234
LCU	.9279	2.2518
PREWGT	.9334	2.0678
NID	.8209	6.3286
SNACPERC	.9112	2.8261
NMOODPER	.9835	.4878
NEGSSPER	.5838	4.9668
POSSSPER	.9886	.3332

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Table 8: Regression analysis - Retrospective weight change - Sample 2

Dependent Variable. NWP (Retrospective weight change) Hierarchical Multiple Regression

Summary Table

STEP	VARIABLE ENTERED	REMOVED	F TO ENTER OR REMOVE	SIGNIFICANCE	MULTIPLE R	R SQUARE	R SQUARE CHANGE	Beta	OVERALL F
1	EMOTTS		.55719	.457	.06145	.00378	.00378	-.10	.55719
2	CRS		7.66260	.006*	.23120	.05345	.04968	-.03	4.12252
3	BS		5.08744	.025*	.29258	.08561	.03215	.18	4.52498
4	LCS		1.17119	.281	.30493	.09298	.00738	.32	3.69054
5	LCUEM (LCS X Emotts)		.39860	.529	.30904	.09550	.00252	-.25	3.01982
6	NID		4.64937	.033*	.35239	.12418	.02868	.29	3.35564
7	CWP		.37814	.540	.35570	.12652	.00234	-.08	2.91768

Adjusted R^2 = .08

Table 9

MEANS	Lost > 4 lbs. Group 1 (n = 11)	Group 2 (n = 112)	Gained > 4 lbs. Group 3 (n = 15)
EMOTTS	38.00000	40.00893	39.40000
CRS	17.09091	15.54464	18.40000
BS	3.81818	5.56250	8.60000
SIS	6.18182	7.57143	11.20000
LCS	103.18182	81.05357	127.93333
PWP	112.18182	97.56250	106.73333
NID	5.54545	5.57143	15.60000

STANDARD DEVIATIONS

	GROUP 1	GROUP 2	GROUP 3
EMOTTS	3.76829	5.98130	5.94979
CRS	6.62502	5.47704	5.75450
BS	5.03623	4.91877	6.43428
SIS	4.87480	6.13910	6.71033
LCS	120.25624	84.51663	100.35542
PWP	11.17871	10.77600	11.60337
NID	6.18650	7.23071	10.29424

WILKD LAMBDA (U-STATISTIC) AND UNIVARIATE F-RAT

VARIABLE	WILKS LAMBDA	F (2.135)
EMOTTS	.9908	.6281
CRS	.9718	1.9561
BS	.9547	3.2001
SIS	.9605	2.7745
LCS	.9713	1.9940
PWP	.8438	12.4999
NID	.8508	11.8392

Table 10

Cell means for weight change as a joint function of moodeating and life changes

Sample #1
(Prospective weight change)
males & females

Life Changes	Moodeating: Low	Moodeating: High
Low	SD = 3.31 +.913 lbs. n = 23	SD = 7.87 -3.94 lbs. n = 17
High	n = 16 -.437 lbs. SD = 1.75	n = 15 +.400 lbs. SD = 3.99

Sample #2
(Retrospective weight change)
females

Life Changes	Moodeating: Low	Moodeating: High
Low	SD = 3.77 -.077 lbs. n = 39	SD = 2.49 +.605 lbs. n = 38
High	n = 37 + 2.10 lbs. SD = 4.74	n = 39 + .410 lbs. SD = 3.18