

# The Effect of Nutrition on Emotions.

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## ABSTRACT

In this paper, we sought to understand the biological effects of nutrition on mood so that we could learn how food intake contributes to emotional state. Previous research has predicted that the effect of chocolate leads to an immediate change in emotional status, that food negatively affects emotional regulation during states of hunger, and that regular overconsumption of food can have negative effects on emotional health. In our first (correlational) study, we tested the strength of these relationships by examining naturalistic daily changes in their variables longitudinally over a period of one week. We measured chocolate consumption by recording the amount and concentration of cocoa in chocolate consumed, measured food intake by recording caloric consumption and perceived levels of hunger through the day, rated level of fullness after eating, and perceived emotional/mood states using the Shortened Unidirectional but Multifaceted version of the Profile Of Mood States (SUM-POMS) Scale for the average degree of mood changes based on these variables experienced throughout each day. Based on the strength of correlation found between food consumption and mood in our correlational study, we then conducted a second (experimental) study to test for a causal relationship between the two variables. Over a 10-day period, participants alternated between either higher calorie consumption (approximately 2130) calories) or lower calorie consumption (approximately 1460 calories) and measured the effect of this manipulation on mood by recording participant perceptions of their mood along with observations from a partner. Data pooled across participants in our correlational study did not find a significant correlation of mood with food consumption, hunger, overfullness, and or chocolate consumption. However, the results of our experimental study determined a causal role of food consumption upon mood state. A possible practical application of these findings could be modestly increasing calorie consumption, within the amounts one typically eats, as a way to help improve mood states.

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## 1. Introduction

### 1.1 Research Problem

Food has the potential to induce both positive and negative emotions in individuals. Although every individual has their own preferred food which can in turn

contribute to a positive emotional state, the underlying biological mechanisms of food intake can apply to all people. It is also apparent that states of hunger have the ability to induce negative emotions and feelings of exhaustion. In addition, incidents of overeating can sometimes lead to feelings of irritability or sadness after the

episode. The purpose of this study is to understand the effect of food on emotions so that we can learn to experience the benefits of nutrition on emotional well being.

## *1.2 Literature Review*

One factor found in previous research that contributes to mood swings was chocolate consumption. An experiment conducted by Macht and Mueller (2007) aimed to examine the relationship between chocolate consumption and changes in mood states. In their experiment, participants were randomly assigned into two groups in which one group received a piece of chocolate (5 g) and the other group received a cup of spring water (20 ml). Three different sequences of films (happy, sad, and neutral) were shown as clips to participants prior to consumption. Mood states were self-reported for three times before watching the film, after watching the film, and after chocolate or water consumption using a 25-point scale subdivided into five categories. The results of mood induction indicated that depressed mood was reported after seeing the sad sequence film while the happy film improved moods and there was no difference made by the neutral sequence film. Furthermore, eating a piece of chocolate improved mood states after a sad film in comparison with water consumption, whereas chocolate and water did not show a difference in mood states after the neutral film. Results also showed that after the happy film, participants were more likely to rate their mood higher with chocolate than with water. However, it is not clear whether it was the chocolate itself that made the difference or its palatability, requiring further research to determine.

Another factor found in previous research to affect mood-swings is how states of hunger negatively impact emotional

regulation. For example, in an experiment by MacCormack and Lindquist (2019), researchers examined the relationship between hunger and negative emotions. In the experiment, the researchers randomly selected a group of 218 participants from the age of 18 to 71 years (46% female, 54% male). During the experiment, the hunger level of the participants was self-reported on a scale of 1-6 (1= not hungry at all, 4= somewhat hungry, 6= extremely hungry; range 1-5, median=2.15; standard deviation =1.32). To test the correlation between negative emotions and hunger, the researchers used ambiguous pictographs, reaction time tests and surveys. The ambiguous pictographs simultaneously represented both neutral and negative images. As the researchers predicted, the participants who reported a higher rate of hunger interpreted more of the ambiguous pictographs as negative. These results demonstrate that there is potentially a link between hunger and emotional regulation, as the interpretation of a negative image likely indicates that the individual had a negative mindset due to a lack of food. In addition, there was a negative correlation between the self-reported hunger scale and the survey regarding the difficulty of the QRT Engine response time test. Thus, the individuals who reported a higher level of hunger also reported that they felt that the test was more difficult. Because a large portion of the experiment is based on self-reported results, further testing is needed to determine the true correlation between hunger and emotional regulation.

Previous research has also demonstrated a relationship of eating beyond physical needs (non-homeostatic eating patterns), such as binge eating and overeating, with emotional distress and depression. In a study by Racine et al. (2019) including 998 undergraduate women and men (54.6%

female) ranging from 18 to 44 years old, researchers sought to better understand the correlation between non-homeostatic eating patterns and emotional dysregulation and other relevant clinical conditions, to discover if some eating patterns were more strongly related to negative outcomes than others. Each participant was given the same online survey package to complete. Each package contained 12 questionnaires, where participants were asked to rate their eating behaviours and experiences with food, including the Eating Disorder Examination – Questionnaire (EDE-Q), Eating Pathology Symptoms Inventory (EPSI), Binge Eating Scale (BES) and others. Along with specific food related surveys, external correlate measures, such as BMI calculator, and the Inventory of Depression and Anxiety Symptoms (IDAS-II) were also used. With other factors controlled for, distress over non-homeostatic eating was significantly associated with depressive symptoms and eating-related clinical conditions in both women and men. Feeling/thought items from the Binge eating scale and others reflected participant feelings of “shame, guilt, disgust and worry” over non-homeostatic eating. Interestingly, the study found that in women, food addiction was uniquely correlated with depressive symptoms, emotional dysregulation, and eating-related clinical impairment. Overeating was uniquely correlated with the same symptoms in men. It appears from this research that there is a strong relationship between food overconsumption and negative emotions.

### *1.3 Hypotheses*

Based on the above literature review, we predicted the following hypotheses:  
Hypothesis #1: If chocolate consumption increases, positive mood states will increase

Hypothesis #2: If food consumption decreases, negative emotions will increase.  
Hypothesis #3: If food overconsumption occurs, negative emotions will increase.

## **2. Methods**

### *2.1 Participants*

The three authors of this paper served as the participants in its studies. The participants ranged in age from 21 - 34 years old, with an average age of 25, and included two females and one male. The participants were all undergraduate students at Camosun College who completed the current studies as an assignment for Psyc 215 (“Biological Psychology”) and were grouped together due to their mutual interest in the effects of food on emotions.

### *2.2 Correlational Study Methods*

We first performed a correlational study to test concurrently all three of our hypotheses by examining naturalistic daily changes in their variables longitudinally. Each participant kept a study journal with them at all times over this study’s one week period in order to record self-observations of the following five variables: (1) chocolate consumption, (2) food consumption, (3) levels of hunger, (4) feelings of fullness after eating, and (5) mood state.

#### *2.2.1 Chocolate Consumption*

To measure chocolate consumption, each participant recorded in their study journal the concentrations and amounts of chocolate that they consumed during this study. The concentration of chocolate was calculated and labeled by denoting the cocoa percentage which is measured by weight of all ingredients. The amount of chocolate per consumption was measured in grams.

#### *2.2.2 Food Consumption*

To measure food consumption, participants recorded what they ate throughout the day using the MyFitnessPal application, which also recorded the calories and caloric content of the food eaten.

#### *2.2.3 Levels of Hunger*

To measure states of hunger, participants recorded their perceived levels of hunger throughout the day using a hunger scale of 1 - 4 (1 – not hungry, 2 – somewhat hungry, 3 – very hungry, 4 – extremely hungry).

#### *2.2.4. Feelings of Fullness*

To measure feelings of fullness after eating, participants rated their level of satiety within 20 - 30 minutes of completing every meal. Participants recorded their perceived level of fullness on a scale of 0 - 5 (0 - Very hungry, 1 - somewhat hungry, 2 - satisfied, 3 - full, 4 - overfull, 5 - extremely overfull).

#### *2.2.5 Mood States*

To measure mood states, each participant rated how they felt using the Shortened Unilateral Multifaceted Profile of Mood States (SUM-POMS) scale. Participants indicated how they felt from a list of eight basic emotions: Sadness, Anxiety, Anger, Tiredness, Confusion, Joy, Contentment, Love, Energy, or Acuity. Each emotion was rated on a scale of 0 - 100 to indicate the intensity of the emotion felt: 0 = not at all, 25 = a little, 50 = moderately, 75 = quite a lot, 100 = extremely. Participants also rated their overall mood/valence on a scale of -100 to 100: -100 = extremely unpleasant, -50 = moderately unpleasant, 0 = neutral, 50 = moderately pleasant, and 100 = extremely pleasant. (See Appendix for complete list of items in this questionnaire.)

### *2.3 Correlational Study Planned Analyses*

To assess the strength and statistical significance of associations between variables predicted by our three hypotheses, we performed Pearson product moment

correlations of their predictor variables (amount and concentration of chocolate consumed, caloric consumption, perceived levels of hunger, feelings of fullness after eating) with their outcome variable (emotional/mood states). For testing Hypothesis #1, we correlated the amount of chocolate consumed each day and the concentration of cocoa, with the participants' emotional state after consumption. For testing Hypothesis #2, we correlated the participants' caloric consumption with the impact on their emotional state. We also correlated the participants' perceived levels of hunger with their emotional state. For testing Hypothesis #3, we correlated the daily measure of feelings of fullness after eating of each participant with their emotional states. We performed all of the above correlations separately for each participant as well as using data pooled across all of the participants. For the correlations using pooled data, in addition to using the raw data, we also performed correlations after we had first transformed the data from each participant into z-scores in order to standardize differences in averages and variability seen between the participants in their data and thus make them more comparable. A correlation coefficient was considered statistically significant if the probability of its random occurrence ( $p$ ) was  $< .05$  (i.e., less than 5% of the time expected by chance alone).

### *2.4 Experimental Study Methods*

Based on the strength of the correlation between amount of food consumed and mood found in our correlational study, we chose to conduct an experimental study to test for a causal relationship between these two variables from Hypothesis #2.

We manipulated the independent variable, calories consumed, over a week

period by assigning participants to alternating days of either a higher calories experimental condition or a lower calorie control condition. High and low-calorie amounts were determined by assessing each participant's typical calorie consumption during our correlation study.

On higher calorie experimental days, participants consumed approximately the number of calories that was comparable to the higher amount of their recorded daily calorie intake, which averaged out to 2,130 calories. On lower calorie control days, participants consumed the number of calories that was similar to the lowest amount of their recorded intake, which was an average of 1,460 calories. We based the caloric amount on the approximate average participants typically ate across the one-week period of the correlational study.

In order to account for experimenter expectancy effects, each participant recruited a roommate or partner to act as an observer and record an outside perspective of the participant's mood. The partners were unaware of the conditions of the experiment, and were informed to observe the participant, and rate their mood using the same mood scale described in the correlational study.

The order of conditions was assigned using an alternating method, with participants alternating daily between experimental and control conditions over the course of the week.

The dependent variable, mood, was then measured by the participant at the end of the day using the same mood scale and procedure described above in the correlational study. Both the participant's perceived mood and the observer's perception of the participant's mood were recorded.

## 2.5 Experimental Study Planned Analyses

To assess the statistical significance of differences seen in mood on higher-calorie experimental days versus lower-calorie control days, participant's *t*-tests were performed.

We performed *t*-tests separately for each participant as well as using data pooled across all of the participants. For the *t*-tests using pooled data, in addition to using the raw data, we also performed *t*-tests after we had first transformed the data from each participant into *z*-scores in order to standardize differences in averages and variability seen between the participants in their data and thus make them more comparable. An average difference between conditions was considered statistically significant if, using a one-tailed distribution (i.e., to determine if there is a difference between groups in a specific direction), the probability of its random occurrence (*p*) was  $< .05$  (i.e., less than 5% of the time expected by chance alone).

## 3. Results

### 3.1 Correlational Study Results

As shown in Table 1, overall our results were not statistically significant. Food consumption and feelings of fullness were significantly correlated with mood for one participant (for Participant #3,  $r = .81$ ,  $p = .02$ , and  $r = -.88$ ,  $p = .005$ , respectively). However, food consumption was not significantly correlated with mood using pooled raw data ( $r = -.01$ ,  $p = .95$ ; see Figure 3) or standardized data ( $r = .34$ ,  $p = .13$ ; see Figure 4). Feelings of fullness was also not significantly correlated with mood across pooled raw data ( $r = -.03$ ,  $p = .88$ ; see Figure 7) or pooled standardized data ( $r = -.27$ ,  $p = .24$ ; see Figure 8). Chocolate consumption and mood were not significantly correlated for any single participant, or using pooled

raw data ( $r = -.01$ ,  $p = .98$ ; see Figure 1) or pooled standardized data ( $r = -.06$ ,  $p = .79$ ; see Figure 2). Similarly, level of hunger and mood did not demonstrate a significant correlation for any participant, or by using pooled raw data ( $r = .03$ ,  $p = .88$ ; see Figure 5) or standardized raw data ( $r = .09$ ,  $p = .70$ ; see Figure 6). Based on a comparison of the correlation coefficients using either the pooled raw data or the pooled standardized data, food consumption showed the strongest correlation with mood out of all the variables examined.

### *3.2 Experimental Study Results*

As shown in Table 2, significant differences were found in participants' self-reported mood between the high-calorie condition and low-calorie conditions. Statistically significant differences between these conditions were seen with two of the three single participants' data ( $p \geq 0.05$ ), pooled raw data ( $p = 0.035$ ; see Figure 9), and pooled standardized data ( $p = 0.015$ ; see Figure 10).

As shown in Table 3, significant differences were found in the observers' accounts of participants' mood between the high-calorie condition and low-calorie conditions. Statistically significant differences between these conditions were seen with one participant's data ( $p = 0.04$ ) and pooled standardized data ( $p = 0.042$ ; see Figure 12), but not with pooled raw data ( $p = 0.069$ ; see Figure 11).

## **4. Discussion**

### *4.1 Summary of Results*

Based on previous research, we hypothesized that increases in chocolate consumption would be followed by increased positive mood (Hypothesis #1).

We also hypothesized that if amount of food consumed decreased (Hypothesis #2), or food overconsumption increased (Hypothesis #3), then negative feelings would increase. Data pooled across participants in our correlational study did not support the predicted relationship of mood states with chocolate consumption, amount of food consumed, or food overconsumption (Hypothesis #1, #2 and #3). However, the results of our experimental study were able to establish a causal relationship between food consumption and mood.

### *4.2 Relation of Results to Past Research*

Based on the results we obtained from our correlation study, we did not report a relationship between chocolate consumption and induced mood states that was found by previous research. Participants in the experiment conducted by Macht and Mueller (2007) reported higher mood states after watching a happy film and indicated that chocolate improved their mood after watching a clip of a sad film. Our correlational study differed from previous research by not introducing mood induction to the participants. In their experiment, participants were shown excerpts from different emotion-related movies to induce mood; in our correlation study, however, participants reported their mood states after chocolate consumption without having any access to mood induction. The lack of induced mood states in the correlation study could be responsible for the different results obtained in our study.

Our correlational study did not confirm the relationship between hunger and negative emotions reported by previous research. MacCormack and Lindquist (2019) found that individuals who reported a higher hunger level displayed poorer emotional

regulation and had a higher tendency to exert negative emotions than those who were not hungry. The methodology of our correlational study differed from that of the MacCormack and Lindquist study in that we used a mood scale and a hunger scale to determine the effect of hunger, whereas the MacCormack and Lindquist study used ambiguous pictographs and a QRT Engine response time test in addition to a mood and hunger scale to determine the effect of hunger. The discrepancy in the results could be due to our correlational study not using as many methods to record emotions and therefore not yielding as accurate of results. Another difference seen between our correlational study and the MacCormack and Lindquist study is seen in the timing of the data collection. In the MacCormack and Lindquist (2019) study, the participants completed the test and immediately reported hunger at the end of the test, whereas in our correlational study mood was reported as a daily average. Future studies could increase accuracy of the relationship of two variables by implementing multiple mood scales throughout the day rather than reporting a single number daily. This improvement could more accurately depict how hunger influences mood by observing how mood changes after and between meals.

The results of our study on the correlation between food overconsumption and negative emotions did not demonstrate consistency with the research done by Racine et al (2019). The Racine et al.'s (2019) study gave participants multiple questionnaires about their eating behaviours and emotions and found relationships between negative emotions and non-homeostatic eating patterns, while our study involved evaluating participant's subjective mood experience in relation to how full that they felt. Our participants did not consistently report negative mood on days where they

may have experienced increased feelings of fullness after eating. There are a couple of ways that our methodology may have affected our results. First, we were measuring multiple variables at once, which may have had a confounding effect on the daily average of each participant's perceived mood state. Second, our study relied on a daily average of perceived mood rather than mood states immediately following a bout of excessive food consumption. Future studies should consider the time of reporting when considering the relationship between food overconsumption and mood.

#### *4.3 Implications of Results*

We conducted this research to better understand the effect of food on emotions so that we could experience the benefits of nutrition on emotional well being. Based on our correlational study, we hypothesized that there is a threshold in which food consumption produces improvements in mood but surpassing this threshold can result in decreased mood. Based on our experimental results, we can suggest consuming the recommended amount of calories each day to maintain an overall positive mood.

#### **References**

- MacCormack, J. K., & Lindquist, K. A. (2019). Feeling hangry? When hunger is conceptualized as emotion. *Emotion*, 19(2), 301–319.  
<https://doi.org/10.1037/emo0000422.supp>
- Macht, M., & Mueller J. (2007). Immediate effects of chocolate on experimentally induced mood status. *Appetite*, 49(3), 667-674.

<https://doi.org/10.1016/j.appet.2007.05.004>

Racine, S.E., Hagan, K. E., & Schell, S. E. (2019). Is all nonhomeostatic eating the same? Examining the latent structure of

nonhomeostatic eating processes in women and men. *Psychological Assessment*, 31(10), 1220-1233  
<https://doi.org/10.1037/pas0000749.supp>



**Table 1**

*Correlations for Study Variables*

Variables	Participant #1		Participant #2		Participant #3		Pooled raw data		Pooled standardized data	
	<i>r</i>	<i>n</i>	<i>r</i>	<i>n</i>	<i>r</i>	<i>n</i>	<i>r</i>	<i>n</i>	<i>r</i>	<i>n</i>
Food consumption & mood	0.10	7	0.12	7	0.81*	7	-0.01	21	0.34	21
Hunger & mood	-0.34	7	0.70	7	-0.09	7	0.03	21	0.09	21
Overfullness & mood	0.20	7	-0.13	7	-0.88*	7	-0.03	21	-0.27	21
Chocolate consumption & mood	0.36	7	-0.24	7	-0.32	7	-0.01	21	-0.06	21

\*  $p < .05$ .

**Table 2**

*Descriptive Statistics for Self Observed Mood States Across Different Conditions*

Condition	Statistic	Participant #1	Participant #2	Participant #3	Pooled raw data	Pooled standardized data
Higher calories consumed	<i>M</i>	18	58*	44*	40*	0.38*
	<i>SD</i>	45.5	19.24	15.17	32.51	0.82
	<i>n</i>	5	5	5	15	15
Lower calories consumed	<i>M</i>	28	20	4	17.33	-0.38
	<i>SD</i>	38.34	37.42	24.08	33.05	0.97
	<i>n</i>	5	5	5	15	15

*Note.* *M*, *SD*, and *n*, represent mean, standard deviation, and sample size, respectively. Mood was measured on a scale from -100 – to +100, where -100 = extremely unpleasant and +100= extremely pleasant.

\*  $p < .05$  for comparison of higher calories condition with its respective lower calories condition.

**Table 3**

*Descriptive Statistics for Partner Observed Mood States Across Different Conditions*

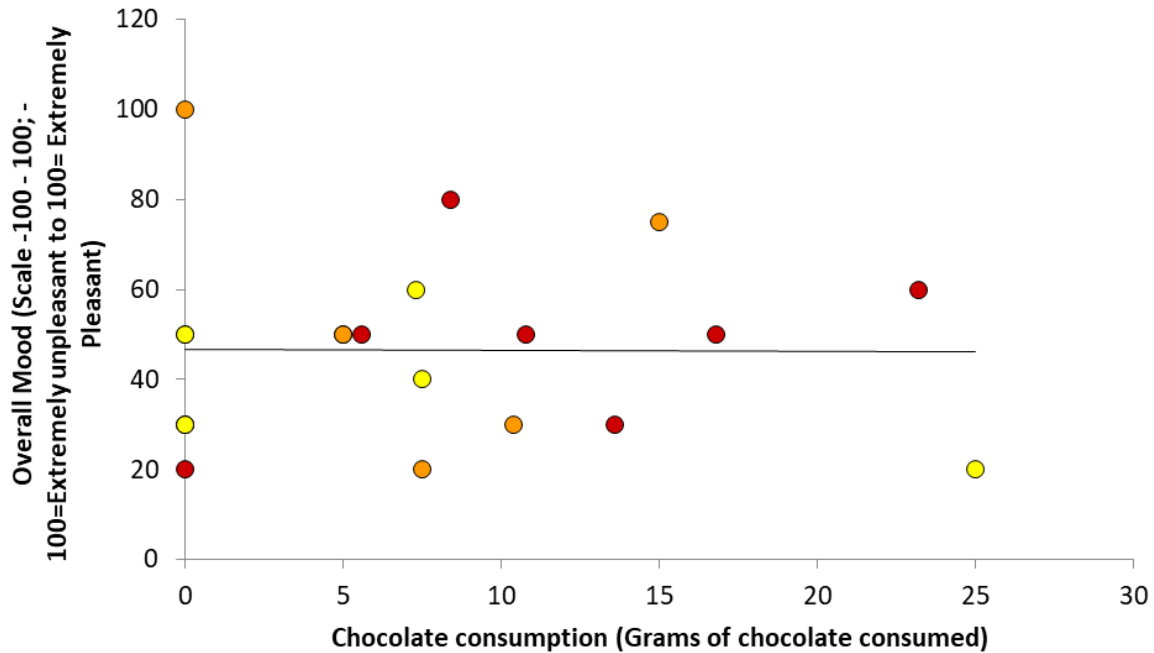
Condition	Statistic	Participant #1	Participant #2	Participant #3	Pooled raw data	Pooled standardized data
Higher calories consumed	<i>M</i>	34	68*	48	50	0.3*
	<i>SD</i>	31.3	22.8	12.55	26.12	0.94
	<i>n</i>	5	5	5	15	15
Lower calories consumed	<i>M</i>	40	40	31	37	-0.3
	<i>SD</i>	22.36	21.21	19.17	19.89	0.92
	<i>n</i>	5	5	5	15	15

*Note.* *M*, *SD*, and *n*, represent mean, standard deviation, and sample size, respectively. Mood was measured on a scale from -100 – to +100, where -100 = extremely unpleasant and +100= extremely pleasant.

\*  $p < .05$  for comparison of higher calories condition with its respective lower calories condition.

**Figure 1**

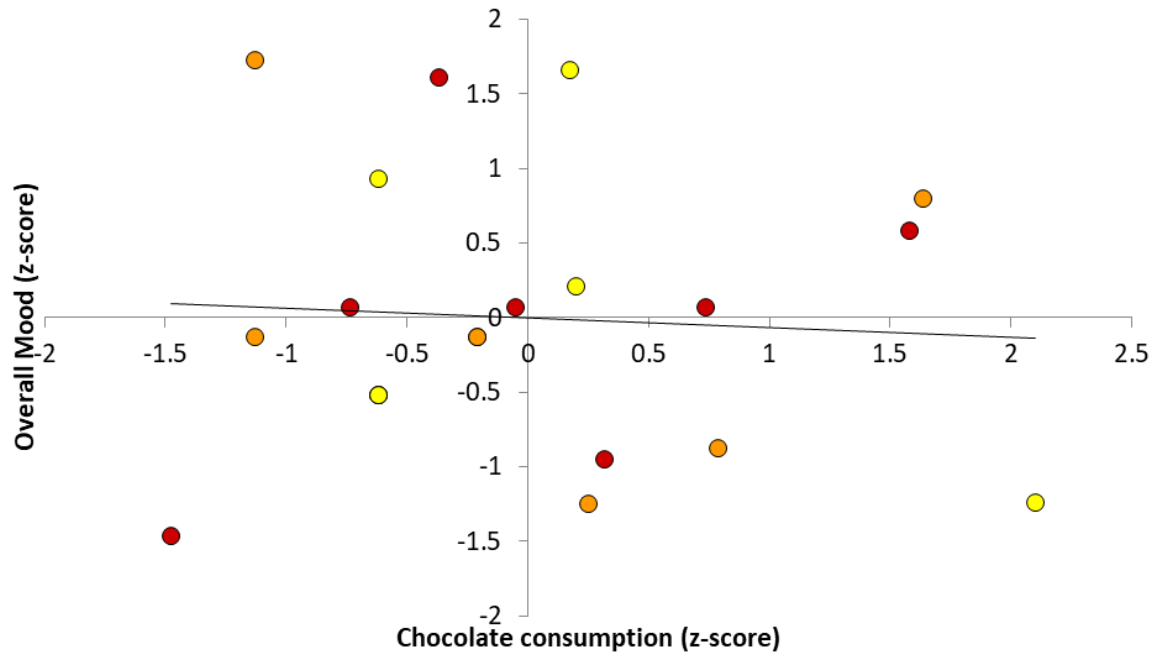
*Association Between Chocolate Consumption and Overall Mood Using Pooled Raw Data*



*Notes.* Marker colour differences participants: red = participant #1, orange = participant #2, and yellow = participant #3. Some data might not be visible in the figure due to overlapping markers.

**Figure 2**

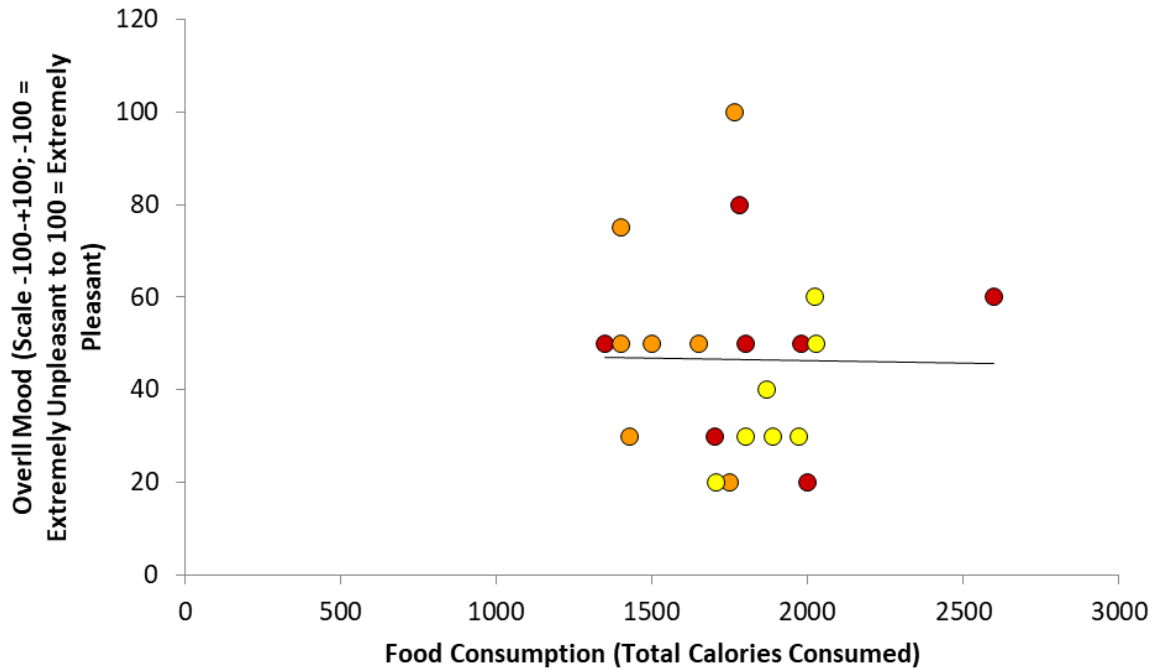
*Association Between Chocolate Consumption and Overall Mood Using Pooled Standardized Data*



*Notes.* Marker colour differences participants: red = participant #1, orange = participant #2, and yellow = participant #3. Some data might not be visible in the figure due to overlapping markers.

**Figure 3**

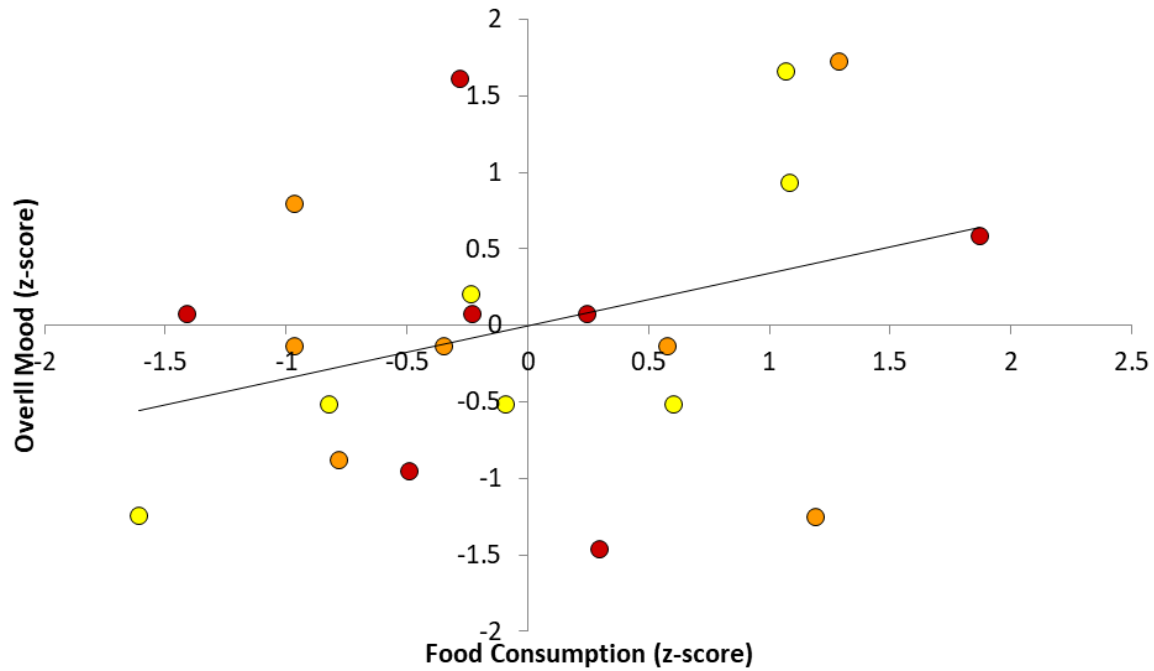
*Association Between Calories and Overall Mood Using Pooled Raw Data*



*Notes.* Marker colour differences participants: red = participant #1, orange = participant #2, and yellow = participant #3. Some data might not be visible in the figure due to overlapping markers.

**Figure 4**

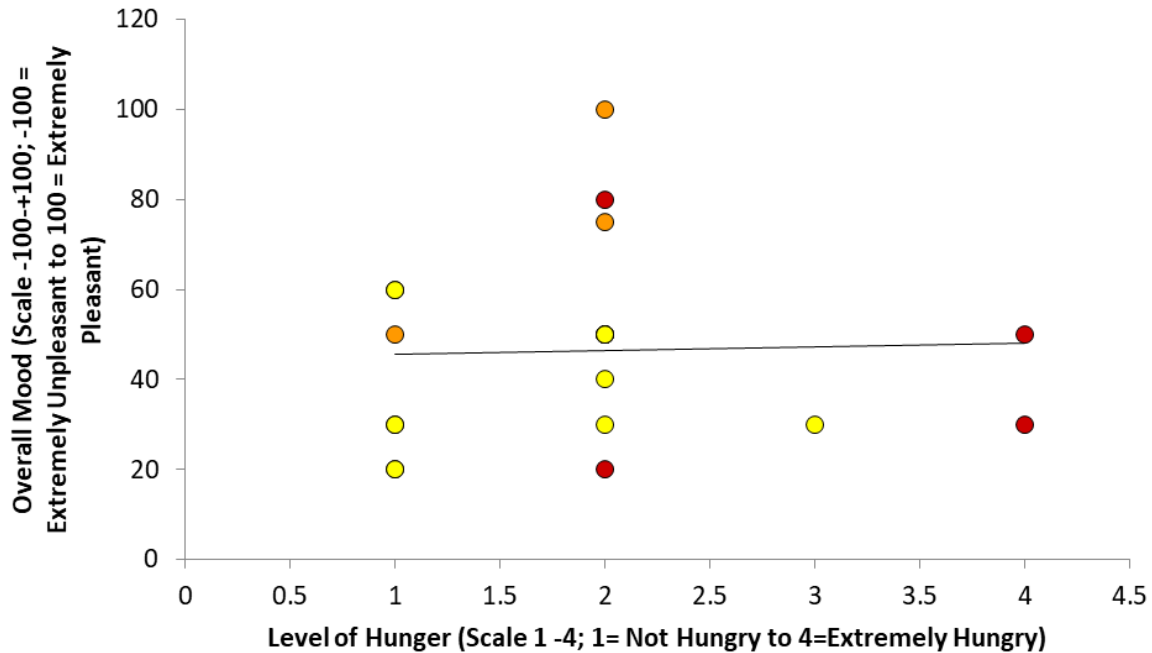
*Association Between Calories and Overall Mood Using Pooled Standardized Data*



*Notes.* Marker colour differences participants: red = participant #1, orange = participant #2, and yellow = participant #3. Some data might not be visible in the figure due to overlapping markers.

**Figure 5**

*Association Between Hunger and Overall Mood Using Pooled Raw Data*

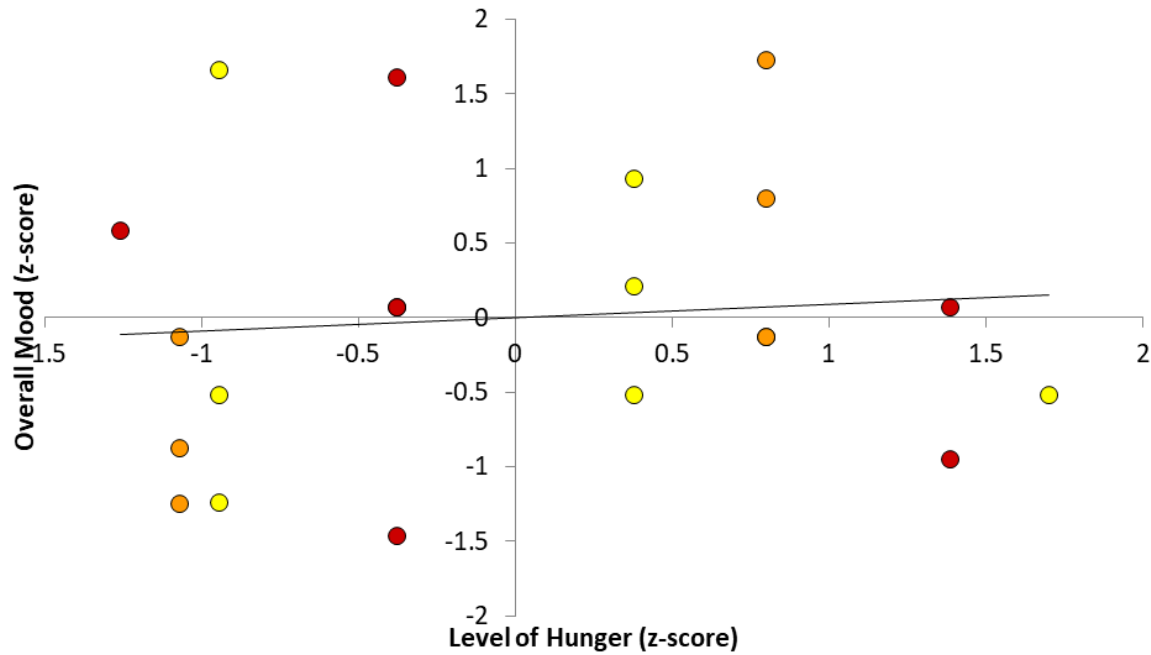


*Notes.* Marker colour differences participants: red = participant #1, orange = participant #2, and yellow = participant #3. Some data might not be visible in the figure due to overlapping markers.



**Figure 6**

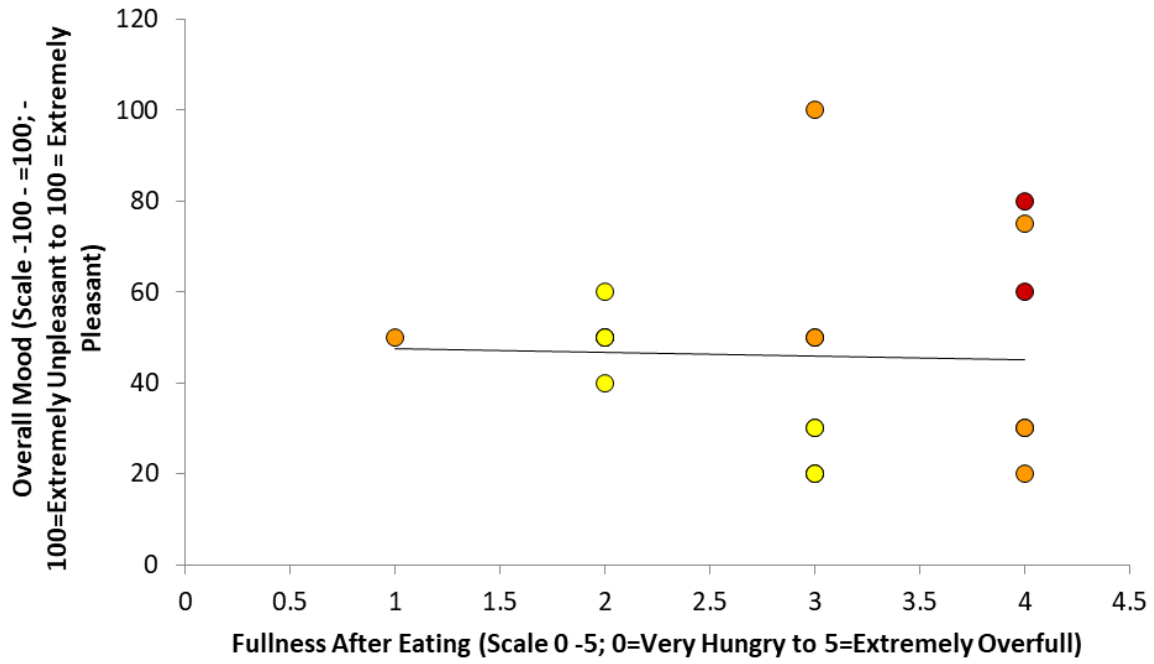
*Association Between Hunger and Overall Mood Using Pooled Standardized Data*



*Notes.* Marker colour differences participants: red = participant #1, orange = participant #2, and yellow = participant #3. Some data might not be visible in the figure due to overlapping markers.

**Figure 7**

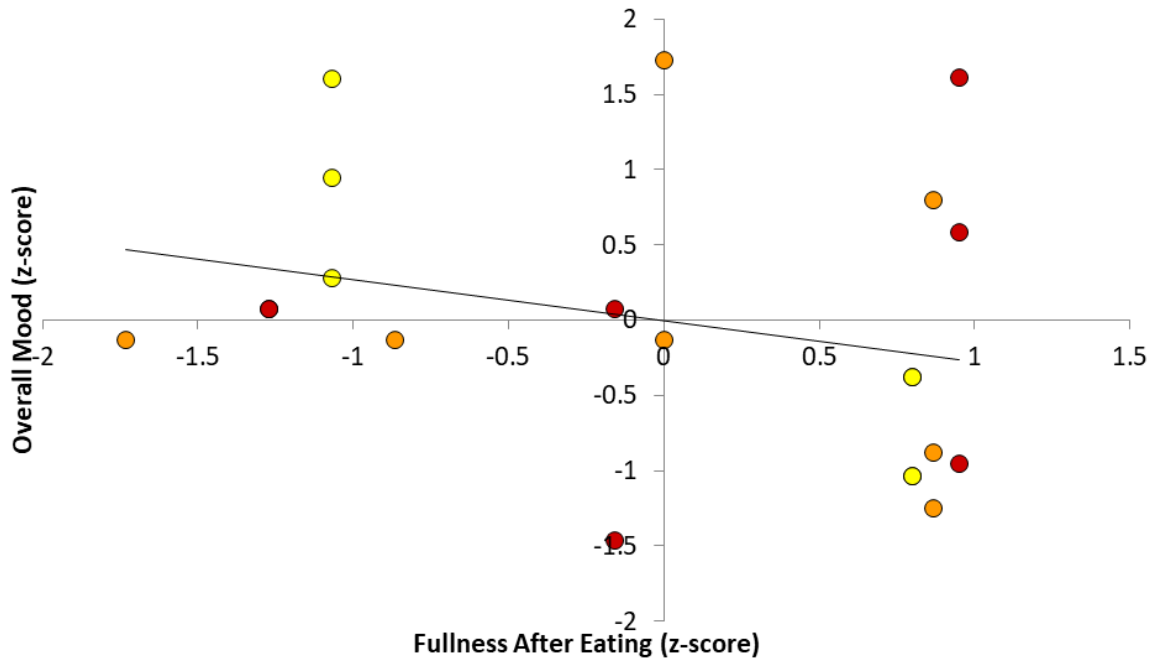
*Association Between Fullness and Overall Mood Using Pooled Raw Data*



*Notes.* Marker colour differences participants: red = participant #1, orange = participant #2, and yellow = participant #3. Some data might not be visible in the figure due to overlapping markers.

**Figure 8**

*Association Between Fullness and Overall Mood Using Pooled Standardized Data*

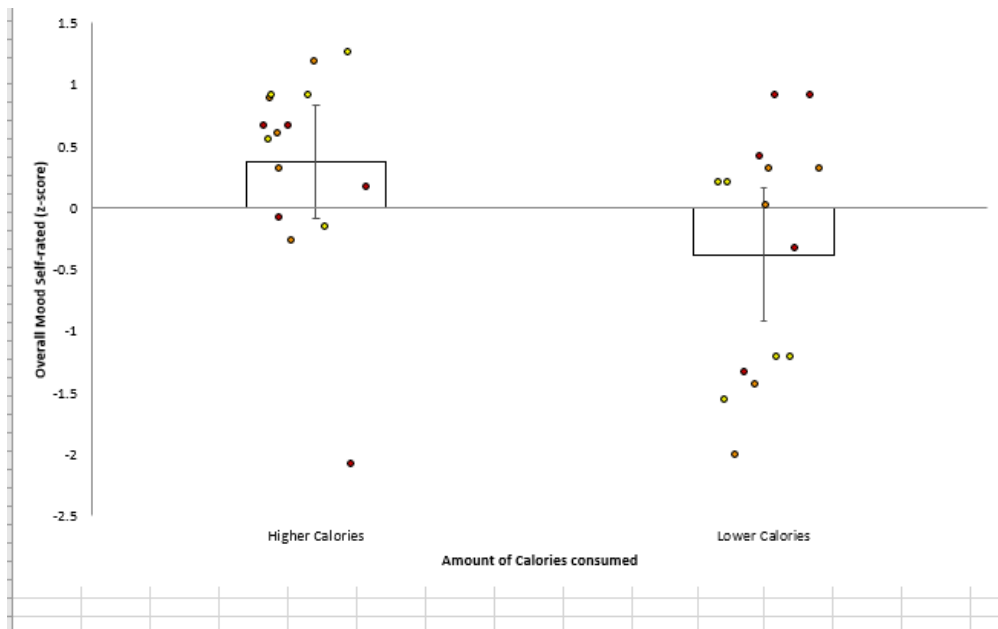


*Notes.* Marker colour differences participants: red = participant #1, orange = participant #2, and yellow = participant #3. Some data might not be visible in the figure due to overlapping markers.



**Figure 10**

*Average Mood Across Different Calorie Conditions Using Pooled Standardized Data*

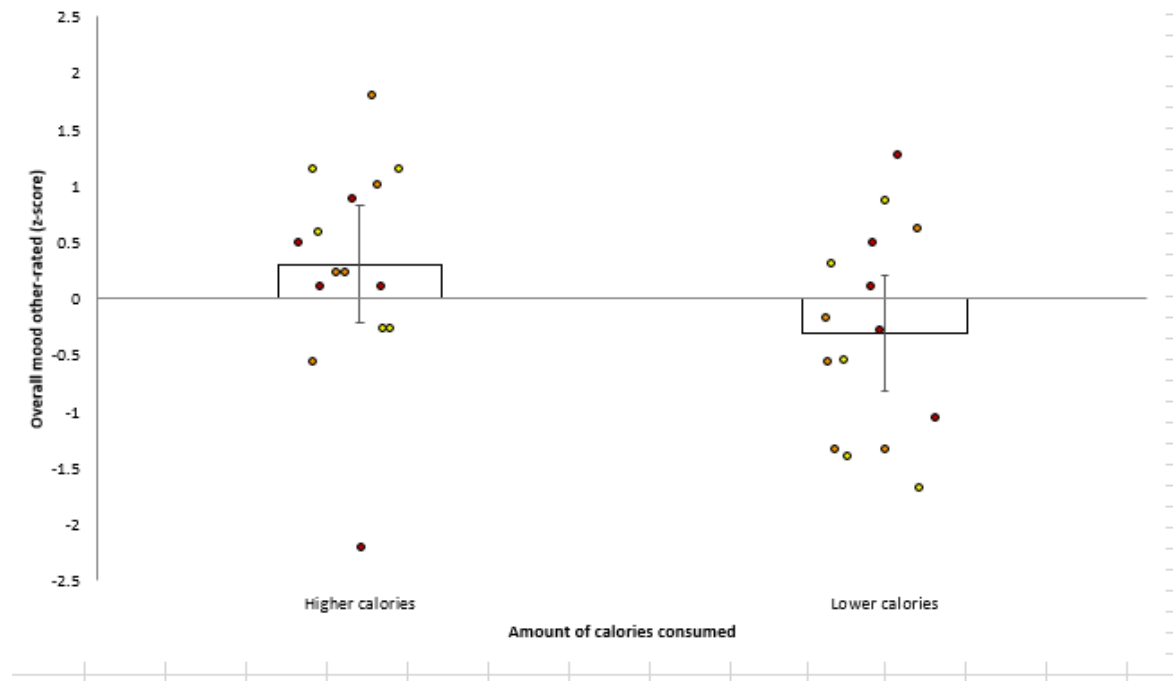


*Notes.* Overall mood scores are shown for high-calorie and low-calorie conditions using pooled standardized data from all participants. Errors bars show  $\pm 95\%$  confidence levels. Overlapping scatterplot shows data from each participant. Marker colour differentiates participants: red = participant #1, orange = participant #2, and yellow = participant #3



**Figure 12**

*Partner Observed Average Mood Across Different Calorie Conditions Using Pooled Raw Data*



*Notes.* Overall mood scores are shown for high-calorie and low-calorie conditions using pooled standardized data from partner observations. Errors bars show  $\pm$  95% confidence levels. Overlapping scatterplot shows data from each participant. Marker colour differentiates participants: red = participant #1, orange = participant #2, and yellow = participant #3

## Appendix

### *The Shortened Unidirectional but Multifaceted version of the Profile Of Mood States (SUM-POMS) Scale*

by Dr. Michael Pollock, Camosun Psychology

#### **Part A. – Individual Negative & Positive Moods**

Using the 0 to 100 range scale shown below, for each of the following moods indicate HOW MUCH YOU ARE FEELING THEM RIGHT NOW.

0	25	50	75	100
Not at all	A little	Moderately	Quite a lot	Extremely

#### Negative Moods

MOOD

SCORE

**Sadness**

\_\_\_\_\_

Adjectives: *Depressed, Unhappy, Blue, Hopeless, Miserable, Helpless, Worthless, and Sad*

**Anxiety**

\_\_\_\_\_

#### Positive Moods

MOOD

SCORE

**Joy**

\_\_\_\_\_

Adjectives: *Elevated, Optimistic, Cheerful, Euphoric, and Joyful*

**Contentment**

\_\_\_\_\_



Adjectives: *Tense, On Edge, Uneasy, Restless, Nervous, and Anxious*

Adjectives: *At Peace, Satisfied, Fulfilled, Relaxed, and Contented*

**Anger** \_\_\_\_\_

**Love** \_\_\_\_\_

Adjectives: *Peeved, Grouchy, Annoyed, Resentful, Bitter, Hostile, Furious, and Angry*

Adjectives: *Fond, Adoring, Affectionate, Tender, Warm-hearted, and Loving*

**Tiredness** \_\_\_\_\_

**Energy** \_\_\_\_\_

Adjectives: *Worn Out, Fatigued, Exhausted, Weary, Bushed, and Tired*

Adjectives: *Lively, Active, Full of Pep, Vigorous, and Energetic*

**Confusion** \_\_\_\_\_

**Acuity** \_\_\_\_\_

Adjectives: *Unable to Concentrate, Bewildered, Forgetful, Uncertain About Things, and Confused*

Adjectives: *Mentally Sharp, Focused, Clear Headed, Efficient, Perceptive, Insightful, and Acute*

**Part B. – Overall Mood/Valence**

Using the -100 to 100 range scale shown below, indicate OVERALL HOW YOU ARE  
FEELING RIGHT NOW.

-100	-50	0	50	100
Extremely	Moderately	Neutral	Moderately	Extremely
Unpleasant	Unpleasant		Pleasant	Pleasant

Overall Mood Score: \_\_\_\_\_