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Risky Behavior, Urgency, And Anonymity: What Sex, Drugs, And Eating Disorders Have In Common

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RISKY BEHAVIOR, URGENCY, AND ANONYMITY:
WHAT SEX, DRUGS, AND EATING DISORDERS HAVE IN COMMON

by

Mary Emilie Zander
Bachelor of Science, University of North Dakota, 2011

A Thesis

of the

University of North Dakota

in partial fulfillment of the requirements

for the degree of

Master of Arts

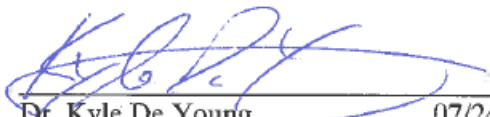
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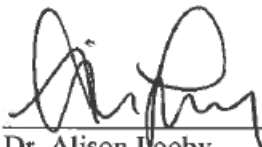
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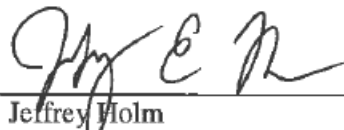
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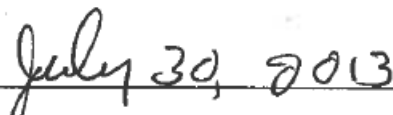

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Mary Emilie Zander
7/18/2013

TABLE OF CONTENTS

LIST OF FIGURES	vi
LIST OF TABLES	vii
ACKNOWLEDGEMENTS	ix
ABSTRACT	x
CHAPTER	
I. INTRODUCTION	1
Experimental Hypotheses	13
II. METHOD	15
Participants.....	15
III. RESULTS	29
IV. DISCUSSION	49
APPENDICES	67
REFERENCES	86

LIST OF FIGURES

Figure	Page
1. The plotted interaction between Affect Intensity, Negative Urgency, and Eating Disordered Behaviors from GEE results of the Standard SQ eating disordered behaviors Subscale. The dependent variable is measured by endorsement of eating disordered behaviors, ranging from 0 to 6.	42
2. The plotted interaction between Affect Intensity, Positive Urgency, and Eating Disordered Behaviors from Linear Regression results of the BULIT-R. The BULIT-R is a continuous measure of eating disordered behaviors and was centered for analysis.	45

LIST OF TABLES

Table	Page
1. Endorsement Rates of Items and Chi-square Comparison of Endorsement across Conditions for Sensitive Items	32
2. Significant Z statistics for the Comparison between RRM and the Conventional, and Combined Data Correlations	34
3. Results for the Linear Regression Analysis for the Total Score from the Standard SQ	36
4. The Results of the GEE Analysis for the Standard SQ Subscale Sex	37
5. The Results of the GEE Analysis for the Standard SQ Subscale Drugs	38
6. The Results of the GEE Analysis for the Standard SQ Subscale Alcohol	39
7. Results for the Linear Regression Analysis for the RAPI	40
8. The Results of the GEE Analysis for the Standard SQ Subscale Eating Disorder Behaviors	42
9. Results for the Linear Regression Analysis for the BULIT-R	44
10. Results of the GEE for the Standard SQ Item "I use energy or protein supplements to build muscle."	47
11. Results of the GEE for the Standard SQ Item "I have taken steroids to become more muscular."	48
12. Results of the Logistic Regression Analyses for the EDE-Q Item "Over the past 28 days, on how many <u>DAYS</u> have such episodes of overeating occurred (i.e., you have eaten an unusually large amount of food <u>and</u> have had a sense of loss of control at the time)?"	82

13. Results of the Logistic Regression Analyses for the EDE-Q Item "Over the past 28 days, how many times have you made yourself sick (vomit) as a means of controlling your shape or weight?" 83

14. Results of the Logistic Regression Analyses for the EDE-Q Item "Over the past 28 days, how many times have you taken laxatives as a means of controlling your shape or weight?" 84

15. Results of the Logistic Regression Analyses for the EDE-Q Item "Over the past 28 days, how many times have you exercised in a 'driven' or 'compulsive' way as a means of controlling your weight, shape or amount of fat or to burn off calories?" 85

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To my loving parents without whom my success in college would have been an
impossibility.

Abstract

A variety of risky behaviors have been found to be related to the tendency to act rashly in the presence of strong emotions, a trait known as urgency. However, whether this extends to a multitude of risky behaviors and what other traits may modify this risk, is unknown. Because individuals may be reluctant to admit to engaging in risky behaviors due to perceived social or legal consequences, these relationships are difficult to study. Current data collection techniques that provide anonymity to participants have serious limitations. This study aimed to test a new method of data collection, the Remote Response Method (RRM), which could address both concerns of anonymity and eliminate the current techniques limitations. This study also aimed to examine the relationship between risky behaviors, urgency, and the intensity of emotions. Participants ($N = 897$) completed questionnaires about risky behaviors, urgency, and affect intensity. Results indicate that RRM produced reliable prevalence rates for the risky behaviors. Negative urgency predicted eating disordered behaviors, alcohol abuse, risky sexual behaviors and supplement use, whereas positive urgency predicted alcohol abuse and steroid use. Although, affect intensity predicted participation in risky behaviors, in general, the hypothesis that affect intensity would moderate the relationship between risky behaviors and urgency was not supported. The results of this study suggest that urgency and affect intensity appear to be important risk factors across a number of risky behaviors.

CHAPTER I

INTRODUCTION

Many behaviors are associated with an increased likelihood of negative consequences. As such, when one engages in these behaviors, s/he risks experiencing the associated negative outcomes. Such risky behaviors include alcohol abuse (e.g., drunk driving, alcohol induced memory loss, aka “blacking out,” assault, skipping work or school), eating-disordered behaviors and concerns (e.g., laxative abuse, self-induced vomiting, fasting, weight-gain related fears, excessive emphasis placed on weight), extreme supplement use (i.e., steroids), drug use (i.e., hallucinogens, methamphetamine, methylphenidate), and certain sexual behaviors (e.g., unprotected sex, contraction of a sexually transmitted disease).

Researchers are concerned about risky behaviors because of the possibility of specific outcomes. These behaviors may put individuals at risk for sexually transmitted diseases, overdose, poor health, social impairment, work-related difficulties, as well as a number of other negative consequences. Furthermore, participation in one risky behavior is associated with increased likelihood of participation in other risky behaviors. For example, individuals who engage in problematic drinking are also more likely to engage in disordered eating behaviors (Sinha et al., 1996), risky sexual practices (Cooper, 2002; Dunn & Bartee, 2003), violence (Del Boca, Darkes, Greenbaum, & Goldman, 2004), and drug use (Chassin, Flora, & King, 2004). Likewise, individuals who have been diagnosed

with an eating disorder are more likely to engage in problematic drinking (Bulik et al., 2004). Drug use is also associated with increase participation in risky sexual behaviors (Celentano et al., 2006). Additionally, both disordered eating and risky sexual behaviors frequently co-occur in individuals with Borderline Personality Disorder (Linehan, 1993). Research has also found links between risky driving practices, gambling, and thrill seeking with alcohol abuse, eating disorder behaviors, and drug use (Cooper, Agocha, & Sheldon, 2000; Holub, Hodgins, & Peden, 2005; Yuen & Lee, 2003).

The association between multiple risky behaviors suggests that some individuals are more disposed than others to engaging in these behaviors. Common underlying traits may be responsible for increasing the likelihood that individuals engage in one or more risky behavior. One personality trait that is associated with risky behaviors is urgency, a facet of impulsivity. Urgency is an emotionally driven disposition to engage in rash actions (Cyders, Smith, Fischer, Annus, & Peterson, 2007). Urgency can be driven by positive or negative emotions. Positive urgency is the tendency to engage in rash actions in response to positive emotion, such as drinking in response to celebratory feelings; whereas, negative urgency is the tendency to engage in rash actions in response to negative emotion, such as purging in response to stress (Cyders et al., 2007). Rash action is simply impulsive action, which does not necessarily mean that the individual will impulsively act in a risky/dangerous way. At the same time, research supports that urgency is related to risky/dangerous behavior (Cyders, Flory, Rainer, & Smith, 2007; Fischer, Smith, Annus, & Hendricks, 2007; Fischer, Smith, & Cyders, 2008; Zapolski,

Cyders, Rainer, & Smith, 2007). Urgency is a unique and distinct facet of impulsivity (Whiteside & Lynn, 2001). Other forms of impulsivity, such as sensation seeking, lack of deliberation, and lack of persistence, are related to risky behavior as well. However, research indicates that sensation seeking, lack of deliberation, and lack of persistence are not related to risky behavior in the same way as urgency. Specifically, a clear connection among problem levels of alcohol, problem levels of other addictive behaviors, and eating disorder behavior has been identified with urgency (Smith, Cyders, Fischer, & Simmons, 2004). Conversely, research suggests that sensation seeking and lack of deliberation are related only to the frequency of drinking and gambling behaviors, which is not associated with psychopathology (McDaniel & Zuckerman, 2003). For example, the increased frequency of drinking alcohol does not necessarily equate to alcohol abuse. In addition, sensation seeking and lack of deliberation are not likely related to eating disorder behaviors (Fassino, Abbate-Daga, Leombruni, Boggoi, & Rovera, 2002). Lack of persistence has only been associated with drinking and to a significantly lesser extent than the other facets of impulsivity (Miller et al., 2003; Whiteside & Lynam, 2003). Likewise, in a structural equation modeling analysis of 246 college students, urgency explained a significant amount of variance in symptom level for bulimic symptoms, pathological gambling, and alcohol abuse, whereas sensation seeking, lack of planning and lack of persistence did not (Fischer & Smith, 2008). For these reasons, urgency is taking center stage as a robust predictor of multiple risky behaviors.

Some individuals may be more predisposed to experiencing a drive to engage in rash actions in the presence of extreme emotion than others. Furthermore, some

individuals with a predisposition may act rashly in the presence of either positive or negative emotions, whereas other predisposed individuals may respond to both types of extreme emotions in maladaptive ways (Cyders et al., 2007). For example, if an individual is high on positive urgency, when he experiences a strong positive feeling he may be compelled to engage in risky behaviors that he would not otherwise engage in, such as celebratory binge drinking. Because positive and negative urgency are considered independent traits (Cyders & Smith, 2007, 2008), this same individual may also be high on negative urgency and practice risky behaviors, such as purging, in the presence of extreme negative emotions. Therefore, a person may be more likely to engage in risky behavior depending on the individual's emotional experience and disposition to urgency, both of which may vary among individuals.

Research has demonstrated that levels of urgency predict engagement in risky behaviors. For example, positive and negative urgency predict problem drinking and illegal drug use in first year college students (Cyders et al., 2007). However, research has found that a stronger connection for positive or negative urgency varies with different risky behaviors. A longitudinal study conducted over the course of the first year of college found that positive urgency predicted increases in risky sexual behavior and drug use even after controlling for time, sex, and sensation seeking, lack of deliberation, lack of perseverance, and negative urgency (Zapolski, Cyders, Rainer, & Smith, 2007). Positive urgency was found to be a better predictor of both drinking quantities and problem drinking in college-age students than negative urgency (Cyders, Flory, et al., 2007).

Alternatively, negative urgency prospectively identified women who have both eating and alcohol use disorders compared to women who have just one or neither disorder (Fischer, Smith, Annus, & Hendricks, 2007). Urgency discriminated among individuals with co-occurring alcohol dependence and an eating disorder, either alcohol dependence or an eating disorder, and no diagnosis, suggesting that higher scores on negative urgency were related to risky behavior and even higher scores were related to participation in more than one risky behavior. Additionally, a meta-analysis of 50 studies indicated that bulimia nervosa symptoms (e.g., binge eating and purging) were most strongly related to negative urgency (weighted $r=.38$) compared to the other impulsive traits including lack of planning (weighted $r=.16$), sensation seeking (weighted $r=.16$) and lack of persistence (weighted $r=.08$; Fischer, Smith, & Cyders, 2008). As a result, research has substantiated the connection between urgency and risky behaviors; however, the previously mentioned studies suggest that positive urgency may be a better predictor of alcohol abuse, risky sexual behavior, and drug use, whereas, negative urgency may be a better predictor of disordered eating behavior.

With respect to individual differences in emotional experience, research indicates that different individuals respond to the same stimuli with differing levels of affect intensity (Diener, Larsen, Levine, & Emmons, 1985; Larsen & Diener, 1985). An individual's capacity to experience intense emotions is called affect intensity, which is a component of affect lability or emotion dysregulation (Mennin, Holaway, Fresco, Moore, & Heimberg, 2007). In longitudinal studies of daily mood, researchers found that some individuals reported experiencing emotions more strongly than do others (Diener et al.,

1985; Larsen & Diener, 1985). Researchers have found large individual differences in the reported intensity of emotion among college-age students who experienced objectively similar emotion-provoking real-life situations as well as hypothetical life events (Larsen, Diener, & Emmons, 1986). Like urgency, increased affect intensity has been associated with increased participation in risky behaviors, such as those that occur in bulimia nervosa (i.e., binge eating and purging; Anestis et al., 2009) and alcohol abuse and dependence (Simmons, 2003).

Although urgency's association with affect intensity has not been directly studied, an individual cannot experience a drive to act rashly in the presence of a strong emotion if the individual does not experience strong emotions. If an individual is low in affect intensity, she may have few opportunities to feel a strong drive to engage in risky behaviors because she rarely experiences strong emotions. On the other hand, individuals high in affect intensity have more opportunities to experience a strong emotional reaction and, therefore, have more opportunities to experience a drive to act rashly. In this way, differences in affect intensity may place individuals with the same level of urgency at different levels of risk for participating in risky behaviors.

Individuals who rarely experience intense emotions may still experience a drive to act rashly in the presence of strong emotions. These individuals may be more likely to engage in risky behaviors than individuals who are low in urgency but would probably be less likely to engage in risky behaviors than individuals who tend to both experience intense emotions and behave rashly under these circumstances. The relationship between urgency, affect intensity, and risky behaviors may help explain why some individuals

participate in multiple risky behaviors (they may experience more affect intensity), whereas others only participate in one risky behavior (they may experience negative emotions infrequently). For example, Fischer, Smith, and Annus (2007) found urgency to be a good predictor of individuals who were diagnosed with an eating disorder, alcohol use disorder, or both. Affect intensity may clarify the relationship between urgency and risky behaviors.

Research on urgency and affect intensity is essential to understanding the emotional mechanism underlying risky behavior and predicting future rash actions. Discoveries made in the area of urgency may help prevent future risky actions by aiding in the development of programs specifically targeted at high risk individuals. Because urgency is typically studied within the context of risky behaviors, urgency research may be subject to the same drawbacks as research investigating potentially embarrassing or illegal activities. Specifically, standard techniques used to establish base rates of a variety of risky behaviors are often found to produce inaccurately low estimates (Anderson, Simmons, Milnes, & Earlywine, 2007; Coutts & Jann, 2011; Dalton, Wimbush, & Daily, 1994; LaBrie & Earleywine, 2000; Lavender & Anderson, 2008, 2009; Walsh & Braithwaite, 2008). Research has found that participants are reluctant to respond honestly to assessments of eating disorders (Vitousek, Daly, & Heiser, 1991), alcohol and drug use, sexual behaviors (Durant, Carey, & Schroder, 2002), and maladaptive muscle development behaviors (Lavender & Anderson, 2008, 2009). Shame, embarrassment, positive self-presentation, and avoiding criminal implications may all play a role in participants' denial and minimization of their participation in risky behaviors (Ahart &

Sackett, 2004; Chadhuri & Mukerjee, 1988; Couturier & Lock, 2006; Dalton et al., 1994; Vanderdeycken & Vanderlinden, 1983). Research suggests that using anonymous assessments of socially sensitive behaviors, such as substance use, results in better quality data (Durant et al., 2002; LaBrie & Earleywine, 2000). Standard techniques of data collection are confidential (i.e., the experiment administrator would guard the identity of the individual and his/her answer) but not anonymous. Anonymous means that no one, including the experiment administrator would know the identity of the participant or his/her answers. If even one individual (e.g., the researcher) has the ability to see the participant's answers, then the participant's responses are not anonymous, and this may affect how likely the participant is to endorse a socially sensitive behavior. If the participant is not convinced of anonymity, s/he may deny participation in a particular behavior. Anonymity ensures no social or legal consequences of any kind could result from endorsing an illegal or embarrassing behavior, making it more likely that a participant will respond honestly.

In order to provide participants with guaranteed anonymity, Wimbush and Dalton (1997) developed the unmatched count technique (UCT) to study base rates for employee theft, a behavior individuals would be unlikely to report honestly if not anonymous. The UCT method allows participants to report behaviors without explicitly endorsing a particular item (i.e., behavior) and provides data regarding the prevalence of specific behaviors. To accomplish this, the UCT method presents participants with a set of 4 to 6 items and asks them to indicate the number of items that are true for them. Half of the participants receive sets that contain one sensitive item (e.g., a risky behavior) among

other innocuous items, and the other half of participants receives sets without sensitive items. The base rate estimate of the sensitive item is determined by comparing the two halves of the sample, since random assignment should result in endorsement rates of the innocuous items that are equal across the two halves. The most important element of the UCT method is that participants do not directly endorse a risky behavior; they only indicate how many items in a set are true of them. The following is an example from LaBrie and Earleywine's (2000) UCT study of risky sexual practices. Half of the participants received this set of items (Set A):

1. I have been to Spain.
2. I would consider myself a sports fan.
3. I have a brother.
4. I have more than one sister.
5. I read the book "The Pelican Brief."

The other half of participants received the exact same list with an additional item (Set B): *I have had sex without a condom*. Both groups of participants responded to the set by indicating the number of items that were true for them. For instance a participant may have indicated 2 of the 5 items were true for him/her, but s/he did not circle or mark any of the items in any way. Therefore, it would be impossible for anyone to know which two items were true for that person. Even if another person was watching the participant complete the questionnaire, s/he would not be able to tell which items were true for the participant, guaranteeing anonymity. LaBrie and Earleywine (2000) found that participants who responded to Set B endorsed a significantly higher proportion of items

compared to participants who responded to Set A. Because participants were randomly assigned to groups, LaBrie and Earleywine deducted that the discrepancy in endorsement rates must be due to the inclusion of the sensitive item. After comparing the UCT groups to the conventional survey group, results indicated that UCT provided a higher base rate of “sex without a condom.”

Likewise, research using UCT has found higher estimates of base rates for other risky sexual behaviors compared to standard techniques of data collection (LaBrie & Earleywine, 2000; Walsh & Braithwaite, 2008). For example LaBrie and Earleywine (2000) found 59% of participants reported “Sex without a condom” in the conventional condition; whereas, 70% endorsed this item in the UCT condition. Disordered eating behaviors and concerns and supplement use (Anderson et. al, 2007; Lavender & Anderson 2008, 2009) have also been found to have higher endorsement rates within a UCT condition. Lavender and Anderson (2008) found that the endorsement rate for women within the conventional condition was 5.77% for laxative and diuretic use and 5.77% for vomiting to control weight compared to 24.51% and 14.92% endorsement rate for women within the UCT condition, respectively. Likewise, men’s endorsement rate for steroid use was 3.33% in the conventional condition and 18.67% in the UCT condition. Finally, alcohol abuse behavior has been endorsed at significantly higher rates when using a UCT condition compared to a conventional condition (LaBrie & Earleywine, 2000; Walsh & Braithwaite, 2008). Unfortunately, UCT does not allow researchers to directly analyze individual responses, because participants do not directly endorse individual items. Therefore, UCT cannot be used for any purpose other than establishing

prevalence rates because it is impossible to know which individuals endorsed the risky behaviors.

The current study aimed to understand how urgency is related to risky behaviors among individuals with varying degrees of affect intensity. This study further aimed to investigate a new data collection method that, along with providing anonymity, retained the ability to connect risky behaviors to other constructs of interest. This data collection method is known as the remote response method (RRM). The RRM involves the use of small electronic devices, called “clickers.” Clickers are frequently found in classrooms and allow students to respond to questions presented by instructors by selecting the corresponding button on the device. The answers are then received in real-time by a central computer. Few researchers outside of the field of education research have explored the practicality of using clickers, even though there is evidence that RRM has potential usefulness in the areas of health promotion, social research, and norm-based interventions (Legreco, Hess, Lederman, Schuwerk, & LaValley, 2010). In a recent study, LaBrie, Earleywine, Lamb, and Shelesky (2006) found that clickers appeared to generate valid data concerning alcohol use in a sample of college students. They identified a number of benefits of using clickers including rapid group feedback, easy use, and human error-free data entry for analysis. Additionally, LaBrie, Hummer, Huchting, and Neighbors (2009) found that clickers can be successfully used as a normative group intervention to reduce alcohol abuse and consequences in college-age students.

In the current study, a previously unstudied, potential benefit of RRM is inducing a feeling of anonymity in participants that conventional data assessments do not provide. Because participants responded to questionnaires via a clicker, they were assured that no one would see their responses to individual items. Because the clicker software allowed participants to proceed at their own pace, the participants were able to conceal both the question they were answering and the answer they were providing. The participant was assured that it would be extremely difficult, or impossible, for any other individual to discover the participant's answers. This should have produced the same feeling of anonymity that UCT provides and therefore produce similar estimates of base rates. However, whereas UCT's inherent design guarantees anonymity, the clicker's promise of anonymity relies on the participants' trust that the research administrator truly cannot connect clickers to a specific participant, the technology, and their ability to shield their answers.

Another benefit of using clickers was being able to analyze individual responses, unlike in UCT. Each participant's response to any particular item was recorded on the central receiving computer and assigned to a participant number. In this way, the individual responses were linked to one particular participant (although participants' identities remained unlinked). This allowed for more detailed and complex statistical analyses because the participants provided data about individual items, and data from other measures could be linked to the endorsement of risky behaviors.

Experimental Hypotheses

The aims of the current study were to analyze the role of urgency in different types of risky behaviors using three data collection techniques. The first aim was to discover differences among the three data collection techniques: Conventional, UCT, and RRM. This aim tested a new method of data collection (i.e., the RRM) for whether it successfully increased anonymity while also linking the endorsement of risky behaviors to other psychosocial variables of interest. It was hypothesized that individuals would be more willing to endorse having engaged in risky behaviors when assessed via the RRM or the UCT than the conventional survey technique and would likewise rate the RRM and UCT as more anonymous techniques compared to the conventional survey. If the RRM was found to be equivalent to the UCT, the RRM data would allow for the testing of the hypotheses described in Aims 2 and 3. If RRM was found not to be equivalent to UCT, the conventionally collected data would be used to evaluate the following hypotheses.

Aim 2: Tested for relationships between risky behavior and positive and negative urgency. It was hypothesized that individuals who endorsed sensitive eating disorder and supplement use behaviors would score higher on negative urgency than individuals who did not. Individuals who endorsed drug use and alcohol abuse were expected to score higher on positive urgency than individuals who did not endorse these behaviors. **Aim 3:** Analyzed the relationship among urgency, risky behavior, and affect intensity. It was hypothesized that the relationship between urgency and risky behaviors would be moderated by affect intensity, such that individuals high on affect intensity and positive or negative urgency would be the most likely to have participated in risky behaviors.

Also, individuals low in affect intensity would be the least likely to have participated in risky behaviors, regardless of their urgency scores.

CHAPTER II

METHOD

Participants

The sample included 937 participants from the University of North Dakota's undergraduate psychology course discussion sections. Participants received extra credit for their participation. A total of 897 participants provided data that are included in the following descriptive summary.¹ Fifty-nine percent of participants identified as female ($n = 529$), and 39.6% identified as male ($n = 356$). The majority of participants were 18 years old (41.0%, $n = 368$), followed by 19 (32.4%, $n = 291$), 20 (12.0%, $n = 108$), 21-25 (10.3%, $n = 92$), 26-30 (1.1%, $n = 10$), 31-50 (1.1%, $n = 10$), and 51-75 (0.1%, $n = 1$). Most participants identified as Non-Hispanic (95.2%, $n = 834$) and forty-three participants identified as Hispanic (4.8%). The majority of participants identified as White (89.9%, $n = 792$), followed by Asian (3.7%, $n = 33$), Native American (2.7%, $n = 24$), Black (2.4%, $n = 21$), and other (0.9%, $n = 8$). Finally, most participants were Freshmen (63.9%, $n = 569$), followed by Sophomores (21.8%, $n = 194$), Juniors (9.5%, $n = 85$), Seniors, (4.8%, $n = 43$).

¹ A thorough description of the exclusionary criteria is explained in the Results section.

Measures

Participants completed the following questionnaires in the order listed below except where stated differently in the procedures section. Copies of all measures unique to this study can be found in Appendix A-E.

Demographic questionnaire. This 9-item questionnaire assessed participants' age, sex, Hispanic ethnicity, year in school, and body mass index.

UPPS+P (Cyders & Smith, 2007; Whiteside & Lynam, 2001). The UPPS+P is a 49-item self-report questionnaire with five subscales that assessed the personality pathways to impulsive behavior: Negative urgency, (lack of) premeditation, (lack of) perseverance, sensation seeking, and positive urgency. Responses were given on a 4-point scale from *Agree Strongly* to *Disagree Strongly*. Higher subscale scores indicated endorsement of higher levels of impulsive behavior. Research suggests good internal consistency, with Cronbach's alphas equaling .88 for negative urgency, .84 for (lack of) premeditation, .80 for (lack of) perseverance, .86 for sensation seeking, and .94 for positive urgency (Cyders & Smith, 2007).

UCT questionnaire. The UCT is a 20-item self-report questionnaire that was presented in two versions (UCT A and UCT B). The UCT questionnaire contained neutral content items and "sensitive" content items, which asked about drug use, maladaptive eating behaviors and attitudes, supplement use, behavior while under the influence of alcohol, and risky sexual practices. The majority of the sensitive and neutral items were taken from prior research (Anderson, et al., 2007; Coutts & Jann, 2011; Dalton, Wimbush, & Daily, 1994; LaBrie & Earleywine, 2000; Lavender & Anderson,

2008, 2009; Walsh & Braithwaite, 2008). Additionally, two control sensitive items were included. The control sensitive items are items that individuals should theoretically not have any reservations about openly endorsing. The control sensitive items were “I sometimes lose control and eat an unusually large amount of food” (Anderson, 2007; Lavender & Anderson, 2009) and “I’ve consumed alcohol until I was intoxicated” (LaBrie & Earleywine, 2000), which have been found not to differ between UCT and conventional data collection conditions. Some items were updated or changed to fit the context of this research (e.g., changing items to the past tense in order to be consistent throughout the questionnaire).

The 20 neutral and sensitive items were mixed among 20 sets of neutral items so that each contains four to five neutral content items and one sensitive item. Each of these 20 sets has two versions. One version contained the sensitive item plus the neutral items, and the other set contained only the neutral items. The two versions of these 20 sets were separated so that half of the sets in UCT-A have sensitive items and half do not, with their corresponding pairs appearing in UCT-B. This is done to reduce error due to any differences that exist between groups (Dalton, Wimbush, & Daily, 1994). To determine the prevalence rates of the behaviors assessed by sensitive items, each set was compared to its identical set without the sensitive item in the opposite version.

On the UCT questionnaire, participants were asked to indicate *how many* items were true for them from each set. The individuals were clearly instructed not to indicate, in any way, if an individual item is true for them. Because the participant did not directly

endorse any individual items, it would be impossible to know which items were true for them and, therefore, ensures anonymity.

Standard Sensitive Questionnaire (Standard SQ). All 20 sensitive items from the UCT questionnaire were listed. Participants were asked to circle/click “yes” if the item was true for them or mostly true for them and circle/click “no” if the item was not true for them. This questionnaire represented a traditional method of assessing for the presence of the constructs of interest in this study, and it did not guarantee anonymity. All 20 sensitive items were aggregated to produce a total number of sensitive items endorsed. Subscales were created by combining endorsement of similar sensitive items. The eating disordered behavior subscale was created by combining sensitive items that assessed fasting, vomiting, binge eating, laxative use, weight and shape concerns, and avoiding activities due to body image disturbances. The muscle subscale was comprised of items assessing steroid and supplement use. The drug subscale included items that assessed cocaine and hallucinogen use and prescription stimulant abuse. The sex subscale included sexually transmitted disease and unprotected sex. Finally, the alcohol subscale comprised of items concerning blacking out, attending school/work drunk, getting drunk, fighting, and drunk driving.

Eating Disorder Examination-Questionnaire (EDE-Q; Fairburn & Beglin, 1994). Part of the EDE-Q was administered, specifically the 6 items that assess maladaptive eating behaviors over the previous 28 days (i.e., the frequency of binge eating, purging, driven exercise, and fasting). Responses were given on an altered 5-point

scale (from *No days* to ≥ 20 days) to accommodate the clickers. Each item was evaluated independently as a measure of frequency of maladaptive behavior.

The Bulimia Test—Revised (BULIT-R; Thelen, Farmer, Wonderlich, & Smith, 1991). The BULIT-R is a 36 item self-report assessment of bulimia nervosa symptoms. Responses were given on a 5-point scale from 1, indicating the absence of disturbance, to 5, indicating the presence of extreme disturbance. Twenty eight of the 36 items were summed to provide a total score ranging from 28 to 140 with higher scores indicating a greater presence of symptoms. A clinical cutoff score of 104 or higher indicates the presence of DSM-IV bulimia nervosa. The BULIT-R has demonstrated good internal consistency, with Cronbach's alpha equaling .98 (Thelen, Mintz, & Vander, 1996).

Rutgers Alcohol Problem Index (RAPI; White & Labouvie, 1989). The RAPI is a 23-item self-report questionnaire that assesses problem drinking behaviors, such as drinking and driving. Responses were either endorsing the behavior or consequence (*Yes*) or denying it (*No*) with higher frequencies of endorsement indicating higher levels of problem drinking behaviors. The RAPI has demonstrated good internal consistency, with Cronbach's alpha equal to .92 (White & Labouvie, 1989).

Emotional Intensity Measure (EIS; Bachorowski & Braaten, 1994). The EIS is a 30 item self-report questionnaire that assesses the characteristic strength with which an individual experiences emotions. The construct of affect intensity is distinct from frequency (i.e., how often an individual experiences the emotions in question), which is not measured. Responses were made using a 5 point scale ranging from *It has little effect*

on me to a specifically stated strong emotional response (For example, on the item *I am happy. I feel*, participants responded on a scale, including the response options: *It has little effect on me, Mildly happy, Happy, Extremely happy, and Euphoric—so happy I could burst*). The EIS produced both a total affect intensity score and two subscale scores: positive affect intensity and negative affect intensity. After reverse coding, the EIS was scored by summing the individual item scores (1-5). Totals can range from 30 to 150. The EIS has demonstrated good internal consistency, with Cronbach's alpha equaling .90 (Bachorowski & Braaten, 1994).

Anonymity questionnaire. A one-item self-report questionnaire for assessing perceived anonymity stated the following: "We're interested in the extent to which you believe the information you just provided was *anonymous*. *Anonymous* means that there is no way for any other person to know how you responded to the questionnaires. In other words, your identity is in no way attached to your responses." Participants were asked to indicate on a scale from 1 (*not at all anonymous*) to 5 (*completely anonymous*) how anonymous they believe their responses were on the questionnaire that assessed the sensitive constructs. This question is similar to Lavender and Anderson's (2009) Anonymity Assessment.

Procedure

Study procedures were approved by the University of North Dakota's institutional review board. Block randomization divided the three conditions across the undergraduate psychology discussion sections, so that times of day (i.e., morning versus afternoon classes) and professor preferences were evenly distributed across groups. All participants

within one discussion section were assigned to one of the three conditions: the unmatched count technique condition (UCT), which was split between two versions (UCT-A and UCT-B), the remote response method condition (RRM), and a conventional questionnaire condition.

The study was presented to potential participants in their undergraduate psychology discussion section by the principal investigator, a research assistant, or both. Students who chose not to participate were allowed to leave the classroom. After the participants consented to participate, they completed a set of questionnaires. The UCT and conventional groups completed the questionnaires by indicating their responses on paper, and the RRM groups completed the questionnaire using clickers to respond. All groups completed the same set of questionnaires with one exception: the questionnaires that assessed for the presence of risky behaviors (i.e., Standard SQ and UCT questionnaire) differed across conditions as detailed below. After completing their participation, participants were asked to refrain from discussing the experiment with other individuals.

Conditions

UCT condition. Participants in this condition ($n = 457$; UCT-A $n = 231$; UCT-B $n = 226$) completed the measures using pen/pencil and paper. The questionnaire unique to this condition was the UCT A or UCT B (Appendix C and D, respectively). Prevalence rate of the sensitive items (i.e., risky behaviors) were derived by comparing response rates across the two versions. Twice as many participants were needed for this condition

than the RRM and the conventional condition because the procedure relied on comparing the two versions.

Participants in this condition were given these specific instructions: “Please pay special attention to the questionnaire labeled UCT. This questionnaire is unique because it adds an additional level of anonymity, meaning that the way it is constructed makes it even harder for anyone other than you to ever know how you answered the questions. Each question on this questionnaire contains a set of 4 to 6 items. We would like you to indicate how many of the items are true for you. Do not make any marks next to the items; just count them in your head. This way, only you will ever know which of the items are true of you. We just want to know *how many* are true for you. Simply write how many are true for you below the set. This type of questionnaire ensures that even if I look directly at your paper, I would not be able to know which items are true for you.”

The experiment administrator referred to an example written on the whiteboard: *I have 2 dogs. *I have attended NDSU. *I have been to Fargo. *I am taking Statistics this semester; then said, “I would write a ‘2’ below this set because two of these items are true for me. Notice, I counted in my head and did not make any marks on the board. There is no way you would know which two are true of me. Please record your answers on this packet. It is important that you conceal all responses that you make on your packet. Pretend that your packet is a hand of cards in a high stake poker game. Please cover your answers quickly after recording them.”

Conventional condition. Participants in this condition ($n = 236$) completed the measures using pen/pencil and paper. In place of the UCT questionnaire, participants in

this condition completed the Standard SQ, which can be seen in detail in Appendix B. Participants received these specific instructions: “Please record your answers on this packet. It is important that you conceal all responses that you make on your packet. Pretend that your packet is a hand of cards in a high stake poker game. Please cover your answers quickly after recording them.”

RRM. Participants in this condition ($n = 204$) completed the same measures as the conventional condition, which were provided to them in the form of a packet of paper. Participants indicated their responses using a “clicker,” which is an electronic device the size of a calculator. The clickers contained 5 buttons, each corresponding to possible response options for items in the study measures. The clicker system that was used was eInstruction’s CPSTM IR student response system. Clickers were provided by the researcher at the start of participation. Participants selected their own clickers from a box and independently returned the clickers to the box after they completed the study. This procedure ensured that only the participant knew his/her clicker number, which was located on the underside of the clicker. Each clicker was linked to a square on the projector screen at the front of the classroom by an identification number. The number was located on the back of the clicker and participants were instructed to hide the clicker number from anyone else’s view. The square on the projector screen tracked each participant’s progress so they knew which question they were currently completing. As long as participants kept the number on their clickers private, no one else was able to discern which question a particular individual was responding to or what response they

indicated at a given point in time. Participants completed the questionnaire at their own pace.

Participants were asked to conceal all actions they made using the clicker. They were asked to treat their clicker like a hand of cards in a high stakes poker game and to hide their actions from other participants. The clickers were presented to the participants as a way to protect their anonymity because no one knew which clicker belonged to them, and were therefore unable to determine their answers to the questions. Furthermore, the researcher would not know which clicker each participant had and would not be able to connect them to the data collected. Clicker responses were immediately received by the computer located in the classroom.

Statistical Analysis

Aim 1. Differences in rates of endorsement of sensitive items between the three methods of assessment were tested using Chi-square analyses. The mean response rate for both UCT A and UCT B questionnaires were calculated for all 20 sets. The endorsement rate of each sensitive item was calculated by subtracting the mean response rate from the UCT version that contains the set without the sensitive item from the mean response rate of the opposite UCT version. This procedure operates under the assumption that differences in mean response rates are due to endorsement of the sensitive item. Similarly, the mean response rates for the sensitive items on the Standard SQ were calculated for both the conventional condition and the RRM groups. All scores were converted to proportions of the sample endorsing each sensitive item to denial of each sensitive item.

Three comparisons (UCT vs. RRM, RRM vs. Conventional Condition, UCT vs. Conventional Condition) of 20 sensitive items were conducted, resulting in 60 Chi-square analyses. However, no single sensitive item was of particular importance. Instead, patterns of significance and non-significance were identified. A Bernoulli trial indicates the probability of obtaining a particular number of significantly different chi-square tests out of the 20 chi-square tests made for each comparison (Howell, 2007; p. 127). The formula for determining the probability of getting n significant chi-square test(s) out of 20 is

$$\frac{N!}{X!(N-X)!} p^X q^{(N-X)}$$

where N is the total number of tests (20), X is the total number of expected outcomes, p is the probability of a significant difference on any one chi square test, and q the probability of a non-significant difference on any one chi square test.

For the first comparison between UCT and RRM mean prevalence rates, no significant differences were expected. Confirmation of a null hypothesis suggests that these two methods derive comparable prevalence rates. The Bernoulli trial indicated a “cut-off” of fewer than 4 non-significant chi-square tests could potentially occur by chance ($p=.05$). Below is an illustration of determining the cut-off.

The probability of obtaining 3 significant differences tests by chance is

$$\frac{20!}{3!(20-3)!} \cdot .05^3 \cdot .95^{(20-3)} = .0596$$

The probability of obtaining 4 significant differences tests by chance is

$$\frac{20!}{4!(20-4)!} \cdot .05^4 \cdot .95^{(20-4)} = .013$$

Therefore, a cut-off of 4 significant chi-square tests is used, meaning that at least 16 of the comparisons between UCT and RRM should yield non-significance, indicating that the hypothesis, UCT and RRM result in similar prevalence rates, is supported.

For the second (RRM vs. Conventional Condition) and third comparisons (UCT vs. Conventional Condition), different expectations are necessary. It is hypothesized that these data collection methods are different and yield different prevalence rates; therefore, for both comparisons the chi-square tests comparing the 18 sensitive item prevalence rates are expected to be significantly different and the 2 chi-square tests comparing the neutral content items are expected to be non-significant. A Bernoulli trial indicated that at least 3 of the 18 chi-square tests should be significant, suggesting that the two methods being compared produced significantly different prevalence rates ($p < .05$). Neither of the neutral content item chi-square tests should be significant.

Research indicates the presence of increased endorsement rates for UCT methods of data collection compared to more conventional methods. A power analysis conducted using G Power (Version 3.1.3), with power at .80 and alpha at .05 to detect effect sizes larger than $w=.199$ (i.e., a small to moderate effect; Cohen, 1988) indicated that 200 participants per group (800 participants in total) were necessary.

Aim 2. Using the RRM and conventional condition data, regression and generalized estimating equation analyses were conducted to determine if positive and negative urgency predicted endorsement of particular risky behaviors. It was expected that the higher an individual scored on negative urgency, the more likely s/he would be to endorse sensitive eating disorder and supplement use items. Conversely, high scores on

positive urgency would increase the odds of endorsing drug use and alcohol abuse. The Standard SQ total and subscales were used to determine if the participant endorsed the risky behavior, and the UPPS+P was used to determine the individuals positive and negative urgency levels.

Standard SQ subscales were analyzed using generalized estimating equations (GEE) with subscale scores as the dependent variable. Because the data were count data and not normally distributed with variance greater than the mean, the GEEs were fit using a negative binomial distribution. The independent variables were positive and negative urgency, assessed by the UPPS+P and affect intensity as measured by the EIS. Age, Hispanic ethnicity, group assignment and sex as assessed by the demographic questionnaire were also included as covariates. Parameters were evaluated with statistical significance set at $p < .05$. The covariance structure was specified as independent. Missing data were presumed to be missing at random (MAR; see Singer & Willett, 2003; p. 158).

Aim 3. In order to evaluate if affect intensity moderated the relationship between urgency and risky behaviors, hierarchical regression and GEE analyses were conducted. To examine the moderator's effects, the two-way interactions for affect intensity were included (i.e., affect intensity with positive urgency and affect intensity with negative urgency). Both affect intensity, as measured by the EIS, and urgency, as measured by the UPPS+P, were mean centered to decrease multicollinearity with the interaction term. The dependent variable, risky behaviors, was measured by the subscale scores. In order to more fully understand the role of affect intensity and urgency,

additional analyses were conducted using continuous measures of risky behaviors. Linear regression analyses were conducted using the following dependent variables: alcohol problems, as measured by the RAPI, and eating disorder psychopathology, as measured by the total score on the BULIT-R. Because the aggregated total of the Standard SQ was normally distributed, it was also analyzed using linear regression. The same interactions and covariates were used in these analyses as in the GEE analyses. No hypotheses were made concerning a three-way interaction or the two-way interaction between positive urgency and negative urgency because the literature does not support hypotheses pertaining to these interactions; therefore, they were not included in analyses. The significance threshold used for the linear regression analyses was $p < .05$.

Research points to the presence of robust associations among affect intensity, urgency, and risky behaviors that support the legitimacy of the hypotheses of this study. A power analysis was conducted using G Power (Version 3.1.3) with power at .80 and alpha at .05 to detect effect sizes larger than $f^2 = .04$ (i.e., a small to moderate effect; Cohen, 1988) indicated that 199 participants were necessary to detect significance.

CHAPTER III

RESULTS

Three participants from the UCT, four from the Conventional, and 22 from the RRM group provided inconsistent data and are not included in subsequent analyses. Inconsistency was determined by specific response patterns on the BULIT-R: selecting “Never” in response to the item “I use laxatives or suppositories to help control my weight,” and a response denoting laxative use at least 2-3 times a month to the same item asked later in the BULT-R; indicating “Never” in response to the item “I use diuretics (water pills) to help control my weight” and a response denoting diuretic use at least once a month on the same item; indicating “Never” in response to the item “I use diuretics (water pills) to help control my weight” and selecting “Frequently” or “Very frequently” in response to the same item. Eleven participants were removed from the RRM group due to excessive missing data. Visual inspection of the distribution of missing data revealed a point of rarity at 24% of the items missing (i.e., ≥ 44 item responses) and was used as the cut-off to determine exclusion. No participants were removed from the UCT or conventional conditions due to excessive missing data. Excluded participants did not differ from non-excluded participants in sex ($X^2 = .61, df = 1, p = .44$), race ($X^2 = 3.48, df = 4, p = .48$), and year in school ($X^2 = 2.61, df = 3, p = .46$); however, they did significantly differ in Hispanic ethnicity ($X^2 = 42.09, df = 1, p < .001$), age ($X^2 = 39.38, df = 6, p < .001$) and BMI ($X^2 = 23.82, df = 9, p < .01$). A higher proportion of excluded

participants identified as Hispanic (35%) than non-excluded participants (4.8%). The excluded participants had a higher proportion of participants identifying themselves as older than 30 years (14%) compared to included participants (1%). A higher proportion of excluded individuals reported extreme BMIs, that is selected a BMI < 18 (11%) or BMI > 27 (28%) compared to included individuals that indicated a BMI <18 (3%) or BMI of >27 (14%).

To determine whether randomization resulted in any demographic differences between conditions, Chi-square tests were conducted on: Age, BMI, Hispanic ethnicity, race, year in school, and sex. No significant differences were found between groups for BMI ($X^2 = 11.86$, $df = 8$, $p = .30$), sex ($X^2 = 1.12$, $df = 2$, $p = .57$), or race ($X^2 = 11.82$, $df = 10$, $p = .30$). Significant differences were found for Hispanic ethnicity ($X^2 = 15.45$, $df = 2$, $p < .001$), with the RRM group having a higher proportion of Hispanic participants (9.9%) than the UCT (2.7%) and conventional groups (4.7%). In addition, a significant difference between conditions for age was found ($X^2 = 65.17$, $df = 14$, $p < .001$), indicating that the UCT condition had the highest proportion of 18 and 19 year olds (77%) compared to the Conventional (71%) and RRM (67%) conditions. Year in school was also significantly different between conditions ($X^2 = 19.42$, $df = 6$, $p = .005$), with UCT having the highest proportion of freshmen (79%) compared to the RRM (58%) and conventional (57%) conditions. Age and year in school are likely measuring similar constructs and suggest that the UCT group had younger participants than the other groups. As a result, Hispanic ethnicity and age are included in subsequent analyses as covariates in order to control for these differences.

Aim 1

Differences in rates of endorsement of sensitive items between the three methods of assessment were assessed using the Bernoulli trial for the 60 Chi-square analyses. Prevalence rates and results of the chi-square tests comparing UCT, RRM, and the conventional condition are reported in Table 1. For the comparison between UCT and RRM, 15 of the 20 chi-square tests were significantly different. The number of significant Chi-square tests greatly exceeds the expected number of 4 or fewer, suggesting that these two methods of assessment derive different prevalence rates. Only 25% of the differences were in the expected direction, and 75% of the differences were opposite to what was hypothesized.

Likewise, 13 of the 18 sensitive items were different between the UCT and conventional conditions. This greatly exceeds the Bernoulli trial cut-off of 3 and suggests these two methods of assessments derive different prevalence rates. However, it was hypothesized that UCT would produce higher prevalence rates compared to the conventional condition, but only 11% of the differences were in the expected direction. The conventional condition yielded higher prevalence rates on 67% of the items. Additionally, both of the control items were significantly different, which was opposite to what was hypothesized. Finally, 2 of the 18 sensitive items were significantly different between the RRM and Conventional conditions, and neither of the two control items were significantly different. This does not reach the cut-off determined by the Bernoulli trail (i.e., 3 significant differences), suggesting that these two methods of assessment are equivalent and thus derive similar prevalence rates.

Table 1. Endorsement Rates of Items and Chi-square Comparison of Endorsement across Conditions for Sensitive Items.

	Endorsement (%)			χ^2		
	C N = 234 - 236	UCT N = 102 -231	RRM N = 196 -202	C vs. UCT	UCT vs. RRM	RRM vs. C
I have taken laxatives or diuretics to control my weight	6	1	7	7.31*	63.29*	0.18
I have made myself vomit to control my weight	9	6	11	1.43	3.58	0.57
I have fasted/starved myself to lose weight	24	27	27	0.49	0.0072	0.35
I have a strong fear of gaining weight or becoming fat	43	34	50	0.38*	10.69*	1.86
My body weight and shape play a strong role in how I think about myself as a person	56	33	55	23.91*	20.63*	0.03
I sometimes avoid intimate contact because I am embarrassed by my body	35	17	30	19.06*	10.26	1.10
I have avoided going out because I am uncomfortable with my appearance	22	-2	24	44.17*	50.58*	0.51
I use energy or protein supplements to build muscle	23	6	22	25.97*	24.05*	0.0068
I have taken steroids to become more muscular	1	-5	6	5.69*	1.46	7.18*
I've had unprotected sex	41	20	43	24.77*	25.89*	0.075
I have/have had a sexually transmitted disease	2	1	7	0.52	5.11*	6.08*
I have driven a car when I knew I had too much to drink to drive	23	11	28	11.11*	19.19*	1.43
I have gotten into physical fights while drinking	10	26	12	19.46*	12.56*	0.51
Within the last year, I have went to work or school while drunk	17	17	23	0.014	2.24	2.97
I have blacked out from drinking too much alcohol	48	36	46	6.98*	4.20*	0.24
I have used hallucinogens (LSD, PCP)	6	-5	7	1.93	1.85	0.0014
I have used cocaine (crack, blow, coke)	3	25	8	37.05*	17.97*	3.57
Have you ever used a prescription stimulant (e.g., Ritalin, Adderall, Concerta) without a prescription or in greater amounts than prescribed	19	1	17	21.67*	17.71*	0.47
I sometimes lose control and eat an unusually large amount of food	37	13	43	35.74*	49.54*	1.72
I've consumed alcohol until I was intoxicated	71	77	64	2.10	8.27*	2.24

* $p < .05$, Note: Conventional (C), Unmatched Count Technique (UCT), Remote Response Method (RRM)

A supplementary analysis was conducted to determine the differences in concurrent validity between the conventional and RRM conditions. The strength of Pearson correlation coefficients between each sensitive item and constructs of interest (i.e., positive urgency, negative urgency and affect intensity) and between BULIT-R and RAPI total scores with positive and negative urgency were compared using a Fischer's r -to- Z transformation. Five of the 20 correlations between positive urgency and sensitive items were significantly different, and nine of the 20 correlations between negative urgency and sensitive items were significantly different. As shown in Table 2, the majority of the conventional condition's correlations indicate a negative relationship with urgency, suggesting that high scores on positive and negative urgency are related to low endorsement of risky behaviors, whereas in the RRM condition positive correlations were observed. None of the correlations between affect intensity and sensitive items, or between BULIT-R and RAPI total scores with positive and negative urgency were significantly different between the conventional and RRM conditions. All of these differences were in the direction of stronger association of risky behaviors and constructs of interest in the RRM condition than in the conventional condition, suggesting that the RRM condition may have better concurrent validity.

The same analyses were used to compare the RRM condition to the combined data of the RRM and conventional conditions. These analyses were conducted to determine if combining the data collected from these two conditions compromised the concurrent validity demonstrated by the RRM condition alone. None of the correlations were significantly different between the RRM condition and the combination of data for

Table 2. Significant Z statistics for the Comparison between RRM and the Conventional, and Combined Data Correlations

Variables	Positive Urgency	Negative Urgency	Emotional Intensity
Standard SQ: Fasted/starved myself	.15/.04/.10	.27/.03/.15	.05/.03/.04
Standard SQ: Binge ate	.27/.02/.14	.47/-.02/.22	.12/.22/.17
Standard SQ: Blacked out from drinking	.19/.01/.09	.26/.02/.13	.03/.03/.03
Standard SQ: Vomit to lose weight	.12/-.05/.03	.31/.01/.17	-.01/.03/.01
Standard SQ: Taken steroids	.25/-.02/.16	.10/.02/.07	-.09/.02/-.06
Standard SQ: Fear weight gain/fat	.15/-.04/.05	.31/-.02/.15	.35/.25/.30
Standard SQ: Avoid intimate contact	.26/-.01/.11	.35/-.06/.13	.15/.21/.19
Standard SQ: Sexually transmitted disease	.32/-.05/.18	.17/.01/.12	-.07/-.01/-.05
Standard SQ: Unprotected sex	.10/-.06/.02	.27/-.03/.12	.17/-.03/.04
Standard SQ: Used cocaine	.27/.004/.16	.11/-.02/.06	-.09/-.18/-.13
Standard SQ: Abused prescription stimulant	.16/-.02/.05	.18/-.03/.07	-.08/-.05/-.06
Standard SQ: Avoided going out	.24/-.09/.07	.30/-.06/.12	.19/.18/.18
Standard SQ: Went to work/school drunk	.30/.01/.16	.21/-.08/.15	-.07/-.04/-.06
Standard SQ: Weight & shape are important	.15/-.06/.03	.27/-.03/.12	.31/.17/.24
Standard SQ: Got drunk	.17/.007/.08	.31/-.001/.15	.07/.07/.08
Standard SQ: Physical fight while drinking	.36/.05/.15	.34/-.03/.16	-.12/-.03/-.08
Standard SQ: Used supplements	.06/.13/.10	.07/.14/.10	-.10/-.10/-.10
Standard SQ: Used hallucinogens	.05/.04/.05	.05/-.03/.04	-.14/-.14/-.14
Standard SQ: Drunk drove	.17/-.05/.06	.31/-.10/.11	.07/-.05/.01
Standard SQ: Laxatives/diuretics use	.19/-.11/.036	.10/-.05/.03	.04/-.003/.02
BULIT-R total score	.37/.24/.31	.47/.37/.42	--
RAPI total score	.41/.39/.41	.49/.38/.44	--

Note: Correlations are presented in this order RRM/Conventional/Combined data and bolded correlations indicate a significant z statistic, $p < .0025$. RRM $n = 196 - 204$, Conventional $n = 234 - 236$, combined data $N = 434 - 440$.

the RRM and the conventional conditions, suggesting similar levels of concurrent validity and providing a rationale for proceeding with further analyses using this combined group.

Additionally, combining the two conditions provides more statistical power because the average n is 390, whereas the RRM condition alone has an n of 168. Due to the increased power and similar prevalence rates between RRM and conventional conditions, the subsequent analyses include the combined data from the RRM and the conventional conditions. However, group is included in these analyses as a covariate to account for any group effects that are present.

A Chi-square analysis was used to test whether conditions differed in their perceived anonymity. Perceived anonymity ratings were not significantly different between conditions ($\chi^2 = 9.49$ $df = 8$, $p = .30$), indicating that conditions did not differ in perceived anonymity. All groups had high average rating for anonymity, RRM ($M = 4.53$, $SD = .85$), UCT ($M = 4.44$, $SD = .85$), conventional ($M = 4.35$, $SD = .89$).

Aims 2 and 3.

Using data from the combined RRM and conventional conditions, regression and GEE analyses were conducted to determine if positive and negative urgency predicted endorsement of particular risky behaviors and if affect intensity moderated the relationship between urgency and the risky behaviors.

Linear regression analysis was conducted on the aggregated endorsement rate for risky behaviors as assessed by the Standard SQ, using age, group, sex, and Hispanic ethnicity as covariates, affect intensity, positive and negative urgency as independent variables, and the interactions between affect intensity and positive urgency and between affect intensity and negative urgency. The overall model was significant, ($F(9, 363) = 5.27$, $p < .001$), with significant main effects for affect intensity and negative urgency,

suggesting that higher rates of affect intensity and negative urgency are associated with more risky behaviors (Table 3). Neither of the interactions, affect intensity by positive urgency or affect intensity by negative urgency, were statistically significant.

Table 3. Results for the Linear Regression Analysis for the Standard SQ Total Score.

Variable	β	t	p
Intercept	--	2.72	.007
19 years old	-0.043	-0.78	.44
20 years old	0.29	0.55	.59
21 years and older	0.34	0.61	.54
Sex	0.036	0.68	.50
Hispanic ethnicity	0.037	0.73	.47
Group	-0.043	-0.86	.39
Affect Intensity	0.20	3.90	<.001
Negative Urgency	0.26	3.71	<.001
Positive Urgency	-0.012	-0.18	.86
Affect Intensity X Negative Urgency	-0.098	-1.40	.16
Affect Intensity X Positive Urgency	-0.046	0.66	.51

$N = 441$, *Note:* Age categories 19, 20 and 21 years and older were compared to the reference group 18 years old.

Sex. GEE analysis was conducted on the Standard SQ sex subscale. This model included positive and negative urgency, affect intensity, and the two-way interactions of affect intensity with positive and negative urgency in addition to age, group, sex, and Hispanic ethnicity as covariates. A significant main effect for negative urgency was

present, indicating that higher negative urgency was associated with higher endorsement of sensitive sex-related items. Neither the affect intensity by positive urgency nor the affect intensity by negative urgency interactions was statistically significant. See Table 4.

Table 4. The Results of the GEE Analysis for the Standard SQ Subscale Sex.

Variable	B	SE	95% CI	Wald Chi-Square	p
Intercept	-1.27	.61	-2.47, -.068	7.42	.006
Age (18 years old)	--	--	--	2.61	.63
19 years old	-.056	.14	-.34, .22	0.16	.69
20 years old	.17	.17	-.16, .49	0.98	.32
21-25 years old	.014	.20	-.38, .40	0.005	.94
26+ years old	-.57	.59	-1.70, .58	0.94	.33
Sex (Male)	.013	.13	-.23, .26	0.010	.92
Ethnicity (Non-Hispanic)	-.055	.23	-.50, .39	0.059	.81
Group (RRM)	-.11	.117	-.34, .12	0.90	.34
Affect Intensity	.043	.054	-.063, .15	0.63	.43
Negative Urgency	.033	.011	.013, .054	9.99	.002
Positive Urgency	-.011	.009	-.029, .007	1.48	.22
Affect Intensity X Negative Urgency	-.009	.0094	-.028, .009	0.99	.32
Affect Intensity X Positive Urgency	.013	.0079	-.002, .029	2.79	.095

N = 402, Note: Parentheses surround the level used as the index for variables with comparisons.

Drugs. GEE analysis was conducted on the Standard SQ drugs subscale. This model included positive and negative urgency, affect intensity, and the two-way interactions of affect intensity with positive and negative urgency in addition to age, group, sex, and Hispanic ethnicity as covariates. No significant main effects or interactions were found. See Table 5 for full model statistics.

Table 5. The Results of the GEE Analysis for the Standard SQ Subscale Drugs.

Variable	B	SE	95% CI	Wald Chi-Square	p
Intercept	-2.01	.66	-3.29, -0.72	9.37	.002
Age (18 years old)	--	--	--	5.33	.26
19 years old	-.65	.29	-1.23, -.081	5.01	.025
20 years old	-.13	.30	-.72, .46	0.19	.66
21-25 years old	-.05	.34	-.73, .63	0.02	.88
26+ years old	-.58	1.06	-2.66, 1.5	0.30	.58
Sex (Male)	0.54	.22	-.37, .47	0.06	.80
Ethnicity (Non-Hispanic)	0.98	.63	-.25, 2.21	2.45	.12
Group (RRM)	-0.076	.22	-.51, .36	0.12	.73
Affect Intensity	-.15	.10	-.36, .049	2.21	.14
Negative Urgency	0.002	.019	-.035, .039	0.011	.92
Positive Urgency	0.019	.017	-.013, .052	1.34	.25
Affect Intensity X Neg. U.	-0.001	.015	-.029, .028	0.0002	.99
Affect Intensity X Pos. U.	-0.009	.012	-.033, .015	0.54	.46

N = 398, Note: Parentheses surround the level used as the index for variables with comparisons.

Alcohol. GEE analysis was conducted on the Standard SQ alcohol subscale. This model included positive and negative urgency and affect intensity and the two-way interactions of affect intensity with positive and negative urgency in addition to age, group, sex, and Hispanic ethnicity as covariates. A significant main effect for negative

Table 6. The Results of the GEE Analysis for the Standard SQ Subscale Alcohol.

Variable	B	SE	95% CI	Wald Chi-Square	p
Intercept	0.40	.19	.032, .77	4.54	.033
Age (18 years old)	--	--	--	5.29	.26
19 years old	-0.04	.10	-.24, .16	0.15	.70
20 years old	0.18	.11	-.03, .40	2.73	.10
21-25 years old	0.013	.13	-.25, .28	0.009	.93
26+ years old	-0.30	.33	-.94, .35	0.82	.37
Sex (Male)	0.089	.088	-.083, .26	1.024	.31
Ethnicity (Non-Hispanic)	0.066	.16	-.25, .38	0.16	.69
Group (RRM)	-0.008	.08	-.17, .16	0.008	.93
Negative Urgency	0.22	.009	.005, .039	6.13	.013
Positive Urgency	0.002	.007	.016, .059	0.059	.80
Affect Intensity	0.025	.037	.097, .45	0.45	.50
Affect Intensity X Neg. U.	-0.007	.008	.008, .86	0.86	.36
Affect Intensity X Pos. U.	0.002	.006	.014, .16	0.16	.69

N = 392, Note: Parentheses surround the level used as the index for variables with comparisons.

urgency was found, suggesting that as negative urgency increases, endorsement of alcohol-related risky behaviors increases. Neither of the interactions, affect intensity by positive urgency and affect intensity by negative urgency, were statistically significant. See Table 6 for full model statistics.

Linear regression analysis was conducted on the total RAPI scores for participants, using age, group, sex, and Hispanic ethnicity as covariates, affect intensity,

Table 7. Results for the Linear Regression Analysis for the RAPI.

Variable	β	t	p
Intercept	--	4.79	<.001
19 years old	.018	0.377	.71
20 years old	.082	1.76	.08
21 years and older	.16	3.36	.001
Sex	.032	.70	.48
Hispanic ethnicity	-.068	-1.57	.12
Group	-.17	-3.94	<.001
Affect Intensity	.016	0.36	.72
Negative Urgency	.27	1.47	<.001
Positive Urgency	.21	3.53	<.001
Affect Intensity X Negative Urgency	.02	.38	.71
Affect Intensity X Positive Urgency	.038	.65	.52

Total $Df = 401$, Note: Age categories 19, 20 and 21 years and older were compared to the reference group 18 years old.

positive and negative urgency as independent variables, and the interactions between affect intensity and positive and negative urgency. The overall model was significant ($F(9, 392) = 16.81, p < .001$; Table 7). Neither interaction was significant. Main effects were present for positive urgency, suggesting that higher positive urgency is associated with higher RAPI scores, negative urgency, suggesting that higher negative urgency is associated with higher RAPI scores, age, suggesting that a significant difference exists between 18 year olds and 21 and older participants and group. Analysis of means, suggest that participants who were 21 years or older ($M = 1.72, SD = 1.23$) endorsed more alcohol-related problems than participants who were 18 years old ($M = 1.33, SD = 1.23$). Analysis of the group means suggest that participants in the RRM condition ($M = 1.67, SD = 1.20$) endorsed more alcohol-related problems compared to participants in the conventional condition ($M = 1.17, SD = 1.70$).

Eating Disordered Behavior. GEE analysis was conducted on the Standard SQ eating disorder behaviors subscale. This model included positive and negative urgency and affect intensity and the two-way interactions of affect intensity with positive and negative urgency in addition to age, group, sex, and Hispanic ethnicity as covariates. A significant interaction was found between affect intensity and negative urgency (Wald $\chi^2 = 4.75; df = 1; p = .029$; Figure 1), suggesting that as participants report higher levels of affect intensity, eating disorder behavior endorsement increases regardless of negative urgency level; whereas, when affect intensity is low, high levels of negative urgency are more strongly associated with eating disorder behaviors. An interaction between affect

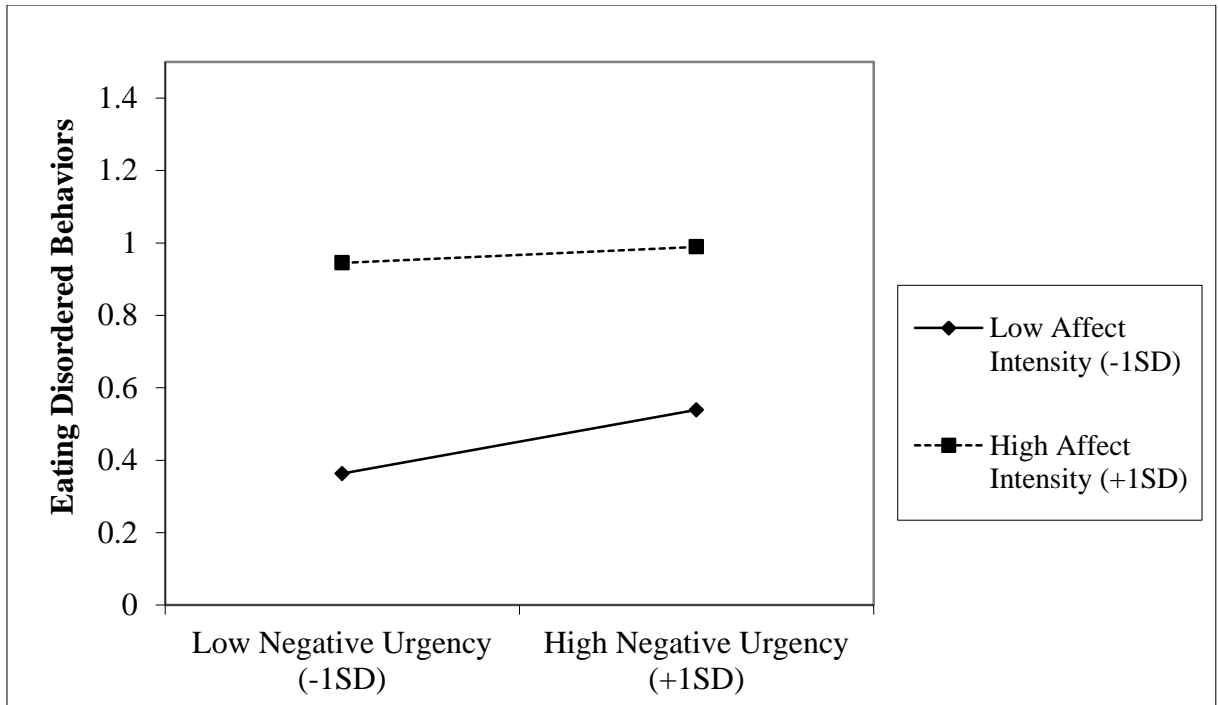


Figure 1. The plotted interaction between Affect Intensity, Negative Urgency, and Eating Disordered Behaviors from GEE results of the Standard SQ eating disordered behaviors Subscale. The dependent variable is measured by endorsement of eating disordered behaviors, ranging from 0 to 6.

intensity and positive urgency was not significant. Significant main effects were found for negative urgency, suggesting that higher negative urgency was associated with greater endorsement of eating disorder behaviors, and affect intensity, suggesting the higher an individual's affect intensity score, the greater the number of eating disorder behaviors s/he endorsed, and age. All age groups were significantly different than the index group (18 year olds) with 26 years and older ($M = 2.27$, $SD = 0.55$) scoring the highest, followed by 21 through 25 years old ($M = 1.25$, $SD = 0.86$), 18 year olds ($M = 1.21$, $SD = 1.66$), 19 year olds ($M = 1.12$, $SD = 0.16$), and 20 year olds ($M = 0.88$, $SD = 0.17$). See Table 8 for results.

Table 8. The Results of the GEE Analysis for the Standard SQ Subscale Eating Disorder Behaviors.

Variable	B	SE	95% CI	Wald Chi-Square	<i>p</i>
Intercept	.069	.26	-.43, .57	.072	.79
Age (18 years old)	--	--	--	10.82	.029
19 years old	-.075	.12	-.31, .16	0.38	.54
20 years old	-.31	.19	-.68, .06	2.67	.10
21-25 years old	.037	.18	-.31, .38	0.045	.83
26+ years old	.63	.26	.12, 1.15	5.76	.016
Sex (Male)	.007	.12	-.22, .23	0.004	.95
Ethnicity (Non-Hispanic)	.18	.23	-.28, .64	0.61	.44
Group (RRM)	.032	.10	-.17, .23	0.099	.75
Negative Urgency	.039	.01	.017, .06	12.36	<.001
Positive Urgency	-.002	.008	-.019, .015	0.058	.81
Affect Intensity	.23	.05	.13, .33	19.77	<.001
Affect Intensity X Neg. U.	-.02	.009	-.04, -.002	4.75	.029
Affect Intensity X Pos. U.	-.0001	.008	-.016, .016	0.0001	.99

N = 388, *Note*: Parentheses surround the level used as the index for variables with comparisons.

Linear regression analysis was conducted on the total BULT-R scores for participants, using age, group, sex, and Hispanic ethnicity as covariates, affect intensity, positive and negative urgency as independent variables, and the two-way interactions of

affect intensity with positive and negative urgency. The overall model was significant ($F(9, 394) = 11.75, p < .001$; Table 9), with a significant interaction for affect intensity by positive urgency ($\beta = -0.29, t(394) = -2.07, p = .039$; Figure 2), suggesting that when participants report high levels of affect intensity, the strength between positive urgency and eating disordered behaviors is relatively stable; whereas when affect intensity is low, the higher positive urgency is associated with higher BULIT-R scores. The interaction

Table 9. Results for the Linear Regression Analysis for the BULIT-R.

Variable	β	t	p
Intercept	--	34.45	<.001
19 years old	.024	0.49	.62
20 years old	.006	0.13	.90
21 years and older	-.008	-0.17	.87
Sex	.17	3.63	<.001
Hispanic ethnicity	-.086	-1.91	.057
Group	-.066	-1.45	.15
Affect Intensity	-.016	-0.35	.73
Negative Urgency	.32	5.14	<.001
Positive Urgency	.10	1.59	.11
Affect Intensity X Negative Urgency	.84	1.36	.17
Affect Intensity X Positive Urgency	-.12	-2.03	.043

Total $Df = 403$, Note: Age categories 19, 20 and 21 years and older were compared to the reference group 18 years old.

between affect intensity and negative urgency was not statistically significant. Main effects were found for negative urgency, suggesting that higher rates of negative urgency significantly predict higher BULIT-R scores, and sex, indicating that women ($M = 3.98$, $SD = 0.30$) scored higher compared to men ($M = 3.87$, $SD = 0.26$).

In order to test participants' engagement in specific eating disorder behaviors, not assessed by other measures, four logistic regressions for the individual EDE-Q items were conducted, using a Bonferroni family-wise correction of $p < .0125$. The data met assumptions for binary logistic regression. The binary logistic regression models analyzed the presence versus absence of various eating disorder behaviors over the previous 28 days. The models also included positive and negative urgency and affect intensity and age, group, sex, and Hispanic ethnicity as covariates. None of the logistic

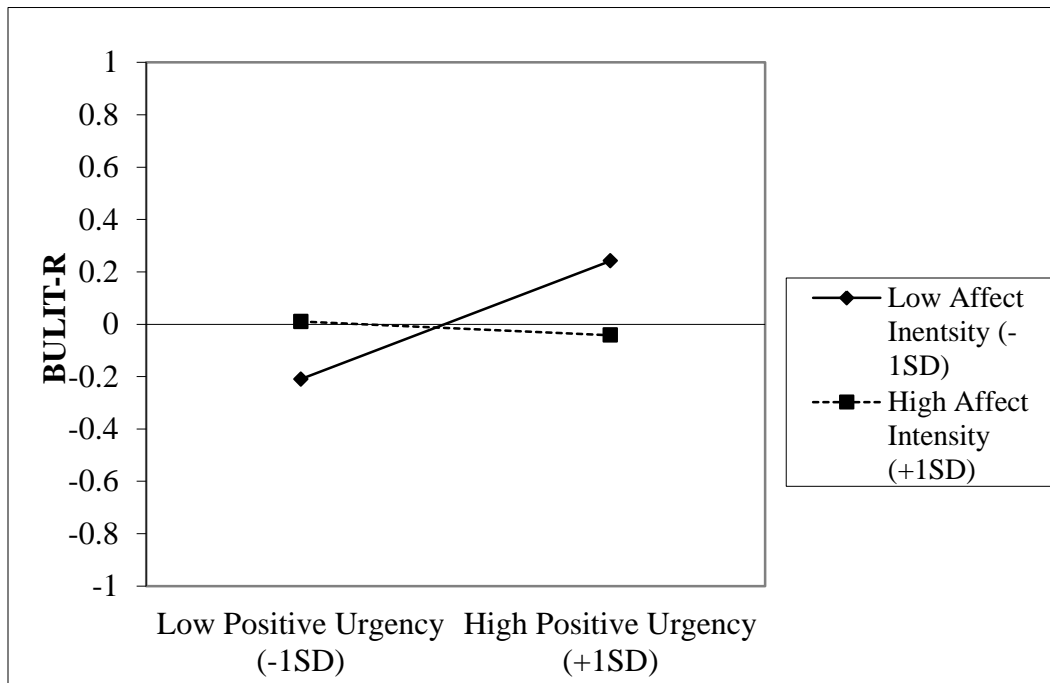


Figure 2. The plotted interaction between Affect Intensity, Positive Urgency, and Eating Disordered Behaviors from Linear Regression results of the BULIT-R. The BULIT-R is a continuous measure of eating disordered behaviors and was centered for analysis.

regression models were statistically significant: whether individuals reported experiencing a loss of control and consuming an unusually large amount of food ($X^2 = 18.79$, $df = 10$, $p = .043$; Appendix F, Table 12), self-induced vomiting ($X^2 = 8.04$, $df = 10$, $p = .63$; Appendix F, Table 13), misusing laxatives ($X^2 = 19.79$, $df = 10$, $p = .031$; Appendix F, Table 14), and excessive exercise ($X^2 = 8.46$, $df = 10$, $p = .58$; Appendix F, Table 15).

Muscle-Oriented Behaviors. The GEE failed to converge on a final solution for the Standard SQ muscle subscale; therefore, two separate GEE were conducted for the individual muscle-related Standard SQ items. Each item has dichotomous response options, either "yes" I have engaged in the risky behavior or "no" I have not. The two GEE models included positive and negative urgency and affect intensity and age, group, sex, and Hispanic ethnicity as covariates. For the item, "use of energy or protein supplements to build muscle," the GEE failed to converge therefore, the covariate age was removed due to a high number of vacant cells between this covariate and the dependent variable. A main effect for negative urgency was found, suggesting that as negative urgency scores increase endorsement of supplement use increases. Additionally, a main effect for sex was found, such that men ($M = 0.36$, $SD = 0.068$) were more likely than women ($M = 0.16$, $SD = 0.035$) to endorse supplement use. See Table 10 for full model statistics.

For the item "taking steroids to become more muscular," the GEE failed to converge therefore, the covariates age and ethnicity were removed due to a high number of vacant cells between these covariates and the dependent variable. A main effect for

Table 10. Results of the GEE for the Standard SQ Item "I use energy or protein supplements to build muscle."

Variable	B	SE	95% CI	Wald Chi-Square	<i>p</i>
Intercept	-.97	.36	-1.68, -.25	7.07	.008
Sex (Male)	-.80	.19	-1.18, -.43	17.51	<.001
Ethnicity (Non-Hispanic)	-.22	.35	-.90, .46	.39	.53
Group (RRM)	.10	.18	-.25, .45	.32	.58
Negative Urgency	.041	.017	.007, .075	5.62	.018
Positive Urgency	-.006	.015	-.034, .023	.15	.70
Affect Intensity	-.13	.072	-.27, .015	3.09	.079
Affect Intensity X Neg. Urgency	.004	.01	-.015, .024	.19	.66
Affect Intensity X Pos. Urgency	-.007	.01	-.026, .013	.45	.50

N = 401, *Note*: Parentheses surround the level used as the index for variables with comparisons.

positive urgency was found, suggesting that as positive urgency scores increased, endorsing steroid use increased. Additionally, a main effect for group was found, suggesting that individuals in the RRM condition ($M = 0.044$, $SD = 0.015$) were more likely than individuals in the conventional condition ($M = 0.011$, $SD = 0.008$) to endorse steroid use. See Table 11 for full model statistics.

Table 11. Results of GEE for the Standard SQ Item "I have taken steroids to become more muscular."

Variable	B	SE	95% CI	Wald Chi-Square	p
Intercept	-3.08	.38	-3.82, -2.34	66.23	<.001
Sex (Male)	-.057	.60	-1.23, 1.011	.009	.92
Group (RRM)	-1.41	.66	-2.71, -.12	4.59	.032
Negative Urgency	-.037	.047	-.13, .055	.64	.43
Positive Urgency	.092	.036	.021, .16	6.47	.011
Affect Intensity	-.15	.21	-.56, .25	.55	.46
Affect Intensity X Neg. Urgency	-.02	.025	-.069, .029	.63	.43
Affect Intensity X Pos. Urgency	.18	.028	-.036, .072	.42	.52

N = 402, *Note:* Parentheses surround the level used as the index for variables with comparisons.

CHAPTER IV

DISCUSSION

The purpose of this study was to evaluate a newly devised method of data collection that sought to alleviate potential concerns participants may have with regard to their anonymity when providing information that is potentially embarrassing or may have other negative consequences. In addition, this study tested hypotheses regarding the nature of the risk for participating in risky behaviors as a function of urgency and affect intensity. However, researching risky behavior can be difficult due to the sensitive nature of the questions. Participants may deny or minimize participation in risky behavior due to shame, criminal implications, or embarrassment (Ahart & Sackett, 2004; Chadhuri & Mukerjee, 1988; Couturier & Lock, 2006; Dalton et al., 1994; Vanderdeycken & Vanderlinden, 1983). Unfortunately, the current assessments for risky/sensitive behaviors that guarantee anonymity (i.e., UCT) can only produce prevalence rates and do not allow researchers to connect participation in risky behaviors to constructs of interests. Due to these concerns, the current study tested a new data collection technique (i.e., RRM) that allows data to be gathered anonymously and connects participants' risky behavior endorsement to constructs of interests. In order to determine the utility and validity of this new technique, it was compared to a technique that also ensures anonymity (i.e., UCT) and to a conventional method of data collection. The results of this study clearly suggest that different data collection techniques provide different prevalence rate estimates for

the risky behaviors included in this study. Further, when analyzing the role of constructs in risky behavior participation, urgency and affect intensity both emerged as significant predictors.

Aim 1.

It was hypothesized that the three data collection techniques would result in different prevalence rates, with the UCT and RRM conditions producing higher rates of endorsement compared to the conventional condition. These differences would theoretically be caused by the participants' increased confidence in anonymity because the UCT and RRM conditions guarantee anonymity, whereas the conventional condition does not. The participants' rating of anonymity did not differ across conditions, suggesting that participants felt equally anonymous in each condition. Anonymity was assessed almost identically to Lavender and Anderson (2009) but they found that participants rated the conventional condition as providing less anonymity than the Randomized Response Technique, which has been found to produce similar prevalence rates to UCT.

The results of the current study may have been influenced by the group setting in which data were collected. In general, feelings of anonymity tend to increase in group settings compared to one-on-one or individual attention settings that are typical in research designs (Singer, Brush, Lublin, 1965; Ziller 1964). The group format, which was required for the RRM and also used in the conventional condition and UCT to avoid introducing a confounding effect, may have increased feelings of anonymity across all conditions. Additionally, Lavender and Anderson (2009) used a scale asking participants

to rate how anonymous they felt from 1 to 10, whereas, the current study asked participants to use a scale of 1 to 5, due to limitations in the technology used in the RRM condition. The reduced options may have restricted the range of results and compromised the ability to analyze differences among groups.

When taken as a whole, these results suggest that the UCT may have led to unreliable prevalence rates. As expected, the UCT condition produced different endorsement rates of risky behaviors compared to the conventional condition; however, these endorsement rates were in an unexpected direction. That is, the conventional condition produced higher prevalence rates for the majority (67%) of risky behaviors. Other researchers also found evidence of higher prevalence rates from conventional conditions, although the majority of their findings were in the direction of the UCT producing higher rates (Anderson et al., 2007; Lavender & Anderson, 2008; 2009; Walsh & Braithwaite, 2008). Likewise, the RRM condition produced consistently higher prevalence rates for the majority (61%) of risky behaviors compared to the UCT condition. In addition, the UCT produced negative prevalence rates for three behaviors: avoiding going out due to body image concerns, steroid use, and use of hallucinogens, which are theoretically impossible. Other unusual prevalence rates were also found. For example, the results suggest that 25% of participants within the UCT condition have used cocaine. It is possible that the block randomization procedure failed to effectively distribute rates of use across conditions resulting in a higher proportion of cocaine use (25%), lower proportions of hallucinogenic (-5%) and prescription stimulant (1%) use, avoidance of intimate contact (17%) and going out (33%) due to body image concerns,

fear of weight gain (34%), and binge eating (13%). Yet, statistically similar rates of fasting (27%), vomiting (6%) and laxative use (1%) were reported compared to the conventional and RRM group participants. Since block randomization assigned participant groups so that there was an equal distribution of time of day, professor preference, and date of administration, it is unclear in what way the assignment process may have failed.

It is also possible that the complexity of the UCT leads the responses it produces to be prone to error. Although the research assistants provided a detailed explanation of the UCT in addition to written instructions provided at the top of the UCT questionnaire itself, the UCT likely remained more difficult than the Standard SQ. The UCT may rely more heavily on cognitive functioning, such as working memory, because it asks participants to read 4 to 6 items and be able to maintain a count of the items that are true for them before writing a final total, whereas the Standard SQ simply asks participants to circle/click yes or no for each item. It is also possible that UCT participants experienced significantly greater mental fatigue compared to participants who complete the Standard SQ due to the increased reading demands (i.e., UCT participants read approximately 100 items, whereas, the Standard SQ participants read 20 items). Therefore, it is conceivable that the UCT is simply too cognitively demanding for participants to complete as accurately/consistently as simpler data collection techniques, although this explanation is not supported by finding a particular pattern by glancing at the UCT questionnaire (i.e., more reliable rates at the beginning of the questionnaire). Because there were so many unusual responses (14 out of 20), a pattern may have been lost. Another possible

explanation is that these findings are due to the principle investigator having personally administered a larger proportion of the RRM conditions (85%) than the UCT (23%) and conventional (15%) conditions. However, it is not clear why this would have led only to differences in the UCT condition and not also differences between the RRM and conventional conditions or why the UCT condition differed from the conventional condition. Yet another possible explanation is that participants who responded inconsistently were more easily detected in the RRM condition and conventional conditions than the UCT condition. The RRM may have required more effort and a longer duration for valid responding, as participants must read the questionnaire, select the button that corresponds to the answer, select the button that allows them to proceed to the next question, and finally view the screen to confirm that they moved to the next question. Due to the increased effort this procedure may require compared to a conventional questionnaire, participants who were not motivated to provide accurate responses had more opportunities to respond inconsistently, as well as to stop responding all together. This may explain why the RRM group contained a higher proportion of participants who responded inconsistently or who provided a great deal of missing data. It is possible that the UCT questionnaire was cognitively taxing, leading to a high proportion of *undetectable* inconsistent responders who introduced additional error into the prevalence estimates. The UCT has other drawbacks that make this technique undesirable, such as requiring twice as many participants to calculate prevalence rates than conventional techniques and lacking the ability to connect participants' endorsement of sensitive items (e.g., cocaine use) to other constructs (e.g., urgency). Overall, the

results of the current study suggest that researchers using the UCT should consider its drawbacks and potential for unreliable prevalence rates and strive to thoroughly explain the technique, provide opportunities to practice answering the items, and keep the number of UCT questions to a minimum.

Although the RRM and conventional condition appear to produce similar prevalence rates, other evidence suggests that the RRM and the conventional condition differ in terms of concurrent validity. Specifically, differences in strengths of relationships were found for the correlations between the Standard SQ item scores and the urgency scales; although, they were not found between other scales. The RRM condition produced correlations that are more consistent with research, which suggests urgency is positively related to engagement in risky behaviors (Cyders et al., 2007; Cyders, Flory, et al., 2007; Fischer, Smith, Annus, & Hendricks, 2007; Fischer, Smith, & Cyders, 2008; Zapolski, Cyders, Rainer, & Smith, 2007). The conventional condition produced mostly negative correlations, suggesting that higher urgency scores were generally related to denial of participation in risky behaviors. Because the RRM's correlational findings are more consistent with previous research, it is likely this technique led to more valid data.

Overall, the current study found that there are a number of positive indicators suggesting that the RRM is a useful data collection technique; however, limitations have also been highlighted. On the positive side, the RRM allows for researchers to conveniently collect data from a large number of participants and the data are easily transferred to Excel, SPSS, or other data processing programs, relieving the researcher

and assistants of hours of data entry and the eliminating potential for errors from transferring the information. In addition, the current study's results suggest the RRM produces valid data, similar to a conventional condition and perhaps more valid than the UCT. The prevalence rates of the risky behaviors assessed in this study are also similar to previous research findings. For example, 28% of participants in Lavender and Anderson's (2008) study endorsed avoiding going out due to body image concerns, and in the current study, 24% of participants within the RRM condition endorsed this behavior. Likewise, Labrie and Earlywine's (2000) assessment of drinking until intoxication and Lavender and Anderson's (2008; 2009) assessment of laxative use, vomiting, avoiding intimacy, steroid use, and supplement use appear to produce similar prevalence rates compared to the current study. However, due to population differences and small differences in word choice of the items, comparisons across studies should not be over-interpreted. Finally, although the assessment of anonymity used in this study has limitations, as noted above, participants rated their perceived anonymity as high (i.e., 4.53 on a scale from 1 to 5) in the RRM condition, suggesting that participants perceived themselves as anonymous.

Limitations of the RRM are also noteworthy. First, the RRM took a substantially longer time to complete than paper and pencil due to the multiple steps involved in answering one item. These steps may have increased the effortful responding required by the participants, and for a participant to successfully complete the RRM questionnaire, s/he needed to have some degree of motivation to finish. As reported above, the RRM had a high number of participants ($n = 11$) that met the 24% missing data cut-off;

whereas, the UCT and the conventional conditions had no participants excluded for this reason. This finding suggests that the RRM may require motivated participants, is especially prone to missing data, and/or is too complicated to complete accurately. Likewise, the RRM showed evidence of having a higher proportion of random responders. Again, this may suggest that the RRM is too complicated for everyone to complete accurately or requires a particular type of participant (e.g., motivated/attentive). However, this may also be considered to be a strength of the RRM, as it provided the researcher with the ability to easily detect these participants who may have gone unnoticed in the UCT or conventional conditions. Finally, the RRM can be more expensive than other data collection techniques, because it requires the purchase of clickers and software. Although, the RRM condition may save money in long run through requiring fewer paper copies.

Aim 2 and 3.

Aims 2 and 3 sought to determine the factors and moderators involved with participation in risky behavior. Affect intensity did not moderate the relationship between urgency and risky behavior for the majority of behaviors, with the exception of eating disorder behavior as described below. However, affect intensity was found to be a significant predictor of a number of risky behavior classes as a main effect. It was hypothesized that negative urgency would predict eating disorder and muscle-orientated behaviors, whereas positive urgency would predict drug use and alcohol abuse. However, the majority of analyses indicated that negative urgency predicts endorsement of almost all of the risky behavior classes assessed in this study, including eating disorder

behaviors, alcohol abuse, risky sexual behaviors, and supplement use. Positive urgency was found to be a predictor for fewer risky behaviors, including alcohol abuse and steroid use.

When endorsement of risky behaviors were aggregated and included in a single analysis (i.e., the total Standard SQ score), negative urgency and affect intensity were significant predictors, suggesting that the greater the degree of negative urgency or affect intensity, the greater the number of risky behaviors that the participant endorsed.

Research suggests that participation in one risky behavior is associated with an increased likelihood of participation in other risky behaviors (Bulik et al., 2004; Celentano et al., 2006; Chassin, Flora, & King, 2004; Cooper, 2002; Del Boca et al., 2004; Dunn & Bartee, 2003; Sinha et al., 1996). The results of this study are consistent with negative urgency and affect intensity leading to increased risk of participation in multiple risky behaviors. The risky behaviors were broken into classes to provide a more thorough description of the factors associated with participation in particular types of risky behaviors.

Sex. The results suggest that negative urgency predicted risky sexual behavior, including having contracted a sexually transmitted disease and having engaged in unprotected sex. This finding differs from previous research that suggests positive urgency predicts risky sexual behavior (Zapolski, Cyders, Rainer, & Smith, 2007). Finding that negative urgency predicts these two risky sexual behaviors has clinical implications as it identifies a trait, negative urgency, that may put one at risk of engaging in potentially dangerous sexual behavior in response to strong negative emotions.

Drugs. The results did not support the hypothesis that positive urgency would predict the use of cocaine, hallucinogens, or the abuse of prescription stimulants. The prevalence rates of the use of these drugs were similar to the American College Health Association National College Health Assessment II (ACHA NCHA II)'s 2012 survey of the University of North Dakota's student population. In the current study cocaine use had a 3% prevalence rate for the conventional condition and an 8% prevalence rate for the RRM condition compared to the 3% found by the ACHA NCHA II. In the current study hallucinogen use had a 6% prevalence rate for the conventional condition and a 7% for the RRM condition compared to the 2.79% reported in the ACHA NCHA II. ACHA NCHA II did not assess prescription stimulants lifetime prevalence.

Neither affect intensity nor urgency was associated with the use of any particular drug. The drug use behaviors had low base rates (i.e., 1 to 19% lifetime prevalence), which may have made identification of important contributors unlikely. Additionally, this study only included a limited number of drugs that may not thoroughly assess the construct of "drug use." Future research should further examine the role of urgency and affect intensity with a broader classification of drug use including illegal and abused prescription drugs.

Alcohol. The hypothesis that positive urgency would predict alcohol abuse behaviors was supported by the findings involving alcohol problems as measured by the RAPI but not as measured by the Standard SQ. The Standard SQ alcohol subscale did not include all alcohol abuse behaviors measured by the RAPI, which may explain this difference. The RAPI is a more comprehensive measure of alcohol problems and may

have been better able to capture the relationship between positive urgency and alcohol abuse behaviors. Research supports that positive urgency is linked to alcohol abuse (Cyders et al., 2007; Cyders, Flory, et al., 2007). Negative urgency also predicted alcohol abuse as measured both by the RAPI and the Standard SQ alcohol subscale. This finding is consistent with research as well (Cyders et al., 2007; Fischer, Smith, Annus, & Hendricks, 2007). These results suggest that alcohol use has a complex relationship both with emotions and impulsivity, as alcohol-related behaviors were related to both strong positive and negative emotions. Future research should continue to evaluate the role and differences among individuals high/low on positive/negative urgency in connection with alcohol abuse.

Eating Disorder Behaviors. The hypothesis that negative urgency would predict eating disordered behaviors was supported when eating disorder behaviors were measured using the Standard SQ eating disorder behaviors subscale and the BULIT-R total score but not by the EDE-Q items. This difference may be due to the limited coverage of eating disorder behaviors provided by the abbreviated version of the EDE-Q used in this study. Overall, these findings are consistent with research that strongly supports a connection between negative urgency and eating disorder behaviors (Fischer, Smith, Annus, & Hendricks, 2007; Fischer, Smith, & Cyders, 2008).

In addition, affect intensity predicted eating disorder behaviors when measured by the Standard SQ and significantly interacted with negative urgency. The interaction indicates that for high levels of affect intensity, risk of eating disorder behaviors increases regardless of their level of negative urgency, whereas when affect intensity is low, high

levels of negative urgency are more associated with participation in eating disorder behaviors. This suggests that urgency is dependent on the degree to which a participant experiences emotions. Because negative urgency is the tendency to act rashly in response to strong negative emotions, this finding makes sense. However, the total affect intensity score was an aggregation of both positive and negative affect intensity. That is, it is possible that a participant may have reported intense emotional reactions to negative events and small emotional reactions to positive events or any other conceivable combination. If these two emotional responses were separated, it is possible that interactions between urgency and affect intensity would be more consistent across all other risky behavior classes. Currently, affect intensity refers to the intensity of any type of emotion, whether positive or negative, and was found to interact with urgency within eating disorder behaviors.

Affect intensity also predicted eating disorder behaviors when measured by the BULIT-R and significantly interacted with positive urgency. The interaction suggests that when participants report high levels of affect intensity, the strength between positive urgency and eating disordered behaviors is relatively stable; whereas, when affect intensity is low, the higher positive urgency is the greater the BULIT-R score is. Strangely, this result seems to suggest the opposite of the previous interaction; that is, urgency appears to be dependent on a participant's affect intensity but only when the affect intensity is low. This appears inconsistent with the definition of positive urgency as the tendency to act rashly in the presence of strong affect, because these individuals reported not experiencing intense affect frequently. However, as mentioned above, the

Emotional Intensity Scale aggregates both positive and negative affect intensity ratings and may have muddled the results to appear that positive urgency is not greatly affected by affect intensity. It could also suggest that positive urgency has a different relationship with affect intensity than negative urgency.

The results of both interactions partially support the hypothesis that affect intensity would moderate the relationship between urgency and eating disorder behaviors and support Cyders and Smith's (2008a) model of positive and negative urgency. According to Cyders and Smith, positive and negative urgency traits are unique and may be thought of as a continuum in association with the Big Five Personality traits. They concluded:

In sum, heightened emotionality appears to be accompanied by a greater likelihood of engaging in ill-considered acts, some of which entail risk. The regular experience of heightened emotionality may increase a person's risk for more frequent engagement in such behaviors, and those behaviors tend to be reinforced, even if they are inconsistent with one's long-term interests. (p. 12)

Affect intensity can be thought of as a trait in which individuals are prone to experience large emotional reactions to negative or positive events (Mennin et al., 2007). Since urgency is dependent upon the experience of emotion, different types of emotions (i.e., positive or negative) will differentially interact with the two different types of urgency. From research, it is clear that urgency is related to eating disorder behaviors (Fischer, Smith, & Cyders, 2008). Therefore, future research should evaluate the role of affect

intensity on positive and negative urgency and perhaps separate negative from positive affect intensity, which may clarify the role that affect intensity plays in eating disorder behavior.

Muscle-Orientated Behaviors. The hypothesis that negative urgency would predict muscle-orientated behaviors was supported by the findings involving supplement use as measured by the Standard SQ but not by the finding involving steroid use as measured by the Standard SQ. Positive urgency was found to predict steroid use but not supplement use. These findings suggest that different mechanisms may be involved in different muscle-orientated behaviors. Steroid use and supplement use are qualitatively different behaviors in that one behavior, steroid use, is illegal and has a lot of negative stereotypes associated with use, whereas, supplement use is more accepted and easily and legally obtained. These differences may help explain why different factors predict steroid use compared to supplement use. Future research should further evaluate the role of positive and negative urgency through a more comprehensive measure of muscle-orientated behavior. Interestingly, this is one of the few risky behavior classes where affect intensity did not appear to play a strong role in the prediction of participation. Further research should aim to examine the implications of this finding.

Limitations of this study include limited generalizability as the participants were primarily 18-20 years old and of Caucasian, non-Hispanic race and ethnicity. In addition, a number of participants were excluded from the study based on inconsistent and incomplete responding. Follow-up analyses suggest that some differences may exist between the included and excluded participants in age, Hispanic ethnicity, and BMI.

Importantly, the items assessing these demographics required more vigilance to answer appropriately and the participants were excluded because they either responded inconsistently or not at all. The demographic items that assessed age and BMI were qualitatively different than other items. These questions were split and participants were required to recognize that they answered the items about BMI and age twice (See Appendix A for more details). Therefore, it is unclear whether the included versus excluded participants differed on these variables or if these variables were not appropriately answered. Furthermore, the item assessing Hispanic ethnicity appears to be flawed even within the included participant data. The current study suggests that 4.8% of participants were Hispanic, which is much larger than the University of North Dakota Department of Institutional Review 2012 report that 2.1% of University of North Dakota students are Hispanic. Although both the UCT (2.7%) and the conventional (4.7%) conditions also had unusually high proportions of Hispanic ethnicities compared to the report, the RRM had a significantly greater proportion of individuals identifying as Hispanic (9.9%). This finding further substantiates the claim that some participants may have found this method especially confusing, or it required some cognitive ability that not all participants had. However, since the included participants did not demonstrate inconsistent responding in later parts of the RRM questionnaire, it is possible that this finding represents a learning curve. That is, the technology required by the RRM condition may have been unfamiliar to participants and led them to make more mistakes during the beginning of the procedures but not after some practice. Although this study allowed a unique opportunity to research the use of clickers in data collection, future

research may be able to analyze the benefits of RRM data collection compared to conventional techniques using individually gathered data and other types of techniques, such as online surveys, and the Random Response Technique. Finally, it appears that assessing individuals in a group setting may have implications for perceptions of anonymity when compared to a one-on-one setting, making the conventional data collection technique result in similar prevalence rates as a technique that ensures anonymity.

The results of this study suggest that different data collection techniques lead to differences in prevalence rate estimates and suggest that the UCT condition led to especially unusual results. Future research should evaluate the utility of gathering data by using the UCT. Conversely, this study has shown that the RRM can produce prevalence rates of socially sensitive items similar to conventional collection techniques when administered in a group setting. Although the results of this study suggest that the RRM is a viable option for researchers, it has the disadvantage of generally needing a group of participants. Research should focus on finding new, less complicated ways to anonymously gather data in a one-on-one research setting. However the viability of the RRM has implications for future research and suggest that this technique can be used to evaluate a number of other variables of interest, as well as be used in intervention programs, such as the normative group intervention conducted by LaBrie and colleagues (2009).

Finally, in addition to urgency, affect intensity was found to be related to a number of risky behaviors, but did not moderate the relationship between urgency and

risky behaviors. Because affect intensity is a construct that theoretically is central to urgency, these two constructs may substantially overlap, leading the hypothesis that affect intensity would function as a moderator to be unsupported. That is, affect intensity and urgency may have accounted for much of the same variance, which may have affected which variables and interactions were significant. However, this explanation would not explain why interactions between negative and positive urgency were found within the eating disordered behavior analyses. Interestingly, these interactions indicate that affect intensity is related to positive and negative urgency in different ways, with greater affect intensity and high levels of negative urgency but low affect intensity and high levels of positive urgency leading to more disordered eating behaviors. Yet, affect intensity's relationship with urgency changed depending on the assessment (i.e., Standard SQ versus BULIT-R) making conclusions about the two interactions unclear. Future research should evaluate the role of affect intensity in risky behaviors, especially eating disorder behaviors research, as affect intensity appears to interact in unique ways with urgency.

This study points to the unique relationship that affect intensity has with a variety of risky behaviors and urgency. Within Cyders and Smith's (2008a) model, positive and negative urgency are the link between affect and participation in risky behaviors. Urgency is an impulsive reaction that is dependent upon the experience of intense affective states. This study has implications that the tendency to experience emotions strongly is predictive of engagement in risky behaviors, as well as, interacts with positive and negative urgency differently within the context of eating disorder behaviors. These

findings have serious clinical implications that traits related to the heightened experience of emotions are associated with many risky behaviors, their serious consequences, and the related disorders. For example, individuals who experience strong negative emotions may be at risk for participation in eating disorder behaviors, the health-related consequences of these behaviors, and meeting criteria for an eating disorder diagnosis. Also, individuals high in affect intensity are particularly likely to participate in risky behaviors and to participate in more than one risky behavior. Finally, these findings suggest that treatments which focus on emotion regulation, such as Dialectical Behavior Therapy, may be useful for a variety of clinical problems, especially disorders thought to be related or driven by impulsivity.

APPENDICES

Appendix A Demographic

Thank you for completing this questionnaire. Please circle the appropriate number or response, or write in information where asked. You may skip any question you do not understand or do not wish to answer. **Please answer EVERY question,** for some of the questions this will mean circling/clicking "None of the above."

1. Age :
 - a. 18
 - b. 19
 - c. 20
 - d. 21-25
 - e. None of the above
2. Age continued:
 - a. 26-30
 - b. 31-50
 - c. 51-75
 - d. >75
 - e. None of the above
3. Sex:
 - a. MALE b. FEMALE
4. What is your ethnic background?
 - a. Hispanic
 - b. Non-Hispanic
5. What is your racial background?
 - a. White
 - b. Black
 - c. Asian
 - d. Native American
 - e. Other
6. What year are you in school?
 - a. Freshman
 - b. Sophomore
 - c. Junior
 - d. Senior
7. Please use the chart on the back to determine your BMI. Round weight to nearest whole number.
 - a. <18
 - b. 18-19
 - c. 20-22
 - d. 23-24
 - e. None of the above
8. BMI continued:
 - a. 25-27
 - b. 28-30
 - c. 31-34
 - d. ≥ 35
 - e. None of the above

This is called a BMI chart. First, locate your height. Second, locate your weight, rounded to the nearest whole number. Third find the number on the chart that links your height and weight. This is your BMI. Record that number on question number 5.

Example: I am 5'4" tall and weigh 138 lbs. I will round to 140 lbs. My BMI is 24. I will circle/click "d" on #5.

WEIGHT		HEIGHT in feet/inches and centimeters																					
		4'8"	4'9"	4'10"	4'11"	5'0"	5'1"	5'2"	5'3"	5'4"	5'5"	5'6"	5'7"	5'8"	5'9"	5'10"	5'11"	6'0"	6'1"	6'2"	6'3"	6'4"	6'5"
lbs	(kg)	142cm	147	150	152	155	157	160	163	165	168	170	173	175	178	180	183	185	188	191	193	196	
260	(117.9)	58	56	54	53	51	49	48	46	45	43	42	41	40	38	37	36	35	34	33	32	32	31
255	(115.7)	57	55	53	51	50	48	47	45	44	42	41	40	39	38	37	36	35	34	33	32	31	30
250	(113.4)	56	54	52	50	49	47	46	44	43	42	40	39	38	37	36	35	34	33	32	31	30	30
245	(111.1)	55	53	51	49	48	46	45	43	42	41	40	38	37	36	35	34	33	32	31	31	30	29
240	(108.9)	54	52	50	48	47	45	44	43	41	40	39	38	36	35	34	33	33	32	31	30	29	28
235	(106.6)	53	51	49	47	46	44	43	42	40	39	38	37	36	35	34	33	32	31	30	29	29	28
230	(104.3)	52	50	48	46	45	43	42	41	39	38	37	36	35	34	33	32	31	30	30	29	28	27
225	(102.1)	50	49	47	45	44	43	41	40	39	37	36	35	34	33	32	31	31	30	29	28	27	27
220	(99.8)	49	48	46	44	43	42	40	39	38	37	36	34	33	32	32	31	30	29	28	27	27	26
215	(97.5)	48	47	45	43	42	41	39	38	37	36	35	34	33	32	31	30	29	28	28	27	26	25
210	(95.3)	47	45	44	42	41	40	38	37	36	35	34	33	32	31	30	29	28	28	27	26	26	25
205	(93.0)	46	44	43	41	40	39	37	36	35	34	33	32	31	30	29	29	28	27	26	26	25	24
200	(90.7)	45	43	42	40	39	38	37	35	34	33	32	31	30	30	29	28	27	26	26	25	24	24
195	(88.5)	44	42	41	39	38	37	36	35	33	32	31	31	30	29	28	27	26	26	25	24	24	23
190	(86.2)	43	41	40	38	37	36	35	34	33	32	31	30	29	28	27	26	26	25	24	24	23	23
185	(83.9)	41	40	39	37	36	35	34	33	32	31	30	29	28	27	27	26	25	24	24	23	23	22
180	(81.6)	40	39	38	36	35	34	33	32	31	30	29	28	27	27	26	25	24	24	23	22	22	21
175	(79.4)	39	38	37	35	34	33	32	31	30	29	28	27	27	26	25	24	24	23	22	22	21	21
170	(77.1)	38	37	36	34	33	32	31	30	29	28	27	27	26	25	24	24	23	22	22	21	21	20
165	(74.8)	37	36	34	33	32	31	30	29	28	27	27	26	25	24	24	23	22	22	21	21	20	20
160	(72.6)	36	35	33	32	31	30	29	28	27	27	26	25	24	24	23	22	22	21	21	20	19	19
155	(70.3)	35	34	32	31	30	29	28	27	27	26	25	24	24	23	22	22	21	20	20	19	19	18
150	(68.0)	34	32	31	30	29	28	27	27	26	25	24	23	23	22	22	21	20	20	19	19	18	18
145	(65.8)	33	31	30	29	28	27	27	26	25	24	23	23	22	21	21	20	20	19	19	18	18	17
140	(63.5)	31	30	29	28	27	26	26	25	24	23	23	22	21	21	20	20	19	18	18	17	17	17
135	(61.2)	30	29	28	27	26	26	25	24	23	22	22	21	21	20	19	19	18	18	17	17	16	16
130	(59.0)	29	28	27	26	25	25	24	23	22	22	21	20	20	19	19	18	18	17	17	16	16	15
125	(56.7)	28	27	26	25	24	24	23	22	21	21	20	20	19	18	18	17	17	16	16	16	15	15
120	(54.4)	27	26	25	24	23	23	22	21	21	20	19	19	18	18	17	17	16	16	15	15	15	14
115	(52.2)	26	25	24	23	22	22	21	20	20	19	19	18	17	17	16	16	16	15	15	14	14	14
110	(49.9)	25	24	23	22	21	21	20	19	19	18	18	17	17	16	16	15	15	15	14	14	13	13
105	(47.6)	24	23	22	21	21	20	19	19	18	17	17	16	16	16	15	15	14	14	13	13	13	12
100	(45.4)	22	22	21	20	20	19	18	18	17	17	16	16	15	15	14	14	14	13	13	12	12	12
95	(43.1)	21	21	20	19	19	18	17	17	16	16	15	15	14	14	14	13	13	13	12	12	12	11
90	(40.8)	20	19	19	18	18	17	16	16	15	15	15	14	14	13	13	13	12	12	12	11	11	11
85	(38.6)	19	18	18	17	17	16	16	15	15	14	14	13	13	13	12	12	12	11	11	11	10	10
80	(36.3)	18	17	17	16	16	15	15	14	14	13	13	13	12	12	11	11	11	11	10	10	10	9

Note: BMI values rounded to the nearest whole number. BMI categories based on CDC (Centers for Disease Control and Prevention) criteria.

Appendix B Standard SQ

Instructions: Next to each item below circle “yes” for items that are true or mostly true for you.
If you have a clicker, please press A for yes and B for no.

67. I have fasted/starved myself to lose weight.	yes	no
68. I sometimes lose control and eat an unusually large amount of food.	yes	no
69. I have blacked out from drinking too much alcohol.	yes	no
70. I have made myself vomit to control my weight.	yes	no
71. I have taken steroids to become more muscular.	yes	no
72. I have a strong fear of gaining weight or becoming fat.	yes	no
73. I sometimes avoid intimate contact because I am embarrassed by my body.	yes	no
74. I have/have had a sexually transmitted disease.	yes	no
75. I've had unprotected sex.	yes	no
76. I have used cocaine (crack, blow, coke).	yes	no
77. Have you ever used a prescription stimulant (e.g., Ritalin, Adderall, Concerta) without a prescription or in greater amounts than prescribed?	yes	no
78. I have avoided going out because I am uncomfortable with my appearance.	yes	no
79. Within the last year, I have went to work or school or drunk.	yes	no
80. My body weight and shape play a strong role in how I think about myself as a person.	yes	no
81. I've consumed alcohol until I was intoxicated.	yes	no
82. I have gotten into physical fights while drinking.	yes	no
83. I use energy or protein supplements to build muscle.	yes	no
84. I have used hallucinogens (LSD, PCP).	yes	no
85. I have driven a car when I knew I had too much to drink to drive.	yes	no
86. I have taken laxatives or diuretics to control my weight.	yes	no

Appendix C UCT A

Instructions: Below each set below place the number that matches the number of items in the set that are true or mostly true for you. DO NOT MARK the individual items that are true for you in anyway. It is important that the number of items true for you for each set is the only writing on these pages. This way you may rest assured that no one will know which individual items are true for you.

Set 1

- I drink coffee every morning or nearly every morning.
- I read the local newspaper almost every day.
- I eat dinner out at least twice a week.
- I know the name of the Chief Justice of the Supreme Court.

Number of items true: _____

Set 2

- I live in an apartment building.
- I have entered over 3 biking competitions in my lifetime.
- I type reasonably well.
- I have watched every episode of the TV show, "American Idol."
- I sometimes lose control and eat an unusually large amount of food.
- I have read "Grapes of Wrath."

Number of items true: _____

Set 3

- I am self-employed.
- I listen to music every day, or nearly every day.
- I have blacked out from drinking too much alcohol.
- I have a brother, who is more than 5 years older than me.
- I have a cell phone.

Number of items true: _____

Set 4

- I have ordered an item online at least once.
- I know the name of the governor of Minnesota and his political party.
- I have more than two children.
- I normally wear a wristwatch.

Number of items true: _____

Set 5

- I usually choose sugar-free or zero calorie soft drinks.
- I am an active, playing member of a soccer club.
- I have visited Orlando, Florida.
- I have a younger brother.
- In my free time I go jogging at least four times a week.

Number of items true: _____

Set 6

- I own more than 100 CD's.
- I wear glasses/contacts to correct my vision.
- I have a strong fear of gaining weight or becoming fat.
- I like the editorial section of the newspaper.
- I own my own shotgun.
- I have taken or am taking a class that focuses on art, such as ceramics or acting.

Number of items true: _____

Set 7

- My shoe size is a 5.
- I have one or more cats.
- I could tell you the name of the head football coach of the Dallas Cowboys.
- I have a Netflix account.
- I do not regularly smoke cigarettes.

Number of items true: _____

Set 8

- I like to rollerblade during the summer.
- I have a dishwasher in the kitchen of my permanent residence.
- I read USA Today several times a week.
- I read my horoscope everyday or nearly every day.

Number of items true: ____

Set 9

- I've had unprotected sex.
- I wanted to be an astronaut when I was a kid.
- I would consider myself a sport fan.
- I own one or more handguns.
- I read the book "The Pelican Brief."
- I work on a computer every day or nearly every day

Number of items true: ____

Set 10

- I take a shower within one hour of waking up in the morning every day or nearly every day.
- If I were to get a pet, I would prefer a cat to a dog.
- I regularly watch the TV game show, "Family Feud."
- I often eat dinner after 8 pm.

Number of items true: ____

Set 11

- I speak more than one language, fluently.
- I have you ever used a prescription stimulant (e.g., Ritalin, Adderall, Concerta) without a prescription or in greater amounts than prescribed
- I own more than one television.
- I have more than one flash drive.
- I have more than four siblings.
- I have been to the Bahamas.

Number of items true: ____

Set 12

- I see one or more movies a month in theaters.
- I've lived outside the U.S for more than 6 months.
- I own a car (i.e., the title of my car is in my name, not my parents' or another person's).
- I currently live in a residence hall.
- In my free time I listen to rap music at least once a week.

Number of items true: _____

Set 13

- I have been to Ireland.
- I have played the board game, "Guess Who?"
- I have seen the movie, "Funny Girl" that stars Barbra Streisand.
- I have been on an airplane more than twice.
- I do not normally eat breakfast.
- Within the last year, I have gone to work or school or drunk.

Number of items true: _____

Set 14

- I have a horse.
- My body weight and shape play a strong role in how I think about myself as a person.
- I have seen the movie, Napoleon Dynamite.
- I have a nephew.
- I go to the gym at least twice a week.
- I never drink soda.

Number of items true: _____

Set 15

- I use an electronic planner to schedule my appointments.
- I own a tablet (e.g. ipad, kindle fire).
- I can drive a motorcycle.
- I have read the entire book, "War and Peace."

Number of items true: _____

Set 16

- I subscribe to three or more magazines.

- I own a digital camera.
- I would consider myself a religious person.
- I eat only vegetarian dishes.
- I went to a private high school.

Number of items true: _____

Set 17

- I have a television in my bedroom.
- I have been to Spain more than once.
- At least twice a week, I watch television between the hours of 3 am and 6 am.
- I use energy or protein supplements to build muscle.
- I know what a “gigabyte” is.

Number of items true: _____

Set 18

- I’ve lived in at least 4 different states for at least 6 months.
- I have used hallucinogens (LSD, PCP).
- I have went to at least two weddings in the last year.
- I could tell you what time “2200” is.
- I have owned more than 5 computers so far in my lifetime.
- I went to a public high school.

Number of items true: _____

Set 19

- I know what a “balk” is in baseball.
- When I go to the movie theatre, I always buy popcorn to eat or share.
- I have driven a car when I knew I had too much to drink to drive.
- I go shopping at the mall more than once a week.
- I have served in some branch of the U.S. military.

Number of items true: _____

Set 20

- I take at least two vitamins every day.
- I played basketball in high school.
- I have flown in a helicopter.
- I could tell you what a “pearson r correlation” is.

Number of items true: _____

Appendix D

UCT B

Instructions: Below each set below place the number that matches the number of items in the set that are true or mostly true for you. **DO NOT MARK** the individual items that are true for you in anyway. It is important that the number of items true for you for each set is the only writing on these pages. This way you may rest assured that no one will know which individual items are true for you.

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- I read the local newspaper almost every day.
- I eat dinner out at least twice a week.
- I know the name of the Chief Justice of the Supreme Court.

Number of items true: _____

Set 2

- I live in an apartment building.
- I have entered over 3 biking competitions in my lifetime.
- I type reasonably well.
- I have watched every episode of the TV show, "American Idol."
- I have read "Grapes of Wrath."

Number of items true: _____

Set 3

- I am self-employed.
- I listen to music every day, or nearly every day.
- I have a brother, who is more than 5 years older than me.
- I have a cell phone.

Number of items true: _____

Set 4

- I have ordered an item online at least once.
- I know the name of the governor of Minnesota and his political party.
- I have made myself vomit to control my weight.

- I have more than two children.
- I normally wear a wristwatch.

Number of items true: _____

Set 5

- I usually choose sugar-free or zero calorie soft drinks.
- I am an active, playing member of a soccer club.
- I have visited Orlando, Florida.
- I have a younger brother.
- I have taken steroids to become more muscular.
- In my free time I go jogging at least four times a week.

Number of items true: _____

Set 6

- I own more than 100 CD's.
- I wear glasses/contacts to correct my vision.
- I like the editorial section of the newspaper.
- I own my own shotgun.
- I have taken or am taking a class that focuses on art, such as ceramics or acting.

Number of items true: _____

Set 7

- I sometimes avoid intimate contact because I am embarrassed by my body.
- My shoe size is a 5.
- I have one or more cats.
- I could tell you the name of the head football coach of the Dallas Cowboys.
- I have a Netflix account.
- I do not regularly smoke cigarettes.

Number of items true: _____

Set 8

- I like to rollerblade during the summer.
- I have a dishwasher in the kitchen of my permanent residence.
- I read USA Today several times a week.
- I read my horoscope everyday or nearly every day.
- I have/have had a sexually transmitted disease.

Number of items true: _____

Set 9

- I wanted to be an astronaut when I was a kid.
- I would consider myself a sport fan.
- I own one or more handguns.
- I read the book “The Pelican Brief.”
- I work on a computer every day or nearly every day.

Number of items true: _____

Set 10

- I take a shower within one hour of waking up in the morning every day or nearly every day.
- If I were to get a pet, I would prefer a cat to a dog.
- I regularly watch the TV game show, “Family Feud.”
- I have used cocaine (crack, blow, coke).
- I often eat dinner after 8 pm.

Number of items true: _____

Set 11

- I speak more than one language, fluently.
- I own more than one television.
- I have more than one flash drive.
- I have more than four siblings.
- I have been to the Bahamas.

Number of items true: _____

Set 12

- I see one or more movies a month in theaters.
- I’ve lived outside the U.S for more than 6 months.
- I own a car (i.e., the title of my car is in my name, not my parents’ or another person’s).
- I currently live in a residence hall.
- I have avoided going out because I am uncomfortable with my appearance.
- In my free time I listen to rap music at least once a week.

Number of items true: _____

Set 13

- I have been to Ireland.
- I have played the board game, “Guess Who?”
- I have seen the movie, “Funny Girl” that stars Barbra Streisand.
- I have been on an airplane more than twice.
- I do not normally eat breakfast.

Number of items true: _____

Set 14

- I have a horse.
- I have seen the movie, Napoleon Dynamite.
- I have a nephew.
- I go to the gym at least twice a week.
- I never drink soda.

Number of items true: _____

Set 15

- I’ve consumed alcohol until I was intoxicated.
- I use an electronic planner to schedule my appointments.
- I own a tablet (e.g. ipad, kindle fire).
- I can drive a motorcycle.
- I have read the entire book, “War and Peace.”

Number of items true: _____

Set 16

- I subscribe to three or more magazines.
- I own a digital camera.
- I would consider myself a religious person.
- I eat only vegetarian dishes.
- I went to a private high school.
- I have gotten into physical fights while drinking.

Number of items true: _____

Set 17

- I have a television in my bedroom.
- I have been to Spain more than once.
- At least twice a week, I watch television between the hours of 3 am and 6 am.
- I know what a “gigabyte” is.

Number of items true: _____

Set 18

- I’ve lived in at least 4 different states for at least 6 months.
- I have went to at least two weddings in the last year.
- I could tell you what time “2200” is.
- I have owned more than 5 computers so far in my lifetime.
- I went to a public high school.

Number of items true: _____

Set 19

- I know what a “balk” is in baseball.
- When I go to the movie theatre, I always buy popcorn to eat or share.
- I go shopping at the mall more than once a week.
- I have served in some branch of the U.S. military.

Number of items true: _____

Set 20

- I take at least two vitamins every day.
- I played basketball in high school.
- I have flown in a helicopter.
- I could tell you what a “pearson r correlation” is.
- I have taken laxatives or diuretics to control my weight.

Number of items true: _____

Appendix E Anonymity Questionnaire

We're interested in the extent to which you believe the information you just provided was *anonymous*. *Anonymous* means that there is no way for any other person to know how you responded to the questionnaires. In other words, your identity is in no way attached to your responses

196. Using the following scale, how anonymous do you believe your responses on the questionnaire you just completed were?
- a. (1) Not at all anonymous
 - b. (2)
 - c. (3)
 - d. (4)
 - e. (5)
 - f. (6)
 - g. (7)
 - h. (8) Completely anonymous

Appendix F
EDE-Q Tables

Table 12. Results of the Logistic Regression Analyses for the EDE-Q Item "Over the past 28 days, on how many **DAYS** have such episodes of overeating occurred (i.e., you have eaten an unusually large amount of food and have had a sense of loss of control at the time)?"

Variable	Exp (B)	Wald Chi-Square	<i>p</i>
Intercept	.44	15.61	<.001
Age (18 years old)	--	1.50	.83
19 years old	.96	0.031	.86
20 years old	.90	0.096	.76
21-25 years old	1.24	0.34	.56
26+ years old	2.16	0.85	.36
Sex (Male)	1.20	0.59	.44
Ethnicity (Non-Hispanic)	1.44	0.58	0.45
Group (Conventional)	0.86	0.46	.50
Negative Urgency	1.03	1.76	.19
Positive Urgency	1.03	2.19	.14
Affect Intensity	1.16	2.31	.13

N = 400, *Note:* Parentheses surround the level used as the index for variables with comparisons.

Table 13. Results of the Logistic Regression Analyses for the EDE-Q Item "Over the past 28 days, how many times have you made yourself sick (vomit) as a means of controlling your shape or weight?"

Variable	Exp (B)	Wald Chi-Square	<i>p</i>
Intercept	0.074	52.85	<.001
Age (18 years old)	--	0.96	.92
19 years old	0.67	.80	.37
20 years old	.70	.38	.54
21-25 years old	.77	.19	.67
26+ years old	.93	.003	.96
Sex (Male)	2.06	3.81	.05
Ethnicity (Non-Hispanic)	1.31	0.13	.72
Group (Conventional)	1.012	0.001	.98
Negative Urgency	1.037	0.94	.33
Positive Urgency	.98	0.50	.48
Affect Intensity	.82	0.003	.20

N = 400, *Note*: Parentheses surround the level used as the index for variables with comparisons.

Table 14. Results of the Logistic Regression Analyses for the EDE-Q Item "Over the past 28 days, how many times have you taken laxatives as a means of controlling your shape or weight?"

Variable	Exp (B)	Wald Chi-Square	<i>p</i>
Intercept	0.017	49.15	<.001
Age (18 years old)	--	0.28	.99
19 years old	1.36	0.27	.60
20 years old	1.19	0.056	.81
21-25 years old	1.16	0.036	.85
26+ years old	<0.00001	0.000003	.99
Sex (Male)	0.87	5.59	.018
Ethnicity (Non-Hispanic)	6.61	8.05	.005
Group (Conventional)	3.42	0.074	.79
Negative Urgency	1.03	0.34	.56
Positive Urgency	0.99	0.052	.82
Affect Intensity	0.57	6.86	.009

N = 401, *Note:* Parentheses surround the level used as the index for variables with comparisons.

Table 15. Results of the Logistic Regression Analyses for the EDE-Q Item "Over the past 28 days, how many times have you exercised in a 'driven' or 'compulsive' way as a means of controlling your weight, shape or amount of fat or to burn off calories?"

Variable	Exp (B)	Wald Chi-Square	<i>p</i>
Intercept	0.52	10.54	.001
Age (18 years old)	--	0.71	.95
19 years old	1.04	0.029	.87
20 years old	0.80	0.43	.52
21-25 years old	1.01	0.001	.98
26+ years old	0.73	0.12	.73
Sex (Male)	0.96	0.031	.86
Ethnicity (Non-Hispanic)	1.28	0.31	.58
Group (Conventional)	1.11	0.24	.63
Negative Urgency	1.01	0.076	.78
Positive Urgency	1.02	1.05	.31
Affect Intensity	1.21	3.94	.05

N = 401, *Note:* Parentheses surround the level used as the index for variables with comparisons.

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