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ABSTRACT OF THESIS

Melissa A. Cyders

The Graduate School
University of Kentucky
2005

THE DEVELOPMENT AND VALIDATION OF A MEASURE OF POSITIVE
URGENCY

ABSTRACT OF THESIS

A thesis submitted in partial fulfillment of the requirements for the degree of Master of
Science in the College of Arts and Sciences

By
Melissa A. Cyders

Lexington, Kentucky

Director: Gregory T. Smith, Ph. D., Professor of Clinical Psychology

Lexington, Kentucky

2005

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ABSTRACT OF THESIS

DEVELOPMENT AND VALIDATION OF A MEASURE OF POSITIVE URGENCY

The aim of the current series of studies was to begin the process of examining whether a propensity to act rashly in response to positive affective states (*positive urgency*) increases the likelihood of engaging in risky, maladaptive, and harmful acts. We theorized that this trait may account for some types of risky drinking behavior not explained by other risk factors, particularly for college students. In the current series of studies, an internally consistent ($\alpha=.94$), unidimensional scale was developed. This scale was shown to have convergent validity across methods and discriminant validity from other types of impulsivity. For both alcohol use and risky behavior, positive urgency explained variance not explained by other forms of impulsivity. Cross-sectional tests were consistent with the hypothesis that positive urgency leads to positive alcohol expectancies, which lead to increased drinking, which leads to involvement in risky behavior. This possibility should be examined prospectively.

KEYWORDS: Impulsivity, Drinking, Alcohol, Positive Affect, Risky Behavior

Melissa A. Cyders

April 19, 2005

DEVELOPMENT AND VALIDATION OF A MEASURE OF POSITIVE URGENCY

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2005

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Chapter One

Introduction

The aim of this series of studies was to test the possibility that there is a form of impulsivity that involves the tendency to act rashly or maladaptively in response to positive mood states and that individual difference on this trait help to account for risky behavior. This possibility stems from the following concerns. First, there is evidence that the term “impulsivity” actually subsumes several, moderately related constructs that play different roles in accounting for risky behavior. However, none of the existing constructs reflects the capacity for risk-taking in response to positive moods. Second, there is suggestive evidence that risky and maladaptive behaviors can follow very positive mood. Celebratory riots on college campuses after important sports wins and the risky behaviors undertaken on college spring breaks are just two examples. I describe here the development of a measure of this trait, referred to here as positive urgency, and the initial evidence for its role in explaining risky behavior.

The Importance of Subtypes of Impulsivity

Researchers have provided varying definitions of impulsivity. One common definition is that impulsivity is, simply, acting without thinking. However, researchers have actually defined the construct of impulsivity in many different ways. Varying operationalizations have included acting without thinking, the inability to concentrate, impulse control, novelty seeking, time orientation, the tendency to seek out novel and thrilling experiences, and the tendency to become easily distracted (APA, 1994; Whiteside & Lynam, 2001). It is an emerging view that impulsivity is a broad term that includes a variety of different components or facets (Bagby, Joffe, Parker, & Schuller, 1993; Depue & Collins, 1999; Evendon, 1999; Eysenck & Eysenck, 1977; Fischer, Smith, & Cyders, 2004; Petry, 2001; Whiteside & Lynam, 2001; Zuckerman, 1994).

Whiteside & Lynam (2001) recently offered a useful description of the facets underlying impulsivity. They conducted a factor analysis of several major self-report measures of impulsivity and found four factors: *sensation seeking* (tendency to seek out novel and thrilling experiences), *lack of deliberation* (tendency to act without thinking),

lack of perseverance (inability to remain focused on a task), and *urgency* (tendency to act rashly when faced with distress).

There is considerable evidence that these four factors represent distinct constructs. First, each corresponds to a facet of one of the big five personality traits. Sensation seeking is a facet of extraversion, lack of deliberation can be thought of as the deliberation facet of conscientiousness, lack of perseverance can be thought of as the self-discipline facet of conscientiousness, and urgency can be thought of as the impulsive facet of neuroticism. This theoretical perspective was confirmed by factor analysis (Whiteside & Lynam, 2001). Fischer, Smith, Cyders, and McCarthy (2005) conducted a multitrait, multimethod study of these constructs. They found both clear convergent validity and clear discriminant validity evidence for each construct. In addition, several studies have demonstrated that these four constructs have different correlates and explain different aspects of risky behavior (Fischer, Anderson, & Smith, 2004; Fischer, Smith, & Cyders, 2005, in press; Fischer & Smith, 2005; Fischer et al., 2005; Miller, Flory, Lynam, & Leukefeld, 2003).

A New Type of Impulsivity: Positive Urgency

I propose that there is an additional type of impulsivity, referred to here as positive urgency: the tendency to respond to very positive mood by engaging in rash, maladaptive action. Anecdotal reports of maladaptive celebrations certainly suggest that rash action can follow a positive, celebratory mood. For example, the Oct. 22 fires that were set in celebration after the West Virginia Mountaineers football team beat Virginia Tech (“WVU cracks down,” 2004) or the November 24th riots in Columbus, Ohio following the football win by Ohio State University over Michigan (“Ohio State suspends,” 2002), indicate that acting out while celebrating can often turn out to be not only maladaptive, but also dangerous. The same inference can be made concerning the rash, risky behavior of some college students on spring break.

There is empirical evidence consistent with this possibility. For example, undergraduate students are more likely to drink on days of celebration than during the week (Del Boca, Darkes, Greenbaum, & Goldman, 2004; Kornefel, 2002). That drinking tends to be quite heavy and associated with increased experience of physical violence,

alcohol-related injuries and deaths, driving while under the influence, and unwanted sexual intercourse (Del Boca et. al., 2004).

Relatedly, there is evidence that some individuals engage in risky drinking in order to enhance an existing positive mood (Cooper, Agocha, & Sheldon, 2000). Cooper et al. (2000) found that extraverted individuals were likely to drink in order to enhance positive affective experience. Drinking for mood enhancement motives tended to lead to increased drinking, more drinking-related problems, and increased involvement in risky behaviors.

Given that some individuals tend to drink to enhance existing positive moods, and given that college students tend to drink during days of celebration, and given that this tends to result in negative outcomes, it seems important to understand the personality basis for this tendency. One possibility is that the trait of sensation seeking underlies positive mood-based risky action. However, sensation seeking items do not appear to tie risk-taking to positive mood states. I believe there is an additional, as yet unstudied, construct that involves rash action specifically in response to positive mood.

The first step in examining this possibility was to develop a measure of positive urgency. I developed a series of items to fully tap the construct of positive urgency, subjected them to content validity analysis by trained raters, examined their psychometric properties and determined their factor structure in a large, development sample. I then examined the validity of the construct across measurement methods by developing an interview version of the measure and conducting multitrait multimethod analyses with a set of impulsivity facets. Finally, I analyzed positive urgency's predictive role by testing its bivariate relations with risky behaviors and alcohol use, testing its incremental validity over sensation seeking, and then testing its incremental validity over all four impulsivity facets identified by Whiteside and Lynam (2001).

Chapter Two

Study One: Item Development and Refinement

The original positive urgency items were either developed on an a priori, theoretical basis or were adapted from the negative urgency items on the UPPS-R (Whiteside & Lynam, 2001). This process resulted in 17 items. Three expert raters (graduate students with extensive knowledge of substance abuse disorders and the relation between these disorders and impulsivity) then received the 17-item scale, along with the Impulsivity Scale – Revised (UPPS-R: Whiteside & Lynam, 2001) and the Drinking Motives Questionnaire (DMQ: Cooper, 1994), for content validity ratings. Following training with sample items, they judged each of the 63 items in the pool on the extent to which they were prototypic of positive urgency and distinct from the other constructs.

Results

Positive urgency items that two of the three experts mis-categorized were deleted. Three items met these criteria. There was 100% agreement that the remaining 14 items reflected positive urgency, and no rater mis-labeled an item from any other scale as a positive urgency item. The full set of items resulting from this study is listed in Table 1 from Study 2.

Table 2.1

Exploratory Factor Loadings for Positive Urgency Measure Items (Principal Factor Analysis)

Item	Factor One	Factor Two
When I am very happy, I can't seem to stop myself from doing things that can have bad consequences.	.83	-.03
When I am in great mood, I tend to get into situations that could cause me problems.	.83	.05
When I am very happy, I tend to do things that may cause problems in my life.	.81	-.31
I tend to lose control when I am in a great mood.	.79	-.20
When I am really ecstatic, I tend to get out of control.	.78	-.16
Others would say I make bad choices when I am extremely happy about something.	.77	-.36
Others are shocked or worried about the things I do when I am feeling very excited.	.75	-.19
When I get really happy about something, I tend to do things that can have bad consequences	.73	.11
When overjoyed, I feel like I can't stop myself from going overboard.	.73	.25
When I am really excited, I tend not to think of the consequences of of my actions.	.72	.29
I tend to act without thinking when I am really excited.	.70	.27
When I am really happy, I often find myself in situations that I normally wouldn't be comfortable with.	.66	-.00
When I am very happy, I feel like it is ok to give in to cravings or overindulge.	.56	.19
I am surprised at the things I do while in a great mood.	.54	.32

Chapter Three

Study Two: Factor Analysis and Screening Stage

Study two consisted of a factor analytic investigation of the 14 positive urgency items as well as initial evidence for positive urgency's correlation with risky behavior.

Method

Participants

The study two sample included 1322 undergraduate students at the University of Kentucky. Sixty-four percent of the sample was female and 36% male. Sixty-five percent of the sample were freshmen, 21% sophomores, 8% juniors, and 3% were seniors.

Measures

Positive Urgency Measure (PUM). The psychometric evaluation of the newly-developed PUM was the object of this investigation and the results of that evaluation are described below. In this developmental sample, the PUM had an internal consistency of .94. The average inter-item correlation was .53, with a range of .32 to .74.

Drinking Styles Questionnaire (DSQ). The DSQ (Smith, McCarthy, & Goldman, 1995) gathers information about an individual's alcohol use. The DSQ provides two alcohol use subscales. The drinking/drunkenness scale includes quantity of consumption, frequency of consumption, proportion of time drinking leads to drunkenness, maximum quantity consumed, and physical effects. Cronbach's alpha for the developmental sample was reported as .94 (Smith et al., 1995). Test-retest reliability was reported as .89 and scores correlated .62 with collateral reports (Smith et al., 1995). Two items from this scale were included in this sample assessing how often the individual consumes alcohol and how much the individual usually consumes at one time. These two items were correlated .78 in the current sample and had an internal consistency of .87.

Procedure

The PUM and two DSQ items were given, anonymously and together with several other measures unrelated to this study, in a group setting to 1322 undergraduate students.

In order to conduct an exploratory factor analysis on this new measure and then confirm the structure on an independent sample, the full sample was divided randomly into two subsamples ($n = 666$ for the exploratory subsample and $n = 656$ for the confirmatory subsample). I conducted the exploratory factor analysis in two ways, using both principle components analysis with orthogonal rotation between factors and principle factor analysis using oblique factor rotation (i.e., allowing factors to be intercorrelated). I hoped to identify a factor structure that was consistent across factor method. Once a factor solution was determined, I specified that structure and conducted a confirmatory factor analysis on the second subsample. Two omnibus fit indices were selected for those analyses: the comparative fit index (CFI; Bentler, 1990) and the root mean square error of approximation (rmsea; Marsh, Balla, & Hau, 1996). The CFI value estimates the percentage of variance in the items that is explained by the factor model. Convention holds that a CFI exceeding .90 indicates acceptable fit. The rmsea statistic provides a measure of the discrepancy between the actual covariances in the data and those specified by the model. Using the convention provided Browne and Cudeck (1993), close fit is identified by a value of .05, fair fit by a value of .08, and marginal fit by a value of .10. Confidence intervals for rmsea can be computed.

Results

The first exploratory factor analysis was a principle components analysis with orthogonal factor rotation. Consideration of the eigenvalues of the resulting factors suggested the possibility of a two-factor solution. The first factor had an Eigenvalue of 7.92, accounting for 57% of the total variance; the second factor a value of 1.11 and accounted for 8% of the total variance. However, examination of the scree plot indicated that many factors had eigenvalues similar to that of factor two, suggesting that one factor best explained the item scores. Most importantly, all items loaded more highly on factor one than they did

on factor two. Those factor one loadings were quite high, ranging from .57 to .84. The average inter-item correlation was .53.

I replicated this analysis using principle factor analysis with oblique factor rotation. That analysis produced the same eigenvalues and virtually the same scree plot. I therefore concluded that a one-factor solution best fit the data for the first subsample. Item factor loadings from the principle factor analysis are presented in Table 1.

I next subjected the one-factor solution to confirmatory factor analysis on the second sample. I parceled the PUM items sequentially into 4 parcels, so that the first parcel had items 1, 5, 9, and 13; the second parcel had items 2, 6, 10, and 14; the third had items 3, 7, and 11; and the fourth had items 4, 8, and 12. The scores on these parcels were then averaged, to avoid giving the four-item parcels disproportionate weight because of their greater variance. By grouping items together in parcels, one creates more stable indicators of the latent construct (a parcel of four items is a better estimate than a single item). Doing so is justifiable when the items have been shown to intercorrelate highly on an independent sample and have been judged as homogeneous in content, both of which were demonstrated in my first subsample (Little, Cunningham, Shahar, & Widaman, 2002).

I used M+ Structural Equation Modeling software to test the fit of the one-factor solution. The model showed CFI of 1.0, with a rmsea of .004 (90% confidence interval from .000 to .077). The parcel loadings ranged from .95 to 1.0. Additionally, the PUM showed an internal consistency of .94 in the combined sample ($n = 1322$).

To provide the first estimation of whether positive urgency relates to risky behavior, I correlated the one-factor PUM with two drinking items. It correlated with both drinking frequency ($r = .26, p < .001$) and drinking quantity ($r = .28, p < .001$) in the combined sample.

Study One and Study Two Discussion

Study one demonstrated that a content-valid measure of positive urgency was developed. Study two showed that the positive urgency measure comprises one, single factor: that finding was demonstrated on two large, independent samples. Typical

procedures for evaluating a hypothesized factor structure involve comparing the model to plausible alternative models. Based on the exploratory factor analysis from the first subsample, however, there was no plausible alternative. Therefore, the confirmatory factor analysis focused on simply replicating the one-factor solution. The positive urgency scale is internally consistent, and it correlates with two, single-item measures of one form of risky behavior: alcohol consumption by college students, most of whom were minors.

Chapter Four

Study Three: Reliability/Validity Analysis and Multi-method assessment

The specific aim of study three was to demonstrate, through the use of a multitrait multimethod analysis, that positive urgency has convergent validity across method of assessment and that it has discriminant validity from other types of impulsivity.

Attempting to discriminate positive urgency from similar impulsivity facets involves a stringent test of discriminant validity. Another goal of this study was to examine positive urgency's associations with measures of risky behavior. Bivariate relations between positive urgency and risky behaviors were examined. In addition, two sets of incremental validity tests were performed. The first examined whether positive urgency explained variance in risky behavior beyond that explained by sensation seeking, because sensation seeking and positive urgency may be similar, or perhaps overlapping, constructs. The second examined whether positive urgency accounted for risky behaviors beyond that provided by all four of the other facets of impulsivity.

Study three also provided an initial test of a theoretical model concerning the role of positive urgency in explaining alcohol consumption and its sequelae. I believe positive urgency leads individuals to form more positive expectancies for drinking (i.e., they expect more benefits from consumption: Fischer, Smith, Spillane, & Cyders, in press). Positive expectancies, in turn, influence alcohol consumption (Smith, Goldman, Greenbaum, & Christiansen, 1995), and perhaps alcohol consumption influences the likelihood of engaging in delinquent acts. I conducted a series of cross-sectional tests to determine whether the correlations among these variables were consistent with my hypothesized mediational relationships. If they were not, this model would be unlikely to be valid; if they did support the model, there would be reason to test it with prospective data.

The final goal of study three was to test whether the role of positive urgency in alcohol consumption was conditional. One motive for drinking that has been identified in the literature is the motive to drink to enhance an existing positive mood (Cooper, 1994). If positive urgency leads to drinking, perhaps it does so specifically for individuals who

are seeking to enhance their positive affective state. I tested whether the relationship between positive urgency and drinking was exclusive to individuals who endorsed the mood enhancement drinking motive. If it is, then perhaps one reason why positive urgency leads to drinking is to further facilitate one's positive mood.

Method

Participants

The sample for study three consisted of 326 college student participants. They ranged from 17-52 years in age. Fifty-seven percent of the sample was 18 years old at the time of sampling, 22% were 19 years old, and the mean age for the sample was 19.1 years old. Fifty-two percent of the sample was male and 67% indicated they were in their first year of college. African-Americans made up 4% of the sample, European-Americans 87%, Asian-Americans 3%, Hispanic-Americans 2% and Other 9%. Of these 326 participants, 186 also completed an interview assessment of positive urgency, as described below. The interview subsample did not differ from the full, $n = 326$ sample on any demographic variable. The 326 participants were a subset of the study two sample of 1,322.

Measures

The Positive Urgency Measure (PUM). The PUM was described above. The scale showed an internal consistency of .94 in the study three sample.

The Positive Urgency Measure-Interview version. An interview version (PUM-I) of the PUM was developed for use in this study. Items were taken from the current PUM and were placed on a scale of 0 - 2, with 0 indicating no exhibition of positive urgency and 2 indicating a high level of positive urgency. Each item consisted of two questions: the first question seeks to distinguish between individuals who show no positive urgency from those who show some level of positive urgency. Then the follow-up question is asked to those who responded positively to the first question, in order to determine the level of positive urgency the individual exhibits. A sample item is as follows: *When you are in a great mood, do you often do things that could cause problems in your life?* If yes,

Do you feel like this is a problem for you most of the time when you are in a great mood?
In the current sample, the PUM-I had an internal consistency of .74.

The UPPS Impulsivity Scale-Revised. The UPPS-R (Whiteside & Lynam, 2001) is a likert type scale used to assess levels of four different types of impulsivity (internal consistencies in parentheses): urgency (.87), (lack of) deliberation (.91), (lack of) persistence (.82), and sensation seeking (.90). Items are assessed on a 1-4 scale, from “agree strongly” to “disagree strongly.” Fischer et al. (2005) showed that the four facets of impulsivity on the UPSS-R showed convergent and discriminant validity and differentially predicted alcohol use, alcohol problems, binge eating, gambling behaviors, and college grade point average.

The UPPS Impulsivity Scale-Revised-Interview version. An interview version of the UPPS-R was developed by Fischer et al. (2005). Items were developed from the existing UPPS-R (Whiteside & Lynam, 2001) and were placed on a scale of 0-2. Items consist of two questions: the first item screens individuals who show no impulsive behavior from those who show some impulsive behavior. Then, a follow-up question is asked to determine the level of impulsive behavior the individual shows. For example, *Do you generally like to see things through to the end?* would be followed-up with *Would it bother you if something distracted you from being able to see it through?* The scale is made up of 44 items that are divided into four subscales: negative urgency, sensation seeking, lack of deliberation, and lack of perseverance. In the current sample, the total scale had an internal consistency of .64, with each subscale having the following internal consistencies: Negative urgency (.79), Sensation seeking (.80), Lack of deliberation (.82), and Lack of perseverance (.73). The interrater reliabilities for the current study are negative urgency (1.0), sensation seeking (.93), lack of perseverance (.85), and lack of deliberation (.82).

The A.E.Max. The A.E.Max (Goldman & Darkes, 2004) is a 24-item self-report measure that assesses one’s beliefs about the effects of alcohol consumption. The A.E.Max has eight intercorrelated first order dimensions: alcohol makes one social, horny, attractive, egotistical, dangerous, sick, sleepy, and woozy. These first order dimensions can be thought to represent one of three main content areas: (a) positive arousing effects, (b) negative arousing effects, and (c) both positive and negative sedating

effects (Goldman & Darkes, 2004). Test-takers rate the frequency with which they expected alcohol would result in each alcohol effect on a 7-point Likert-type scale ranging from 0 = never to 6 = always. The scale has been shown to significantly predict alcohol use ($R^2 = .29, p < .001$) and alcohol involvement ($R^2 = .35, p > .001$) after one year in a college-aged sample.

Drinking Styles Questionnaire (DSQ). The DSQ (Smith et al., 1995) gathers information about an individual's alcohol use. The DSQ provides two alcohol use subscales. The drinking/drunkenness scale includes quantity of consumption, frequency of consumption, proportion of time drinking leads to drunkenness, maximum quantity consumed, and physical effects. Cronbach's alpha for the developmental sample was reported as .94 (Smith et al., 1995). Test-retest reliability was reported at .89 and scores correlated .62 with collateral reports (Smith et al., 1995). The alcohol-related problems scale includes problems related to arrests, vandalism, and fights with friends and family. Cronbach's alpha in this sample was .84. Test-retest reliability was reported at .81; scores correlated with .36 with collateral reports (Smith et al., 1995).

The Drinking Motives Questionnaire (DMQ). The four factor DMQ (Cooper, 1994) reflects four main motivations for drinking, including coping motives (drinking to cope or deal with negative affect), enhancement motives (drinking to enhance positive motives), social motives (drinking to increase socialization), and conformity motives (such as drinking to fit in with a group). Items on this questionnaire are rated on a 1 (almost never/never) to 5 (almost always/always) likert scale. Each factor has an internal consistency of .84 - .85 and each item loads uniquely on one of the four factors (Cooper, 1994). In the current sample, the measure had an internal consistency of .95 ($n = 321$).

Negative Outcome Scale (NEGO). This scale assesses the frequency of participating in risk taking activities that are likely to have a negative outcome (Fischer & Smith, 2004). It consists of 11 items measuring risky or impulsive behaviors. The items ask the individual to indicate how many times in the past year they have participated in a range of activities, with answers ranging from 1 (participated in this activity 0 times in the past year) to 5 (participated in this activity 16 or more times in the past year). Items were chosen to represent a wide range of risk level. Sample items include riding in a car without a seatbelt, shoplifting or stealing something under \$100, trespassing, and having

sex with someone who was married to or involved with someone else. In the current sample, this scale had an internal consistency of .66 with a mean endorsement level of 1.57.

Procedure

Of the 1,322 individuals who completed the PUM for study two, 326 completed the PUM questionnaire version a second time, approximately 4 to 8 weeks later, along with the above measures. Of the 326 participants, 186 also completed the interview measures. Four individuals were trained to administer the PUM and UPPS-R interview measures. All interviews were audiotape recorded. Each interview was scored by both the interviewer conducting the interview and by one other interviewer, using the audiotape.

Results

Reliability Analyses

I first estimated the test-retest reliability of the PUM questionnaire version by correlating PUM scores for the 326 participants across the 4-8 week interval. That correlation was $r = .68, p < .001$. Each PUM interview assessment resulted in two PUM scores, one from the interviewer and one from the audiotape. The interrater reliability correlation for the interview and the rated version of the PUM was $r = .98$.

Convergent and Discriminant Validity of the PUM

As evidence of convergent validity, self-report positive urgency and the interview positive urgency were correlated $r = .65 (p < .001)$. The across-method correlations for the other types of impulsivity are as follows: negative urgency ($r = .64$), sensation seeking ($r = .74$), lack of planning ($r = .57$), and lack of persistence ($r = .56$). These across-method correlations were higher than any of the cross-construct, inter-method correlations (See table 2 for MTMM correlation matrix).

As evidence of discriminant validity, positive urgency was differentially correlated with the other types of impulsivity. Positive urgency was most highly related to negative urgency ($r = .49$ for self-report). Positive urgency was also related to sensation seeking, as predicted, at $r = .22$. Positive urgency was also related to the other types of impulsivity (lack of planning $r = .19$ and lack of persistence $r = .32$).

Correlates of positive urgency: drinking variables

In the current study, the relationship between positive urgency and alcohol consumption that was found in study 2 was replicated: positive urgency was correlated with drinking frequency ($r = .22, p < .001$) and drinking quantity ($r = .27, p < .001$). Positive urgency was significantly related to both drinking symptoms ($r = .24, p < .001$) and drinking problems ($r = .23, p < .001$).

Positive urgency was positively related to expectancies for positive outcomes from drinking ($r = .24, p < .001$). These positive, arousing effects include: drinking makes one more social ($r = .14, p < .05$), drinking makes one more sexually active ($r = .14, p < .05$), and drinking makes one more attractive ($r = .27, p < .001$). The PUM was also significantly correlated with all drinking motives defined by Cooper (1994): social drinking motives ($r = .23, p < .001$), coping drinking motives ($r = .31, p < .001$), enhancement drinking motives ($r = .19, p < .001$), and conformity drinking motives ($r = .29, p < .001$). The PUM-I was only significantly correlated with conformity drinking motives ($r = .17, p < .05$).

Correlates of positive urgency: other acting out behaviors

Positive urgency was related to the measure of risk-taking behaviors likely to have a negative outcome ($r = .38, p < .001$). It correlated with many of the specific risky behaviors: riding in a car without a seatbelt ($r = .26, p < .001$), accepting a ride from a stranger ($r = .18, p < .001$), vandalizing school property ($r = .16, p < .001$), trespassing ($r = .22, p < .001$), having sex with an involved or married person ($r = .24, p < .001$), and cheating on an exam ($r = .21, p < .001$).

Predictive and Incremental Prediction of Positive Urgency

In order to test the hypothesis that positive urgency is distinct from sensation seeking, we conducted three multiple regression analyses to test whether positive urgency predicted variance over and above that predicted by sensation seeking. The first hierarchical regression used sensation seeking in the first step and positive urgency in the second step with the DSQ drinking symptoms scale as the dependent variable. I centered both independent variables in order to reduce multicollinearity, as recommended in Cohen, Cohen, Aiken, & West (2003). The results showed that positive urgency was able

to predict additional variance in drinking symptoms, over and above sensation seeking (R^2 change = .03, $p < .001$) (See Table 3).

The second analysis examined positive urgency's ability to predict DSQ drinking problems beyond sensation seeking. Once again, positive urgency was able to predict a significant amount of additional variance in drinking problems, over and above that which could be predicted by sensation seeking (R^2 change = .04, $p < .001$) (See Table 4).

The third analysis used the scale measuring risk taking with likely negative outcomes as the dependent variable and the same independent variables as in the first two analyses. Once again, positive urgency predicted unique variance in risky behaviors, over and above sensation seeking (R^2 change = .05, $p < .001$) (See Table 5).

In order to subject positive urgency to a more stringent test of incremental validity, we conducted three additional hierarchical multiple regression analyses, using the four types of impulsivity defined by Whiteside & Lynam (2001) in the first step (negative urgency, sensation seeking, lack of deliberation, and lack of perseverance), with positive urgency entered into the second step. Positive urgency predicted a significant amount of variance in risk taking with negative outcomes above and beyond the other four types of impulsivity (R^2 change = .02, $p < .05$) (Table 6). For the two drinking variables, the DSQ drinking symptoms scale and the DSQ drinking problems scale, positive urgency was unable to predict a significant amount of unique variance above and beyond the other types of impulsivity (R^2 change = .004, $p = .26$ for symptoms and R^2 change = .001, $p = .46$ for problems).

Mediated Relationships

I conducted a sequence of statistical tests of mediation, to provide an initial, cross-sectional test of the mediational process described above. The first proposed mediational relationship was the mediation of positive urgency on drinking symptoms by positive alcohol expectancies. When alone in the model, both positive urgency and positive alcohol expectancies significantly predicted drinking symptom level. However, when positive expectancies and positive urgency were both included in the model, the beta weight for positive urgency was reduced from $\beta = .22$ ($p < .001$) to $\beta = .12$ ($p < .05$). Testing this reduction for significance, using the test described by MacKinnon, Krull, & Lockwood (2000), showed that positive alcohol expectancies may have partially

mediated the relationship between positive urgency and drinking symptoms ($t = 3.77, p < .05$) (See Figure 1).

Second, I tested whether the pattern of correlations was consistent with the hypothesis that drinking symptoms mediates the influence of positive urgency on risky behavior (i.e., positive urgency leads to increased drinking, which leads to risky behavior). The proposed model for this relationship is shown in Figure 2. When alone in the model, both positive urgency and drinking symptoms were able to significantly predict risky behaviors. However, when the drinking symptoms measure was added into the model with positive urgency, the beta weight for positive urgency was reduced from $\beta = .29 (p < .001)$ to $\beta = .19 (p < .05)$. Testing this reduction in the beta weight showed that drinking symptoms may have partially mediated the relationship between positive urgency and participation in risky behaviors ($t = 3.68, p < .05$).

I then tested the model that positive alcohol expectancies' influence on risky behaviors is moderated by drinking symptoms. When alone in the model, positive alcohol expectancies were able to significantly predict risky behaviors. However, when DSQ drinking symptoms was added into the model, the beta weight for positive alcohol expectancies was reduced from $\beta = .21 (p < .001)$ to $\beta = .01 (p > .05)$. Testing this reduction in beta weight for significance, I found that drinking symptoms appeared to fully mediate the effect of positive alcohol expectancies on risky behaviors ($t = 5.76, p < .01$). This model is depicted in Figure 3.

Moderated Relationship: Positive Urgency and Mood Enhancement

I also tested whether the trait of positive urgency interacted with drinking motives to explain drinking behavior. As anticipated, there was a significant interaction between positive urgency and DMQ defined enhancement drinking motives on drinking problems (See Table 7). I probed this interaction using the guidelines in Cohen et al. (2003) to see the effects of each variable at high and low levels of the other variable. Results show that positive urgency has significant effects on drinking problems at high levels of enhancement motive endorsement ($\beta = .28, p < .001$), but that positive urgency did not significantly predict drinking problems for those individuals who are endorsing a low level of enhancement motives ($\beta = .06, p = .43$). The moderated relationship is shown in Figure 4.

Study Three Discussion

The results of this study support the hypothesis that positive urgency is a discrete form of impulsivity that has not been studied yet in the impulsivity literature. Positive urgency appears to be more than just sensation seeking; it is able to add incrementally to the prediction of drinking symptoms, drinking problems, and a wide range of acting out behaviors over and above pure sensation seeking. Additionally, positive urgency explained variance in engagement in a broad set of risky behaviors beyond that explained by sensation seeking, negative urgency, lack of planning, and lack of perseverance. Positive urgency did not explain variance in the specific act of alcohol consumption beyond that explained by those other impulsivity measures, though.

Additionally, there was consistent, cross-sectional, correlational support for a hypothesized set of mediational relationships. Statistical tests of mediation were consistent with three hypotheses. First, that the effect of positive urgency on drinking is through the formation of positive drinking expectancies, so that individuals who are high in positive urgency are more likely to learn positive drinking expectancies, which leads to a higher likelihood of drinking. Second, that positive urgency's effect on risky behaviors is mediated by alcohol use, so that positive urgency leads to increased alcohol use, which can lead to participation in a wide range of risky behaviors. Third, that positive alcohol expectancies' relation to risky behaviors is fully mediated by drinking symptoms, so that having the expectancies leads to increased drinking, which leads to risky behaviors. In sum, these data support the theory that positive urgency leads to developing positive alcohol expectancies, which leads to an increased level of drinking and then finally to a wide range of risky behaviors. The model is depicted in Figure 5. Because these data are cross-sectional and correlational, they are not definitive tests of this model. Rather, the positive findings indicate that the model survived this first possible disconfirmation: had the statistical tests not supported mediation, the model would have been quite unlikely to be accurate. It is also important to note that aspects of this model have been supported previously with longitudinal data. There is evidence that positive drinking expectancies predict drinking onset and problem drinking onset (Christiansen et al., 1989; Smith et al., 1995), and there is evidence that drinking behavior predicts subsequent engagement in risky or delinquent behaviors (Barnes, Welte, & Hoffman, 2002). Given the positive

initial findings in this study, and given those prospective tests that have been done, there is good reason to test this model prospectively.

A moderated relationship also existed, such that for individuals who believe drinking will help them enhance an already positive mood, positive urgency can significantly predict drinking problems. It may be that one mechanism by which positive urgency operates is to further facilitate an existing good mood: perhaps one takes risks in the expectation that doing so will enhance the positive affective state one is currently experiencing. Interestingly, for those who did not report enhancement motives for drinking, positive urgency did not correlate with drinking problems. Perhaps for those individuals, positive urgency predicts some other form of acting out behavior that they think is likely to enhance their positive mood. This hypothesis should be examined in future research.

There were some limitations to this study. I discussed the first limitation above: the cross-sectional design does not permit a rigorous test of positive urgency's putative role. Second, I have not shown that individuals who score highly in positive urgency actually act impulsively when experiencing positive mood. The final study in this series was a first attempt to meet the first of these two needs.

Table 4.1
Multitrait multimethod correlation matrix

	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5
A1		.49**	.22**	.19**	.32**	.65**	.38**	.13	.25**	.20**
A2			.12*	.21**	.29**	.45**	.64**	.06	.17*	.24**
A3				.31**	-.06	.17*	.03	.74**	.34**	.07
A4					.34**	.23**	.16*	.31**	.57**	.30**
A5						.35**	.33**	.04	.12	.56**
B1							.46**	.20**	.20**	.26**
B2								.01	.14	.29**
B3									.25**	.05
B4										.31**
B5										

Methods: A. self-report, B. interview

Traits: 1. Positive urgency, 2. Negative urgency, 3. Sensation seeking, 4. Lack of planning,
5. Lack of perseverance

*p<.05 **p<.001

Table 4.2

Hierarchical regression of drinking symptoms on sensation seeking and positive urgency

	β	SE	R ² change	Total R ²
<i>Step One</i>				
Sensation seeking	.25**	.08	.08**	.08
<i>Step Two</i>				
Positive Urgency	.17**	.05	.03**	.11

* p<.05

** p<.01

Table 4.3

Hierarchical regression of drinking problems on sensation seeking and positive urgency

	β	SE	R ² change	Total R ²
<i>Step One</i>				
Sensation seeking	.21**	.01	.06**	.06
<i>Step Two</i>				
Positive Urgency	.20**	.01	.04**	.10

* p<.05

** p<.001

Table 4.4

Hierarchical regression of NEGO behaviors on sensation seeking and positive urgency

	β	SE	R ² change	Total R ²
<i>Step One</i>				
Sensation seeking	.24**	.09	.08**	.08
<i>Step Two</i>				
Positive Urgency	.24**	.08	.05**	.14

* p<.05

** p<.001

Table 4.5

Hierarchical regression of NEGO behaviors on UPPS-R impulsivity and PUM

	β	R ² change	Total R ²
<i>Step One</i>		.19**	.19
Negative urgency	.16*		
Sensation seeking	.25**		
Lack of deliberation	.02		
Lack of perseverance	.14*		
<i>Step Two</i>		.02*	.21
Positive Urgency	.14*		

* p<.05

** p<.001

Table 4.6

Hierarchical regression analyses of the interaction between positive urgency and enhancement motives

	β	SE	R ² change	Total R ²
<i>Step One</i>				
Positive urgency	.17**	.01	.18**	.18
Enhancement motives	.37**	.01		
<i>Step Two</i>				
Positive urgency X Enhancement	.11*	.00	.02*	.20

* p<.05

** p<.001

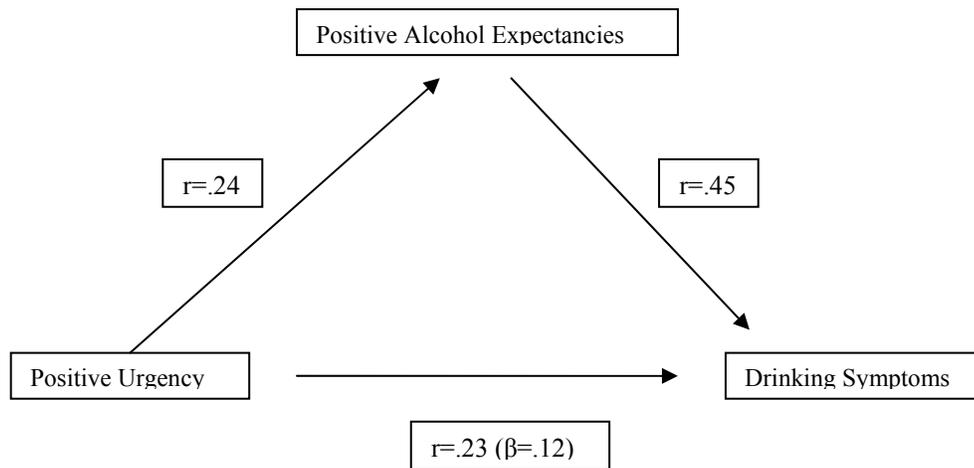


Figure 4.1. Proposed mediation of positive urgency on drinking symptoms by positive alcohol expectancies (Beta noted is the beta for positive urgency when positive expectancies is in the model)

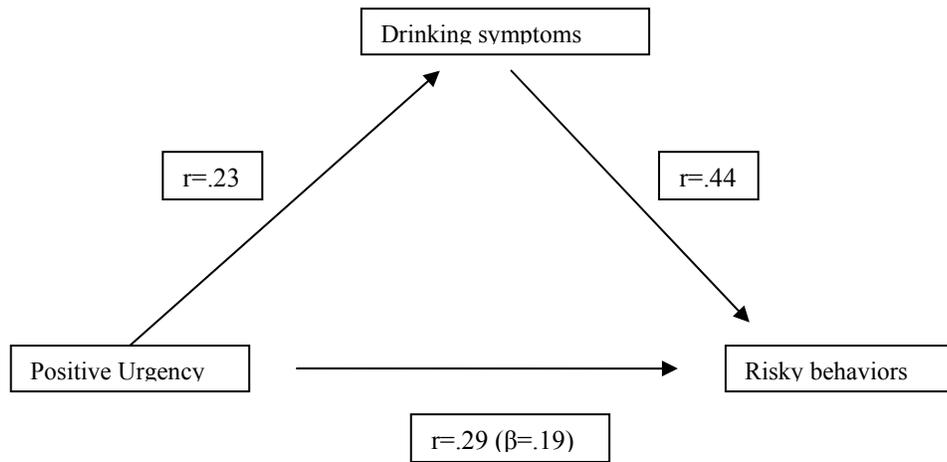


Figure 4.2. Proposed mediational model of positive urgency on risky behaviors by drinking symptoms (Beta noted is the beta for positive urgency when drinking symptoms is in the model)

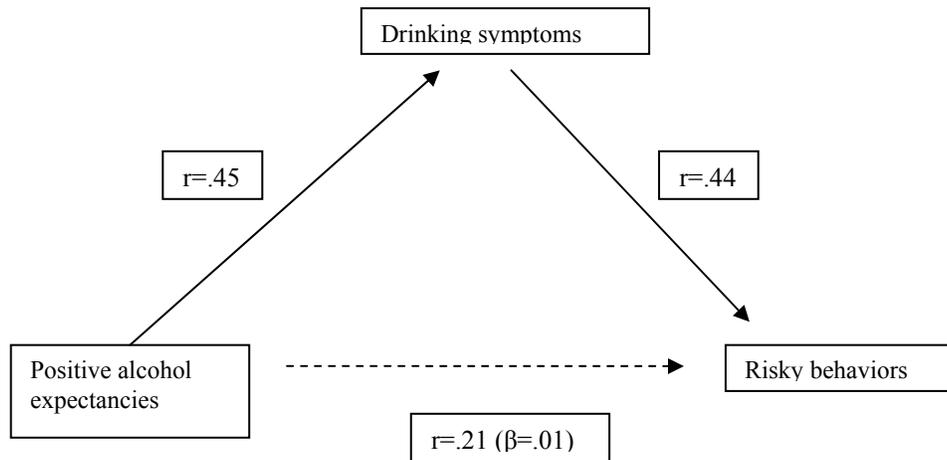


Figure 4.3. Proposed mediational model of positive alcohol expectancies on risky behaviors by drinking symptoms (Beta noted is the beta for positive alcohol expectancies when drinking symptoms is in the model)

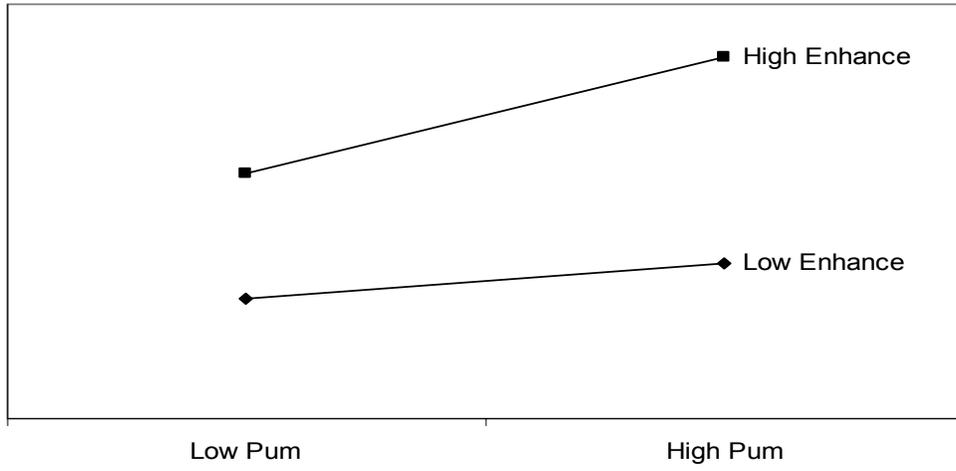


Figure 4.4. Moderated relationship between positive urgency and enhancement motives

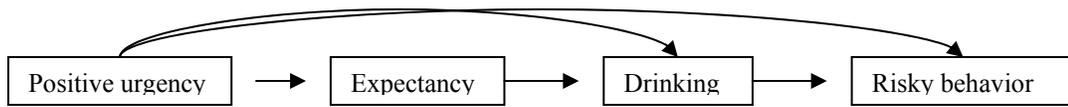


Figure 4.5. Proposed causal model of positive urgency's path to risky behavior

Chapter Five

Study Four: Longitudinal Study

The aim of this study was to predict the onset of one, specific risky behavior in a college sample: drinking. This study was used as a pilot longitudinal study and, as such, did not attempt to predict a wide range of risky behaviors, which would be appropriate for a general trait such as positive urgency.

Method

Participants

Ninety-three non-drinking students were selected from the 1322 participants who completed study 2. Only students who indicated they were (a) first-year college students, (b) either drinking not at all or only endorsed consuming 1-4 alcoholic drinks in their lifetime, and (c) have never consumed more than one drink at a time. The participants were 62% female, ranged from 17-20 years of age (with the majority (73%) stating they were 18 years old) and were composed of the following races: 22% African-American, 73% European-American, 1% Asian-American, and 3% Other. Forty-five percent of the sample indicated a Baptist religious affiliation, 15% Catholic, 3% Presbyterian, 2% Muslim, 29% Other Religion, and 5% No Religious affiliation. Thirty students indicated that they had never had a drink of alcohol at the beginning of the freshman year of college. The remaining 64 students had only had 1-4 drinks of alcohol in their lifetime.

Measures

Drinking Styles Questionnaire (DSQ). Described Above.

Positive Urgency Measure (PUM). Described Above.

Procedure

Students were contacted by phone to participate in the current study at the end of their first semester of college. They completed the PUM, the DSQ, and a short demographics questionnaire.

Results

Longitudinal Onset

Of the 30 students who indicated that they had never had a drink of alcohol at the beginning of their freshman year of college, only 5 showed onset of drinking over the first semester. Four of these students indicated that by the end of the fall semester, they had 1-4 drinks of alcohol. One student indicated drinking alcohol 1-2 times per week.

I nevertheless conducted a simple regression of drinking frequency/quantity at time 2 onto positive urgency. In this case, positive urgency did not significantly predict level of drinking frequency/quantity at time 2 measurement. Given the small number of students who reported onset of drinking over the first semester of college, there was very little change to predict in this sample. Additionally, because this regression was only conducted on the 30 students who originally reported never having a drink of alcohol, our power was .42 to detect a medium effect.

Longitudinal Increase Prediction

Of the remaining 63 students, who indicated only consuming 1-4 alcoholic drinks at the beginning of their first year of college, only 17 endorsed an increase in drinking over the first semester. Nine indicated that they drink alcohol 3-4 times per year, 5 endorsed drinking once per month, and 3 endorsed drinking 1-2 times per week.

Conducting a hierarchical regression analysis on these remaining students indicated that positive urgency was unable to significantly add to the prediction of time 2 drinking quantity/frequency over and above time 1 drinking quantity/frequency. When time 1 drinking quantity/frequency is entered into the first step and positive urgency is entered into the second step, positive urgency was able to predict 1.4% additional variance in time 2 drinking quantity/frequency. ($p = .27$). Once again, very few individuals ($n = 17$) endorsed an increase in drinking over their first semester in college, leaving very little variance in drinking quantity/frequency to predict. Power for this analysis was .61 to detect a medium effect.

Longitudinal Change Prediction

Using hierarchical regression for all the individuals who indicated a non-drinking status at the beginning of their freshman year ($n = 93$), time 1 drinking frequency/quantity was entered into step one and positive urgency at time 1 was entered

into step two. Positive urgency was unable to predict an additional significant amount of variance in time 2 drinking frequency/quantity above and beyond the prediction of time 1 drinking frequency/quantity (R^2 change = .01, $p = .19$). Power for this analysis was .92 to detect a medium effect. Once again, very little change in drinking occurred in this analysis.

Study Four Discussion

The aim of study four was to predict change and onset in drinking symptoms over the first semester in college. In order to do so, we chose a sample of 93 students who indicated a non-drinking status at the beginning of their first semester at college. Results showed that very little onset or change was seen among these students. A further review of the literature indicated that individuals whose drinking increases most during the first semester of college are those who were drinking the most heavily before they arrived in college (Wechsler, Dowdall, Davenport, & Castillo, 1995); those who did not drink before college are less likely to drink significantly during college. It appears to have been an error to focus on non-drinking college freshmen in this study, because doing so limited the sample to individuals unlikely to increase their drinking over the course of their first college semester. Perhaps if I had sampled individuals who had already been drinking at the beginning of college, positive urgency may have predicted an increase in drinking symptoms.

Chapter Six

General Discussion

The current series of studies involved the first test of the hypothesis that there is an impulsivity-related personality trait, called positive urgency, which refers to the tendency to act rashly and maladaptively in response to the experience of positive mood. The basic theory driving this research has these components. First, there is such a trait, the content of which could be identified and measured reliably. Second, it is valuable to measure impulsivity-like traits at this specific, facet level, rather than relying solely on broad, overarching measures of impulsivity (Fischer et al., 2004; Fischer & Smith, 2005; Smith, Fischer, & Fister, 2003). Third, although the trait has specificity, it is general with respect to behavior: many different behaviors could emerge as expressions of positive urgency. What determines the choice of behavior is a combination of availability and specific psychosocial learning tying important, anticipated benefits to the behavior (Fischer & Smith, 2005). That psychosocial learning can be measured as expectancies for reinforcement from a behavior. One individual high in positive urgency may choose to participate in risky drinking behaviors because of the wide availability of alcohol in the environment and one's endorsement of expectancies that alcohol will help to sustain or increase one's positive mood. However, a different person, who lacks access to alcohol or who does not hold expectancies for reinforcement from drinking, may, instead, participate in a different behavior, such as eating, shopping, gambling, or risky sexual activities in response to his or her good mood. Relatedly, positive urgency is one influence on expectancy formation: the general tendency to act rashly in response to positive mood tends to influence one to experience rash action as reinforcing, and hence to form reward expectancies for rash action. Positive urgency increases the likelihood that one will form reward expectancies for rash actions, and in that way influences the likely engagement in those actions.

Fourth, individuals form motives to undertake a behavior as a function of their expectancies that the behavior is rewarding and the degree to which they value the anticipated reward (Cooper, 1994). Fifth, positive urgency is likely to lead to a specific behavior only when individuals are motivated to engage in that behavior (they see the behavior as rewarding in a way that they value). Of course, the series of studies reported

here did not test each aspect of this theory, but they did provide initial, supportive data. No aspect of the theory was disconfirmed by the findings described here.

Concerning the first theory component, I developed a content-valid, internally consistent, stable, unidimensional measure of the trait. Raters agreed highly on interview responses indicative of positive urgency, and questionnaire and interview measures of positive urgency tended to agree. To support the assertion that positive urgency reflects rash, maladaptive action, I correlated positive urgency with a scale tapping a wide range of risky behaviors likely to have negative outcomes. Positive urgency correlated highly with the scale. In addition, it was related to drinking quantity and frequency and problems associated with alcohol use. Thus, not only did experts rate the items as reflecting rash action in response to positive mood, scores on the scale correlated with multiple indices of risky behavior.

Concerning the second theory component, positive urgency could readily be distinguished from four other types of impulsivity. My operationalizations of positive urgency passed a rigorous test of discriminant validity: its same-method correlations with other impulsivity constructs were all appreciably lower than was the correlation between the two methods of measuring positive urgency. In addition, positive urgency provided incremental predictive value over and above the other types of impulsivity. Because positive urgency refers to responding to positive moods, and because sensation seeking is a facet of extraversion in the NEO-PI-R version of the five factor model of personality and hence likely related to positive mood (Costa & McCrae, 1992), I tested whether positive urgency explained variability in risky behavior beyond that explained by sensation seeking. Positive urgency did explain variance in general risky behavior, and in drinking symptoms and problems, that was not explained by sensation seeking. Its incremental validity over sensation seeking provides further support for my contention that positive urgency is a unique form of impulsivity. In addition, positive urgency had incremental validity over all four types of impulsivity in accounting for risky behavior with negative outcomes.

Third, positive urgency may be related to risky behaviors through a mediational, causal relationship. The findings from study three were consistent with the theory that positive urgency leads to developing positive alcohol expectancies, which leads to an

increased level of drinking and then finally to a wide range of risky behaviors. Had the study three tests of mediation failed, my proposed set of causal, mediational relationships would have been largely disconfirmed. Interestingly, the mediation tests supported one further step, suggesting that one way in which positive urgency influences risky behaviors is by influencing alcohol consumption which, in turn, increases the likelihood of engaging in other risky behaviors. Although the findings were consistent with this causal, mediational model, the model was tested using cross-sectional, correlational data. These relationships should be tested prospectively.

Concerning the third, fourth, and fifth theory components, positive urgency's influence on drinking problems was shown to hold for individuals who endorsed drinking in order to enhance an already existing positive mood, but not for those who did not. Perhaps for those who do not endorse drinking for this reason, positive urgency could lead to participation in a different type of risky behavior. That possibility was not tested in these studies.

It will be important in the future to determine how positive urgency fits into an overarching theoretical model of personality, such as the Five Factor Model. If, indeed, positive urgency is a real and valuable construct, there should be a way to understand it in terms of existing, comprehensive models of personality. My hypothesis is that positive urgency will load on the extraversion domain of the Five Factor Model and that high positive scores may capture part of the maladaptive extreme on that personality domain. That possibility was not tested in this research.

A focus of future research with this construct should be an examination of the ability of positive urgency to predict onset and increase in risky behavior participation. Although the current study was not able to predict onset or change in drinking behaviors during the first semester of college, this was most likely due to the limited variance in drinking level change found in this study. Two other issues limited the ability of this study to find predictive value of positive urgency: (1) many of our subjects indicated a religious identification, especially with religions that have traditionally been against alcohol use; and (2) we may have begun our longitudinal onset study after many students had already begun using alcohol (Wechsler et al, 1995). Future research may need to begin measuring these traits and behaviors earlier, maybe during high school. Additional

future research with positive urgency should include additional longitudinal onset/prediction studies which will focus on not only drinking behaviors, but also on participation in various risky and impulsive acts.

Another limitation to the current series of studies is that they have not shown that those individuals who are high in positive urgency are actually acting impulsively while in a positive mood. A series of laboratory experimental tasks involving a positive mood induction with a measure of impulsivity will be needed to provide support for this construct's influence on behavior. Additionally, in order to support positive urgency's external validity, a real life experiment measuring individuals' level of positive urgency and their impulsive responses during a time of celebration (e.g., sports wins, Mardi Gras, etc.) would be very informative as to how this trait actually functions in the real world.

In conclusion, although many questions still need to be answered, the current series of studies make the argument that positive urgency is a real and important construct for determining risk for participation in risky behaviors, at least for college students. It can be measured reliably and validly and is related to, but distinct from, similar impulsivity constructs. Positive urgency was shown to be important in drinking behaviors and impulsive acts for college students and was shown to predict unique variance in these behaviors as well.

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Campus Representative,

American Psychological Association of Graduate Students 1/05-present

Academic Advisor – Graduate Assistant

Academic Advising Center, University of Kentucky 6/04-8/04, 6/05-8/05

Teaching Assistant

University of Kentucky, Department of Psychology 8/03-5/05

Instructor

University of Kentucky, Department of Psychology 6/05-8/05

Treatment Aide

Bassett House Residential Treatment Facility for Adolescents 6/01-9/01

Scholastic and Professional Honors

Provost's Undergraduate Research Fund Award, Ohio University

Presidential Fellowship, University of Kentucky

Psi Chi, National Honor Society in Psychology

American Psychological Association (student affiliate)

Phi Beta Kappa, National Academic Honor Society

Alpha Lambda Delta, National Honor Society

Professional Publications

Smith, G. T., Cyders, M., Fischer, S., & Simmons, J. (2004). Integrating dispositional and psychosocial learning risk factors for bulimia nervosa. Invited paper: *Revista de Psicología Conductual: Revista Internacional de Psicología Clínica y de la Salud. (Journal of Behavioral Psychology: International Journal of Clinical and Health Psychology)*.

Fischer, S., Smith, G. T., & Cyders, M. (2004). Sensation seeking versus urgency as risk factors for drinking and gambling. *Alcoholism: Clinical and Experimental Research*, 28(5), 122A-122A.

Fischer, S., Smith, G. T., & Cyders, M. A. (in press) Integrating personality and environmental risk factors for bulimia nervosa. In F. Columbus (Ed.), *Trends in Eating Disorder Research*. New York: Nova Science Publishers.

- Fischer, S., Smith, G. T., Spillane, N, & Cyders, M. A. (in press). Urgency: Individual differences in reaction to mood and implications for addictive behaviors. In F. Columbus (Ed.), *The Psychology of Mood*. New York: Nova Science Publishers.
- Cyders, M.A., Smith, G.T., Spillane, N.S., Fischer, S., Annus, A.M. (in press). Development and validation of a measure of positive urgency and its relation to drinking behaviors. *Alcoholism: Clinical and Experimental Research*.
- Fischer, S., Smith, G. T., Cyders, M. A., Spillane, N. S., Annus, A. M., & Hendricks, M. (in press). Integrating dispositional and learning risk factors for addictive behaviors. *Alcoholism: Clinical and Experimental Research*.

Melissa A. Cyders