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Risky Behavior as Motivated Emotion Regulation: A Mixed-Method Approach

Lyneé A. Herrera
University of Denver

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Abstract

Engaging in risky health behaviors is a ubiquitous human experience that often marks developmental progression from adolescence into adulthood. While much previous research has framed risky behaviors in terms of negative legal, social, and public health consequences, less empirical work has been done on potential benefits of their engagement. A growing body of research has identified emotion regulation deficits as a significant driver of risky behavior engagement, suggesting that these behaviors may offer perceived emotional benefits when other regulation strategies are less accessible. Previous research has shown that emotional outcomes can be influenced by the regulation strategies one chooses to employ, but a growing body of recent work has also posited that emotional outcomes may also be influenced by an individual's motives for engaging in emotion regulation. Examining how risky behaviors serve as a form of emotion regulation, as well as how motives to engage in these behaviors as regulation influence emotional outcomes, may help to identify points of intervention to mitigate negative personal and societal consequences of their engagement. The current investigation aimed to address these open questions across 2 studies. In Study 1, 259 participants who had recently experienced a stressful event reported risky behavior engagement and affect over a 28-day period. Participants were asked to report how many different behaviors they engaged in, their motives for engaging, and affective outcomes. Engagement in risky behavior predicted short term emotional benefits (increased positive and decreased negative affect), but this pattern reversed longer-term, suggesting deleterious consequences for affect. While motives to engage in risky behaviors did not appear to influence positive affect, the motivation to decrease negative emotions predicted increased negative affect. Study 2 explored and expanded upon these motives further. 163 participants were asked to provide qualitative reports on varying motives to engage in risky behaviors. On the whole, participants were motivated to enhance or maintain positive emotions and avoid feeling negative emotions, but high risk-takers were more motivated than low-risk takers to feel negatively (i.e., endorsing contrahedonic motives). Additionally, motivation to facilitate social connections emerged as a strong driver of risky behavior engagement, particularly within romantic relationships. Results from this investigation suggest that consideration of motivation in the context of risky behavior and emotion regulation offers a promising future direction for improving individual and public health outcomes, and that these considerations should be situated within temporal context.

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by

Lyneé A. Herrera

August 2023

Advisor: Kimberly Chiew, PhD

Author: Lyneé A. Herrera
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Introduction

Engagement in risky behaviors, such as smoking, excessive alcohol consumption, and risky sexual behaviors, are a leading cause of preventable disease and negative health outcomes (Pellmar et al., 2002). Because of these detrimental implications for public health, risky behaviors are often framed in the literature in terms of their negative consequences. Previous research has linked difficulties in *emotion regulation*, or the processes by which we change or modify our emotional experiences and/or responses, with increased risk-taking behavior across the lifespan (reviewed in Weiss, Sullivan & Tull, 2015). Additionally, individuals with psychopathologies marked by emotion dysregulation, such as depression and bipolar disorder, also show increased risky behavior engagement in comparison to healthy controls (Auerbach et al., 2007; Gold et al., 2018). Despite traditional characterizations of the negative impacts of risky behaviors, growing research also suggests that such behaviors may serve important functions in the service of emotion regulation (Magar et al., 2008). Taken together, current literature suggests strong connections between emotion regulation and risky behaviors. Further, motives to engage in risky behaviors vary greatly across individuals and contexts (Cooper et al., 2000; Sheehan et al., 2013; Sadeh & Bredemeier, 2021; Seehuus & Rellini, 2013), which could potentially account for variation in propensity to engage in risky behaviors as well as the associated benefits and drawbacks.

Understanding how motives might shape emotional outcomes of risky behavior is important in terms of developing a more comprehensive characterization of such behavior as well as understanding its possible adaptive aspects. Developing more in-depth characterizations of motives to engage in risky behaviors, as well as their associated outcomes, could provide clearer points of intervention with important personal and public health implications. At present, to our knowledge, a comprehensive characterization of the relationship between motives for risky behavior and associated emotional outcomes has not been conducted. Quantitative studies of risky behavior have been critical in advancing our understanding of both the prevalence of these behaviors, as well as understanding developmental patterns of risky behavior engagement across the lifespan (Hoyle et al., 2000; Arsandaux et al., 2020). However, individuals also differ in what behaviors they perceive as "risky" (Rodham et al., 2006), and motives to engage in these behaviors may reflect the complexity of daily life choices in a fashion that is difficult to capture through quantitative data alone. By taking a mixed-methods approach utilizing both quantitative and qualitative data, the present study aims to capture changes in selection and frequency of risky behavior engagement while also capturing rich qualitative insights into individual differences in motives and lived consequences, whether positive or negative, of risky behavior engagement.

While a small number of qualitative studies of emotion and risky behavior have been conducted, they have focused on fairly specific populations and contexts, such as specific mental health disorders (i.e., hoarding and PTSD; Kline et al., 2022 ; Taylor et al., 2019), and specific occupations such as teaching and healthcare (Uzuntiryaki-Kondakci et al., 2022; Weilenmann et al., 2018). Further, few existing qualitative studies focus on participants' motives for behavioral engagement and associated emotional experiences. The proposed investigation will address these knowledge gaps by investigating patterns of risky behavior engagement and emotional outcomes quantitatively as well as using qualitative accounts of motivations for risky behavior engagement and its consequences.

Risky behaviors increase when emotion regulation ability is limited

While emotion regulation processes have important implications for our physical and mental health (Aldao & Nolen-Hoeksema, 2012 ; Hu et al., 2014), they also require cognitive resources. Maintaining information about the emotional stimulus, focusing attention to or away from the stimulus, and generating reappraisals (i.e., altering one's cognitive interpretation of the emotion-generating stimulus) in order to change one's current emotional state requires cognitive functions such as cognitive flexibility, working memory, and self-control, that rely on the prefrontal cortex of the brain (Hofmann et al., 2012). Importantly, acute stress has been found to be detrimental to cognitive

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performance as well as disrupting activity in PFC regions supporting successful emotion regulation (Liston et al., 2009; Suzuki & Tanaka, 2021). Recent fMRI evidence suggests that stress can detrimentally impact function in prefrontal regions necessary for cognitive resources supporting emotion regulation, limiting successful implementation of cognitive emotion regulation (Raio et al., 2013). This raises the possibility that individuals under stress, with diminished cognitive resources for emotion regulation, may turn to other, less cognitively demanding, coping mechanisms. In such contexts, risky behaviors may provide a more accessible alternative.

However, the possibility of detrimental and lasting social and health impacts makes risky behavior engagement a suboptimal method of managing emotions. A growing body of evidence has begun to link engagement in risky behaviors with both positive and negative emotion dysregulation (reviewed in Weiss et al., 2015). In particular, individuals who experience more frequent and intense emotional states, both positive and negative, tend to also be more prone to engage in risky and impulsive behaviors (Cyders & Smith, 2008). While engaging in risky behaviors may boost positive affect and decrease negative affect in the short term, long-term consequences of engaging in cycles of unhealthy coping may have negative physical and mental health outcomes.

Contextual factors, including past experience, social and cultural influences, and situational elements, may also influence whether individuals with fewer emotion

regulation skills and lower emotion regulation capacity can successfully implement

healthy emotional coping strategies, leaving risky behavior as a potentially more

accessible and adaptive option. In individuals with binge-eating disorder, researchers

found that emotion regulation difficulty explained more variance in binge-eating

behaviors than sex and body image (Whiteside et al., 2007). Research examining

marijuana use in young adults who experienced childhood mistreatment found that

emotion regulation difficulties increased likelihood of problematic marijuana use

(Vilhena-Churchill & Goldstein, 2014). While currently lacking an integrative account,

the existing literature examining risk-taking as it relates to emotion regulation suggests

that the capacity and tendency to regulate emotions effectively could potentially impact

one's tendency to engage in risky behaviors, and therefore may serve as an effective

target for intervention to mitigate the consequences of said behaviors.

Motivation can modulate the course and outcome of risky behavior

Evidence suggests that motivation to engage in a given risky behavior or behaviors

may influence related outcomes. While people may recognize that risky behaviors have

downsides overall, they may still engage in them in a goal-directed fashion. For example,

research has demonstrated that approach vs. avoidance motivational valence (i.e.,

whether people engage in a given behavior to *approach* a desired outcome, as opposed to

avoiding an undesired outcome) potentially modulates the associated long-term

outcomes. For example, one study found that intolerance for uncertainty led to engaging

in more risky and impulsive behavior when an individual's goal was to avoid distress

(i.e., a negative or avoidance-based motive), than when the goal was to experience

pleasure (i.e., a positive or approach-based motive; Sadeh & Bredemeier, 2021).

Additional research has proposed that substance use motivated by the goal of dampening

negative emotions (i.e., potentially an avoidance-motivated behavior) seems to have

particularly harmful consequences and is more heavily associated with emotion

dysregulation and mood disorders than substance use motivated by increasing positive

affect (Kober, 2014). Consistent with this, researchers examining substance use and stress

reported a stronger correlation between stress and alcohol consumption in men prone to

avoidance-based strategies, relative to men who relied less on avoidance-based strategies

(Cooper et al., 1992). Similar results have been shown in the marijuana use literature,

where young adults who struggle with emotion dysregulation and report motives to avoid

negative affect report more problematic marijuana use (Bonn-Miller et al., 2008 ;

Vilhena-Churchill & Goldstein, 2014).

While there is evidence for motivated-related impacts on substance use behaviors,

there is limited evidence on whether or not these effects extend to other subtypes of risky

behavior. By examining motivations for a broader range of risky behaviors, we may be

able to better determine whether different motivational profiles lead people to engage in different types of risky behavior, as well as whether we see similar or different patterns of consequence severity across behavior types.

A proposed taxonomy of motives for emotion regulation

While some aspects of the emotion regulation process, such as regulation strategy selection (English et al., 2017), regulation success (Bigman et al., 2016; Gutentag et al., 2017 ; McRae, 2013), and associated biological and brain mechanisms (Ochsner et al., 2012) have been focused on in the research literature, more recent work has posited the importance of examining emotion regulation through a motivational lens, as a goal-directed behavior (Gross, 2015; Tamir, 2016; Tamir & Millgram, 2017; Tamir et al., 2020). Tamir and colleagues (2016) identified six distinct sub-categories of motives for engaging in emotion regulation that can be grouped into two broader categories (Figure 1). The first of these broad categories are *hedonic* motives, in which the emotional goal is to change the emotion itself. Two sub-categories have been proposed within hedonic motives:

1) *Pro-hedonic Motives*, in which the emotional goal is to increase positive emotion.

2) *Contra-hedonic Motives*, in which the emotional goal is to increase negative

   emotion.

The second of the two broad categories are *instrumental* motives, in which the goal of

emotion regulation is to attain benefits outside of the emotion itself. Instrumental motives

are broken down into four sub-categories, which include:

1) *Performance Motives*, in which the goal of emotional change is to promote

   adaptive behavior, such as increasing sadness to promote creativity (Cohen &

   Andrade, 2004).

2) *Social Motives,* in which the goal of the emotional change is to either facilitate or

   impair social relationships (i.e., matching your emotional state to your partner's

   in order to facilitate closeness).

3) *Epistemic Motives*, in which one regulates their emotional state to be consistent

   with their values and beliefs about themselves. For example, people with lower

   self-esteem report lower levels of motivation to feel pleasant emotions because

   negative emotions align more with their self-image (Wood et al., 2009).

4) *Eudamonic Motives*, in which people use emotions to change their behaviors in

   ways that contribute to their sense of autonomy (i.e., consuming emotion-

   eliciting media as a way to learn to cope with emotional stimuli in a safe

   environment; Rozin et al., 2013).
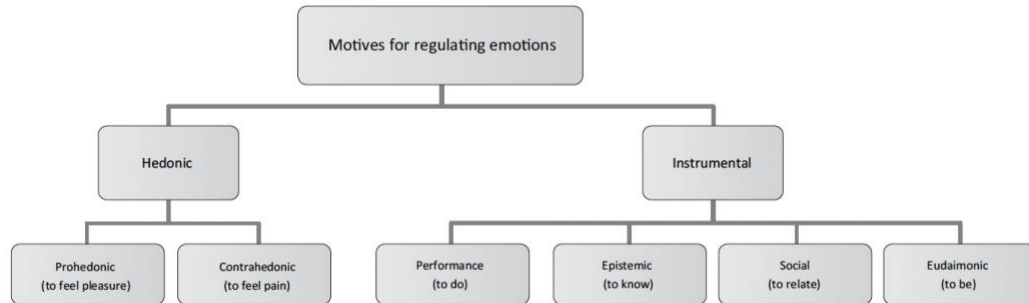
Figure 1. A taxonomy of motives for emotion regulation; image from Tamir, 2016.

To our knowledge, little is presently known about the frequency at which these motives drive emotion regulation in people's everyday lives. Further, there is limited research into risk taking as hedonically-motivated behavior (Dijkstra et al., 2015; Riediger et al., 2009; Weiss et al., 2018), and, to our knowledge, no direct investigations of the impact of instrumental motives on risk taking behavior exist. The proposed study will directly investigate whether each of these motivational subtypes is associated with differences in frequency and/or outcomes of risky behavior engagement using in-depth qualitative response data.

Examining valence (approach vs. avoidance) and goals (hedonic vs. instrumental) as two facets of motivation influencing risky behavior as a form of emotion regulation

While emotion regulation and risky behavior have been characterized in terms of motivational valence (i.e., *approach* of desired outcomes versus *avoidance* of undesired outcomes), as well as in terms of hedonic vs. instrumental motives, to our knowledge, no research has explicitly integrated these two motivational orientations and examined their associated outcomes with regard to emotions and behavior. To begin integrating these perspectives, we suggest that motives to engage in risky behavior, as a form of emotion regulation, can be characterized via a novel two-dimensional [2 (Approach Positive, Avoid Negative) x 2 (Hedonic, Instrumental)] framework to inform understanding of their antecedents and outcomes. Real-life motives to engage in risky behaviors are complex and are influenced by demographic and contextual factors (Cooper et al., 2000; Hirschberger et al., 2002 ; Weiss et al., 2015). By examining risky behaviors within the context of both of these motivational orientations, we may be better situated to identify putative underlying mechanisms of emotion regulation at multiple levels of analysis, allowing for improved characterization of emotional and behavioral outcomes.

The few existing empirical investigations examining risky behaviors within this two-dimensional framework suggest that examining these behaviors within the context of motives may critically inform potential interventions to decrease the prevalence of these behaviors. When investigating social and emotion regulation motives in self-mutilative behavior (SMB), researchers found that participants who were being treated for self-

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injurious behavior reported multiple motives (hedonic, contra-hedonic, pro-social, and anti-social), suggesting the need for varied therapeutic treatments to address person-by-person differences in the function of the behavior (Nock & Prinstein, 2004). These findings are consistent with a model of functional alcohol use, which posits that expectations of increased positive affect with alcohol use (i.e., pro-hedonic goals) might outweigh possible negative consequences of drinking behavior; additionally, there are nonchemical (i.e., social) goals that often need to be therapeutically addressed in order to alter alcohol consumption (Cox & Klinger, 1988). Both lines of work suggest that identifying goals for risky behavior may be critical to identifying methods of efficacious treatment. Additionally, the issues of multiple motives for behavior, and how these behaviors change over time and across individuals, have not been systematically addressed. This leaves room for new and potentially fruitful lines of inquiry.

The Current Study

The proposed series of studies addresses current gaps in the literature, using a mixed-methods approach to critically investigate how motives shape patterns of risky behavior as forms of emotion regulation, therefore driving emotional, social, and physical health outcomes. Through the use of daily self-reports over a 28-day period following a recent stressor, we will examine how patterns of risky behaviors and emotional outcomes

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change both within and across individuals. By pairing these quantitative insights with in-depth qualitative data, we will be better able to disentangle how people's lived experience drives motivation to engage in these behaviors and gain deeper insight into people's perceptions about their experienced real-life consequences of risky behaviors. Such insights could inform therapeutic interventions to mitigate the consequences of these behaviors, thereby improving overall public health.

Study 1: Methods

Overview of Experimental Procedure

In this preregistered longitudinal study, we aimed to examine the relationship between risky behavior and emotional outcomes, as well as the potential moderation of this relationship by motivation, using self-report data. Preregistration can be found here: osf.io/k9vz2. Data was collected over a 28-day period for each participant in the early phases of the COVID-19 pandemic (August & September 2020) as increased instances of illness, uncertainty, and isolation related to COVID-19 created widespread negative consequences for emotional and physical health (Ganesan et al., 2021; Peçanha et al., 2020). Adult participants who had reported undergoing at least one stressful event in the

previous two weeks (i.e., job loss, the death of a loved one, illness; as specified by the

List of Threatening Experiences measure (Brugha & Cragg, 1990) were considered

eligible for the study and invited to complete a series of questionnaires at 10 timepoints

over the course of the 28-day study period. On Day 1, participants were asked to report

on their risk-taking behaviors since the stressful event occurred, their current level of

perceived stress, physical health, coping behaviors, and state affect. On Days 2-7,

participants were asked to report on risk-taking behaviors in the past 24 hours and state

affect. After the first week, participants were asked weekly (Days 14, 27, and 28) to

report on risky behaviors in the preceding 7 days, state affect, perceived stress, and

physical health. The present study focuses on reported engagement in risky behaviors,

motivations for engaging in such behaviors, and concurrent and subsequent affect as

primary measures for analysis. Questionnaires used to index these variables are detailed

below in the "Questionnaires" section.

Participants

To obtain an estimate of our goal sample size, we conducted a power analysis in

G*Power (version 3, Faul, Erdfelder, Lang, & Buchner, 2007) of a linear multiple

regression with 2 tails and a small to medium effect size of $f = .15$, $\alpha = .05$, and power 1-

β of .95 with 5 predictors (time, risky behavior, motivation, perceived stress, and coping

strategies), which yielded an N of 89. We aimed to recruit at least 200 participants to account for anticipated dropout over time. The final sample consisted of 259 adult participants recruited from the United States and the United Kingdom through the Prolific online survey platform (http://www.prolific.co; $M_{(age)} = 30$, $SD_{(age)} = 9.34$, 46% female, 49% male, 3.5% Genderqueer, 1.5% did not report. Full demographics in Appendix I). 69% of participants (N = 177) completed at least 8 timepoints, with 39% of participants (N = 100) completing all 10 timepoints.

Participants were required to be at least 18 years of age, native or fluent English speakers, and had to have reported experiencing at least one stressful life event in the past 14 days, as indexed using the List of Threatening Experiences (Brugha & Cragg, 1990). Types of threatening events included in this measure include serious injury or illness of self or a loved one, death of a friend or family member, marital or close relationship problems, legal trouble, loss of property, financial crisis, and job loss. Participants completed questionnaires and task measures in 10 sessions completed over a 4-week period: sessions were completed daily in Week 1, followed by weekly sessions 7 days apart Weeks 2, 3, and 4. Study measures were programmed and administered in Qualtrics. Full detail about the study procedure and measures collected in each session are detailed below in *Questionnaires* and *Study Timeline*. Participants were offered monetary compensation up to $38 based on the total number of sessions completed ($10

for Day 1, $2 for Days 2-7, $4 for Days 8 & 9, and $8 for Day 10). An extra $5 bonus was offered to participants who completed at least 8 out of 10 sessions.

Questionnaires

We used previously published self-report questionnaires to characterize risky behavior and state affect over the 28-day period. All questionnaires were previously evaluated for and observed to have good psychometric reliability and validity (see publication citation for each questionnaire measure below; measures of perceived stress (PSS) and coping behaviors (COPE) were collected but not included in the analyses for current study). A full timeline of collected measures is shown in Figure 2.

Risky, Impulsive, and Self-Destructive Behavior Questionnaire (RISQ; Sadeh & Baskin-Sommers, 2017). The RISQ was included as a measure of engagement in risky behavior. The original measure includes 38 items grouped into 8 behavioral subtypes: aggression, self-harm, gambling, impulsive spending/driving, impulsive eating, risky sexual behavior, illegal behavior, and alcohol use. The cited validation study for this measure (Sadeh & Baskin-Sommers, 2017) reports excellent internal consistency (Cronbach's alpha = .92) and medium to high reliability (.73-.92). Participants reported whether they had engaged in each risky behavior in a specified time period (at Day 1, since the stressful event; in all subsequent timepoints, since the last session). During the

first session, participants also reported a lifetime estimate of frequency of engagement in each behavior (0-5 times = Rarely, 5-10 times = Sometimes, or 10+ times = Frequently). Higher scores indicate higher lifetime engagement in risky behavior. Motivation for engaging in each endorsed risky behavior was also measured by asking participants to rate on a 1-5 Likert scale the extent to which they agreed with the following statements (1 = Strongly Disagree, 5 = Strongly Agree): "I do this behavior to feel excitement, to get a thrill, or to feel pleasure" (increase positive emotions), "I do this behavior to stop feeling upset, distressed, or overwhelmed" (decrease negative emotions), or "I do this behavior to feel like I have more control over my circumstances" (increase feelings of control). The RISQ was collected at all 10 timepoints.

Positive and Negative Affect Schedule (PANAS; (Clark & Watson, 1994). The PANAS was collected as a measure of participants' state affect since the stressful event (at Day 1) or since the previous experimental session (at each subsequent timepoint). The PANAS asks participants to report on 20 total emotions including 10 positive (interested, excited, proud, enthusiastic, etc.) and 10 negative (afraid, nervous, hostile, distressed, etc.). Participants were asked to report on a 1-5 Likert scale the extent to which they felt each emotion (1 = Very slightly or not at all, 5 = Extremely), and items were summed to obtain separate measures of positive and negative state affect. The cited validation study for this measure (Clark & Watson, 1994) found moderate to good internal consistency

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(Cronbach's alpha of 0.86-0.90 for Positive Affect and 0.84-0.87 for Negative Affect).

Higher scores for the negative subscale indicate more negative affect, while higher scores

for the positive subscale indicate more positive affect. The PANAS was collected at all

10 timepoints.

Day 1		**Days 2-7**	**Days 14 & 21**		**Day 28**	
Threatening Experiences	PHQ	RISQ	RISQ	PHQ	RISQ	PHQ
RISQ	PSS	PANAS	PANAS	PSS	PANAS	PSS
PANAS	COPE					COPE
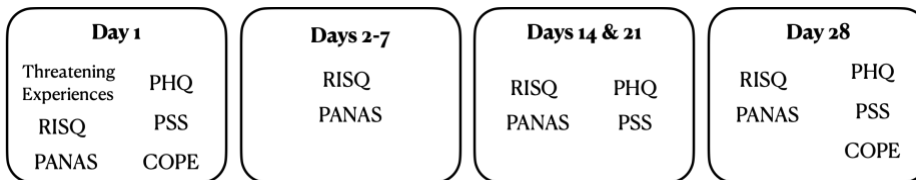
Figure 2. Schedule of questionnaires for Study 1

Predictions and Data Analytic Strategy

Aim 1: Concurrent (Same Day) State Affect at the Time of Engagement in Risky Behavior

Previous work has shown that engagement in risky behaviors increases under

stress (Fields et al., 2015) and that clinical populations with disorders marked by

emotion dysregulation also report higher frequency of engagement in risky behaviors

(Weiss et al., 2015). Risky behaviors may offer an accessible alternative to more

cognitively taxing regulation strategies in contexts where cognitive resources are low, or

for individuals for deficits in emotion regulation ability. This evidence suggests that risky

behaviors may themselves act as a form of emotion regulation and provide immediate

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emotional benefits when other forms of emotion regulation are not as easily accessible. Therefore, we predict that higher reported engagement in risk-taking behaviors (i.e., greater number of reported risk-taking behaviors) will predict higher concurrent positive affect and lower negative affect.

To assess whether state affect is predicted by concurrent engagement in risky behavior, we ran a series of mixed-effects models using the "lme4" package in R version 4.3.0 (R Core Team, 2022). Because different measures were collected at each timepoint and not all timepoints have data for each participant, the utilization of hierarchical mixed-effects models offers a robust method of analyzing studies with a repeated-measures design while maximizing the amount of usable data from this dataset (Wu, 2009). An overview of all final models will be included in Table 1.

We first aimed to examine whether current engagement in risky behavior impacted affective outcomes. Because data were collected at varying timescales (daily for Days 1-7 and weekly for Days 14, 21, and 28), we ran two sets of models for Daily and Weekly timepoints. For each set of models, Positive Affect$_{(Day N)}$ was measured as the outcome variable with Risky Behavior$_{(Day N)}$ (i.e., number of risky behaviors reported on Day N) as a predictor and subject included as a random effect. Demographic variables (age, years of education, gender, and race) were also included as predictors to assess for potential group differences, given previous work has shown that risk-taking behavior can

vary by age (Umberson et al., 2010) and gender (Hirschberger et al., 2002). However, these differences are not the focus of our primary analyses. The same model was then run with Negative Affect$_{\text{Day N}}$ as an outcome.

Aim 2: Subsequent State Affect following Risky Behavior Engagement Over Time

While engaging in risky behaviors may offer short-term emotional benefits, prior literature indicates that continued engagement in these behaviors can have negative downstream consequences on physical health and social relationships, that in turn might negatively impact emotional outcomes. Engagement in these behaviors may lead to a longer-term increase in negative affect by introducing feelings of shame and guilt related to their engagement and may also intensify distress by exacerbating the perception of risky behaviors as the only accessible form of emotion regulation (Weiss et al., 2015). Therefore, we predicted that an initial increase in positive affect at the time of risky behavior engagement would be followed by increased negative affect and decreased positive affect over time. Additionally, we expected an increasing stabilization of affect with increasing time elapsed since the stressful event. Given these predictions of two patterns of change in affective dynamics over time, one linear and one non-linear, we examined for relationships between risky behavior engagement and positive/negative affect over time via linear and non-linear (quadratic and cubic) functions.

We addressed these predictions with the use of mixed-effects models. To examine the linear effect of risky behaviors on affect over time, we centered variables on Day 1 by creating a time-lagged variable for Day in which Day was offset by 1 (Day-1) as well as a time-lagged variable for Week (Week-1) to include as a predictor for Positive and Negative Affect. To examine the non-linear effect of risk on emotional state over time, we also included both quadratic terms $[(Day-1)^2$ and $(Week-1)^2]$ and cubic terms $[(Day-1)^3$ and $(Week-1)^3]$ for the time-lagged Day-1 and Week-1 variables described above as predictors in the model. Next, to examine how positive and negative state affect were influenced by risky behavior engagement on previous days, we time-lagged the Risky Behavior predictor (Risky Behavior$_{(Day N-1)}$) relative to Positive and Negative Affect as model outcomes and added them step-wise as predictors. An overview of models for Positive and Negative Affect can be found in Tables 2 & 3.

Aim 3: Motivational Impacts on Emotional Outcomes following Risky Behavior Engagement

As evidenced by the review of current literature in the introduction, the impact of varying motivational states for engaging in risky behavior on emotional outcomes has not been systematically disentangled. Evidence from clinical populations such as individuals with substance use disorder and alcoholism suggests that motivation to engage in substance use to avoid negative feelings is associated with more negative long-term

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impacts than motivation to increase positive feelings (Kober, 2014). Guided by these findings, we predict that the association between risky behavior engagement and negative affect will be stronger when participants report higher motivation to decrease negative emotions, versus motivation to increase positive emotions. Conversely, we predict that the relationship between risky behavior engagement and positive affect will be stronger when participants report a higher motivation to increase positive emotions, versus motivation to decrease negative emotions. Because this is the first study to our knowledge that directly examines the impact of control motivation on emotional outcomes of risky behavior, we did not have a directional prediction regarding the impact of control motivation for risky behavior engagement on positive and negative affect.

We examined whether motivation orientation improved and moderated the relationship between risky behavior engagement and concurrent state affect by adding motivation orientation as a fixed main and interactive effect to our mixed-effects models outlined above for Aim 1. In Model 1, Positive Affect was examined as an outcome with current day (Day N), reported risky behavior engagement for that day (Risky Behavior$_{(Day N)}$), and reported motivation orientation (on a Likert scale from 1-5 as described above) for risky behavior engagement on that day: i.e., decrease negative motivation (MotivNeg$_{(Day N)}$), increase positive motivation (MotivPos$_{(Day N)}$), and increase control motivation (MotivControl$_{(Day N)}$) as predictors (all motivation orientations rated 1-

5 on a Likert scale). We also included the Risky Behavior$_{(Day N)}$ x MotivNeg$_{(Day N)}$, Risky Behavior$_{(Day N)}$ x MotivPos$_{(Day N)}$, and Risky Behavior$_{(Day N)}$ x MotivControl$_{(Day N)}$ interaction terms to examine whether the impact of risky behavior engagement on state affect was moderated by motivation type. While motive ratings (on a 1-5 Likert scale) were collected for each behavior because we only had one measure of Positive and Negative Affect and one daily total for Risky Behavior, each of the motivations was averaged across Subject and Day to create mean daily MotivNeg, MotivPos, and MotivControl variables per subject. Day and subject ID were included as random effects to account for daily and individual variability. An overview of models can be found in Table 4.

Study 1: Results

Aim 1: Concurrent (Same Day) State Affect at the Time of Engagement in Risky Behavior

Positive Affect Days 1-7

First, we tested whether demographic variables (Age, Race, and Gender) influenced Positive Affect. Model results showed that only the effect of Age was significant ($\beta = 0.26$ (0.06), $p < .001$), while the effect of Gender was trending towards significance ($\beta = 1.55(0.87)$, $p = .07$), and the effect of Race was insignificant ($\beta = -$

0.36(0.37), p = .33). A correlation test revealed that Positive Affect was significantly positively correlated with Age (r = 0.19, p < .001). This is consistent with previous literature indicating elevated positive affect in older versus younger adults (Carstensen & Mikels, 2005). Because of its significant impact on Positive Affect, Age was the only demographic variable kept as a predictor in the final models.

Next, we examined the effects of concurrent risky behavior engagement by adding current risky behavior [Risky Behavior$_{(Day N)}$] and Day to the model. We observed a significant effect of both Risky Behavior (β = 0.09(0.03), p < .01) and Day (β = -0.18(0.07), p = .01) on positive affect. These results suggest that engaging in more risky behaviors was associated with positive affect on the day of engagement, and that positive affect decreased over the course of the data collection period.

Negative Affect Days 1-7

Parallel to analyses conducted with Positive Affect as an outcome, we first examined the effect on demographic variables (Age, Race, and Gender) on Negative Affect. Model results revealed no significant effects of any of the three variables (Age: β = -0.07(0.05), p = .17 .01; Race: β = 0.21(0.29), p = .48; Gender: β = -0.20(0.69), p =.78). Therefore, no demographic variables were included in the final Negative Affect models.

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Next, we ran the same model as described above for Positive Affect, this time with Negative Affect as the outcome. Again, we observed a significant effect of Risky Behavior (β = -0.08(0.55), p < .001) and Day (β = -0.27(0.07), p < .001) on Negative Affect. These results suggest that increased engagement in risky behavior was associated with decreased concurrent negative affect. Similarly to our observations regarding Positive Affect, results also suggest that Negative Affect also decreased over the course of the data collection period.

Positive Affect Weeks 2-4

Parallel to the Week 1 analyses, we first ran a model with Positive Affect as an outcome and demographic variables as predictors (Age, Race, Gender). Again, we found that only Age significantly predicted Positive Affect (β = 0.23(0.06), p < .001) where Positive Affect increased with Age. Therefore, only Age was included in the final model.

Next, we examined the concurrent effects of Risky Behavior(Week N) by including Week as a predictor. For the Weekly model, the effect of Risky Behavior remained significant (β = 0.24(0.11), p <=.03). However, the effect of Week was not significant (β = -0.28(0.22), p = .22). Results indicate that while Risky Behavior engagement was still associated with increased Positive Affect, Positive Affect did not change as weeks progressed, which could reflect potential stabilization of Affect from Week 1.

Negative Affect Weeks 2-4

Conducting a parallel analysis with demographic variables to that examining Positive Affect in Weeks 2-4 revealed no significant effects of Age (β = -.11(0.06), p = .06), Race (β = 0.59(0.33), p = .08), or Gender (β = 0.49(0.85), p =.56). Therefore, no demographic variables were included in the final model for Negative Affect. Concurrent effects of Risky Behavior(Week N) remained a significant predictor of Negative Affect, but in Weeks 2-4 the direction of the relationship reversed, with higher Risky Behavior predicting higher Negative Affect (β = 0.23(0.09), p <.01) while the effect of Week was not significant (β = -0.004(0.18), p =.98). Results show that Risky Behavior predicted increased Negative Affect at the time of engagement, but Week did not. Again, this could potentially reflect a stabilization of affect following a stressful event.

Relationship	Model
Effects of RB on concurrent PA Days 1-7	PA_Concurrent <- lmer(PosAffect ~ RiskyBehav$_{\text{(Day N)}}$ + Age + Day + (1|Subject), data = Risk)
Effects of RB on concurrent PA Weeks 2-4	PA_Concurrent <- lmer(PosAffect ~ RiskyBehav$_{\text{(Week N)}}$ + Age + Week + (1|Subject), data = Risk)
Effects of RB on concurrent NA Days 1-7	NA_Concurrent <- lmer(NegAffect ~ RiskyBehav$_{\text{(Day N)}}$ + Day + (1|Subject), data = Risk)
Effects of RB on concurrent NA Weeks 2-4	NA_Concurrent <- lmer(NegAffect ~ RiskyBehav$_{\text{(Week N)}}$ + Week + (1|Subject), data = Risk)

Table 1. Final models for examining the effects of concurrent engagement in risky behavior on positive (PA) and negative (NA) affect. Age was a significant predictor for PA only, therefore it was only included in the PA models. Time (Day and Week) and engagement in risky behavior remained a significant predictor in all models.

(a)
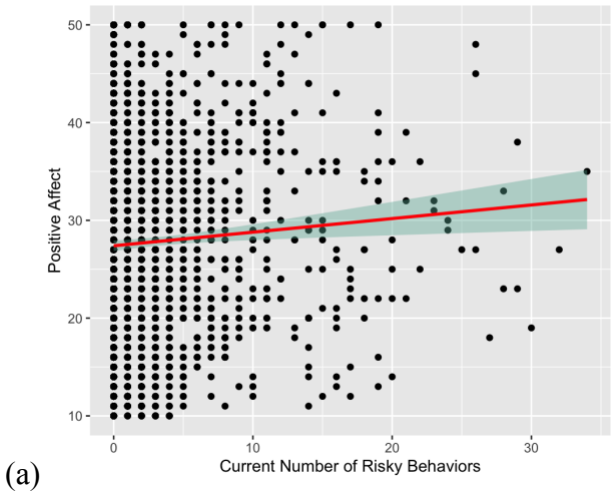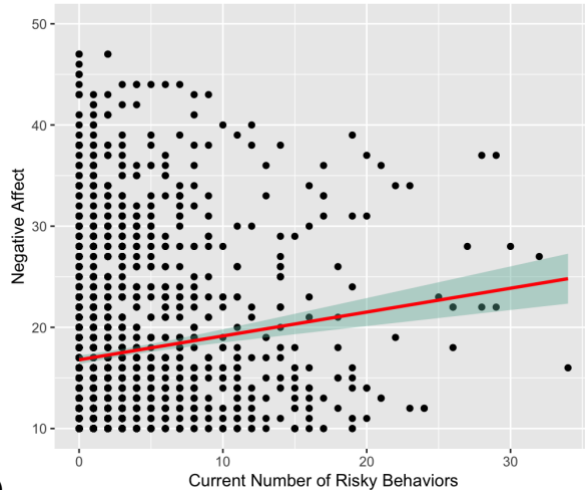
(b)

Figure 3. (a) There was a positive association between risky behaviors and **overall** positive and negative affect. Importantly, the association between risky behaviors and negative affect changes over time. While time is included in our models, the time variable is not included in this graph.

Aim 2: Subsequent State Affect following Risky Behavior Engagement Over Time

Positive Affect Week 1

      Linear and Non-Linear Effects of Risky Behavior. First, we examined the linear effect of risky behavior over the first week of data collection on Positive Affect with data centered on Day 1, with Risky Behavior$_{(Day N)}$ included as a predictor. With data centered on Day 1, we observed a significant linear effect of Day$_{(N-1)}$ ($\beta = -0.18(0.07)$, $p < .01$) where Positive Affect decreased over the course of the first week of the data collection period. Results also revealed a significant effect of current Risky Behavior ($\beta =$

0.09(0.03), $p < .01$), where again, similar to results from Aim 1, increased engagement in current Risky Behavior predicted increased Positive Affect.

Next, we examined non-linear effects by adding the quadratic and cubed terms of our Day$_{(N-1)}$ variable by adding them step-wise as predictors. We did not observe any significant non-linear effects of risky behavior on Positive Affect, either for the quadratic term ($\beta = 0.06(0.04)$, $p = .12$) or the cubic term ($\beta = -0.01(0.02)$, $p = .55$). After double-checking model fit, we confirmed that neither the quadratic term (Likelihood Ratio = -4610.8, $p = .13$) nor cubic term (Likelihood Ratio = -4610.6, $p = .57$) significantly improved the model.

Finally, we wanted to examine the effect of previous risky behaviors on current affect by including lagged risk variables as predictors to the final positive and negative affect models. To address this, we added risky behavior predictors lagged by 1-6 days (i.e. risk lagged by one day (RiskL1) meant we were looking at the effects of the previous day's risky behavior on current affect. Predictors were added stepwise until the models failed to converge (risk-lagged by 5 days). We did not observe a significant effect of time-lagged Risky Behavior on Positive Affect (RiskL1: $\beta = 0.03(0.04)$, $p = .46$; RiskL2: $\beta = -0.004(0.04)$, $p = .91$, RiskL3: $\beta = 0.03(0.04)$, $p = .42$; RiskL4: $\beta = -0.01(0.06)$, $p = .81$).

Positive Affect Weeks 2-4

    Linear and Non-Linear Effects of Risky Behavior. To further examine the effects of Risky Behavior on Positive Affect over time, we ran parallel models to the ones described above for Positive Affect across Weeks 2-4 (Days 14, 21, and 28). We examined the linear effect of Week by centering Weeks on Week 1 and adding the centered variable as a predictor along with Risky Behavior$_{(Week\ N)}$. Current Risky Behavior remained significant when examining Positive Affect across all 4 weeks of data collection ($\beta = 0.08(0.03)$, $p < .01$) with more Risky Behavior predicting increases Positive Affect. After centering the data on Week 1, we found a significant linear effect of Week ($\beta = -0.18(0.07)$, $p < .01$) wherein Positive Affect decreased across Weeks.

    When examining Positive Affect across the 4 weeks of data collection, neither the quadratic ($\beta = -0.24(0.24)$, $p = .31$) nor the cubic ($\beta = 0.06(0.33)$, $p = .86$) terms predicted changes in Positive Affect. Model comparisons confirmed that neither the quadratic (Likelihood Ratio = -4617.9, $p = .12$) nor cubic (Likelihood Ratio = -4617.8, $p = .55$) terms improved model fit. Taken together, these results indicate that Positive Affect decreases steadily across Weeks. Finally, when examining the lagged effects of Risky Behavior (i.e. risk lagged by 1 = effects of risky behavior one week ago), previous engagement in Risky Behavior did not significantly predict current Positive Affect (RiskL1: $\beta = 0.15(0.14)$, $p = .31$; RiskL2: $\beta = -0.11(0.16)$, $p = .47$).

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Relationship	Model
Linear: RB on PA Days 1-7*	PA_Linear_W1 <- lmer(PosAffect ~ RiskyBehav$_{(Day\ N)}$ + Age + (Day-1) + (1|Subject), data = Risk)
Quadratic: RB on PA Days 1-7	PA_Quad_W1 <- lmer(PosAffect ~ RiskyBehav$_{(Day\ N)}$ + Age + (Day-1)^2 + (1|Subject), data = Risk)
Cubic: RB on PA Days 1-7	PA_Cube_W1 <- lmer(PosAffect ~ RiskyBehav$_{(Day\ N)}$ + Age + (Day-1)^3 + (1|Subject), data = Risk)
Linear: RB on PA Weeks 2-4*	PA_Linear_Weekly<- lmer(PosAffect ~ RiskyBehav$_{(Week\ N)}$ + Age + (Week-1) + (1|Subject), data = Risk)
Quadratic: RB on PA Weeks 2-4	PA_Quad_Weekly <- lmer(PosAffect ~ RiskyBehav$_{(Week\ N)}$ + Age + (Week-1)^2 + (1|Subject), data = Risk)
Cubic: RB on PA Weeks 2-4	PA_Cube_Weekly <- lmer(PosAffect ~ RiskyBehav$_{(Week\ N)}$ + Age + (Week-1)^3 + (1|Subject), data = Risk)

Table 2. Models for examining the effects of engagement in risky behavior on positive affect (PA) over time. Only the linear models for both Week 1 and Weeks 2-4 were significant for PA.*denotes final model

Negative Affect Week 1

Linear and Non-Linear Effects of Risky Behavior. For Negative Affect, we
observed a similar effect of Day$_{(N-1)}$ wherein Negative Affect also decreased linearly over
time (β = -0.27(0.07), p < .001). Unlike Positive Affect, increased current engagement in
Risky Behavior predicted a significant *decrease* in Negative Affect (β = -0.07(0.03), p =
.02. Taken together, these results suggest that increased engagement in Risky Behaviors
was associated with improved overall affect through increasing Positive Affect and
decreasing Negative Affect, while time dampens affect overall.

Results for parallel non-linear models run for Negative Affect in Week 1 of data
collection revealed similar results to Positive Affect wherein neither the quadratic (β =
0.05(0.04), p =.20) nor cubic (β = 0.03(0.02), p =.18) terms significantly predicted the
effect of Risky Behavior on Negative Affect. Because neither the quadratic nor the cubic
terms were significant predictors of Positive Affect or Negative Affect, our final models
included only the linear term. Again, model comparisons confirmed that neither the
quadratic term (Likelihood Ratio = -4505.0, p = .23) nor cubic term (Likelihood Ratio = -
4504.1, p = .18) significantly improved the model.

Similar to results from Positive Affect, examining lagged risk as a predictor to the
model across Week 1 also did not significantly predict Negative Affect (RiskL1:β = -
0.02(0.03), p =.59; RiskL2: β = 0.06(0.04), p =.08, RiskL3: β = 2.51(3.47), p =.47;

RiskL4: $\beta = 0.06(0.04)$, $p = .14$). These findings suggest that, at least on the timescale characterized in the present study, previous engagement in Risky Behavior may not significantly predict positive or negative state affect over and above same-day Risky Behavior engagement.

Negative Affect Weeks 2-4

   Linear and Non-Linear Effects of Risky Behavior. Regression coefficients for the model examining the linear effect of Week centered on Week 1 showed that current Risky Behavior$_{Week N}$ was a significant predictor of Negative Affect but in the opposite direction as Week 1. Instead, when we examine effects of Risky Behavior on a Weekly timescale, increase Risky Behavior predicts *increasing* Negative Affect ($\beta = 0.23(0.09)$, $p < .01$). Again, the linear, quadratic, and cubic terms for Weekly data centered on Week 1 were added step-wise as predictors. When included alone, neither the linear ($\beta = -0.004(0.18)$, $p = .98$) nor quadratic ($\beta = 0.02(0.19)$, $p = .89$) terms significantly predicted Negative Affect. However, when the cubic term was included in the model, we observed significant effects for the linear ($\beta = -4.39(1.38)$, $p < .01$), quadratic ($\beta = 4.09(1.19)$, $p < .001$), and cubic ($\beta = -0.90(0.26)$, $p < .001$) terms. Model comparisons showed that including the cubic term significantly improved model predictions compared to a model with only the linear term and a model with only the linear and quadratic terms

(Likelihood Ratio = -2210.5, $p < .001$). Given that a cubic relationship is characterized by two critical points, where the relationship first decreases and then increases (or vice versa), these findings suggest that Risky Behavior has a particularly significant relationship with Negative Affect, and that while Risky Behavior predicts decreased Negative Affect in Week 1, as time goes on increased Risky Behavior predicts increased Negative Affect.

Further, when examining lagged weekly effects on Negative Affect we found significant effects of the previous week's Risky Behavior on current Negative affect ($\beta = 0.34(0.10)$, $p < .001$). This suggests that engaging in more Risky Behaviors was associated with increased Negative Affect one week after engagement, strengthening the argument that increased engagement in Risky Behaviors might alleviate Negative Affect in the short-term, but have deleterious effects in the long-term.

Relationship	Model
Linear: RB on NA Days 1-7*	PA_Linear_W1 <- lmer(NegAffect ~ RiskyBehav$_{(Day\ N)}$ + (Day-1) + (1|Subject), data = Risk)
Quadratic: RB on NA Days 1-7	PA_Quad_W1 <- lmer(NegAffect ~ RiskyBehav$_{(Day\ N)}$ + (Day-1)^2 + (1|Subject), data = Risk)
Cubic: RB on NA Days 1-7	PA_Cube_W1 <- lmer(NegAffect ~ RiskyBehav$_{(Day\ N)}$ + (Day-1)^3 + (1|Subject), data = Risk)
Linear: RB on NA Weeks 2-4	PA_Linear_Weekly<- lmer(NegAffect ~ RiskyBehav$_{(Week\ N)}$ + (Week-1) + (1|Subject), data = Risk)
Quadratic: RB on NA Weeks 2-4	PA_Quad_Weekly <- lmer(NegAffect ~ RiskyBehav$_{(Week\ N)}$ + (Week-1)^2 + (1|Subject), data = Risk)
Cubic: RB on NA Weeks 2-4*	PA_Cube_Weekly <- lmer(NegAffect ~ RiskyBehav$_{(Week\ N)}$ + (Week-1)^3 + (1|Subject), data = Risk)

Table 3. Models for examining the effects of concurrent engagement in risky behavior negative affect (NA) over time. For NA, only the linear model was significant in Week 1. However, in Weeks 2-4, the addition of the cubic term showed that the linear, quadratic, and cubic terms for Week significantly predicted NA. * denotes final model
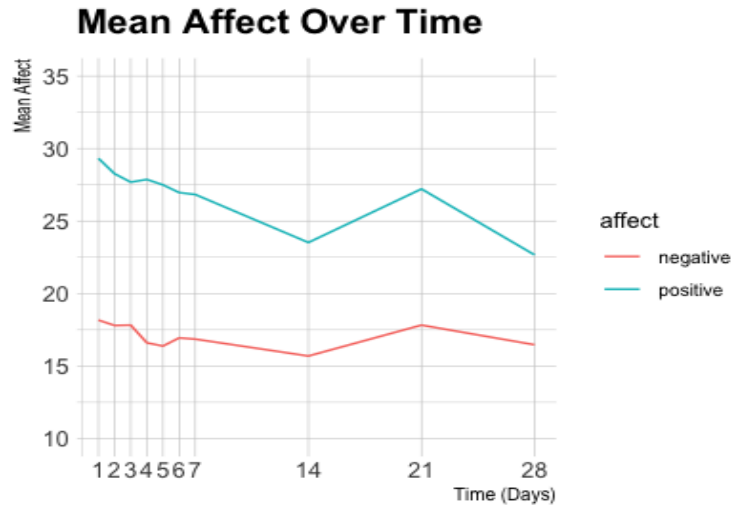
Figure 4. Positive and Negative Affect change over time. Positive affect is overall higher than negative affect and decreases steadily over the course of data collection. Negative affect is lower overall, steadily decreasing across Week 1 (Days 1-7) and Week 2 (Day 14) before increasing at Week 3 (Day 21) and decreasing again in Week 4 (Day 28).

Aim 3: Motivational Impacts on Emotional Outcomes following Risky Behavior Engagement

Motivational Moderation Effects on Affect Days 1-7

Model results for examining the moderating effect of motivation between Risky Behavior and Positive Affect during Week 1 of data collection revealed that while the effect of Day remained significant, with Positive Affect decreasing over the period of data collection (β = -0.33(0.11), p < .01), none of the Motivation Orientation predictors had a significant relationship with Positive Affect (MotivPos: β = 0.21(0.25), p =.39;

MotivNeg: $\beta = 0.19(0.27)$, $p = .49$; MotivControl: $\beta = -0.35(0.25)$, $p = .75$). We also

observed null effects when examining whether each Motivation Orientation moderated

the effect of Risky Behavior on Positive Affect (Risk*MotivPos: $\beta = -0.01(0.04)$, $p = .77$;

Risk*MotivNeg: $\beta = 0.01(0.05)$, $p = .75$; Risk*MotivControl: $\beta = 0.04(0.04)$, $p = .30$).

Similar findings were observed for Negative Affect. While the effect of Day

remained significant, indicating that Negative Affect decreased over the data collection

period ($\beta = -0.54(0.14)$, $p < .001$), none of the Motivation Orientation measures

significantly predicted Negative Affect (MotivPos: $\beta = -0.41(0.24)$, $p = .08$; MotivNeg: β

$= 0.27(0.26)$, $p = .31$; MotivControl: $\beta = 0.35(0.24)$, $p = .15$). We also observed similar,

null effects when examining whether Motivation Orientation moderated the effect of

Risky Behavior on Negative Affect (Risk*MotivPos: $\beta = -0.01(0.05)$, $p = .81$;

Risk*MotivNeg: $\beta = -0.08(0.06)$, $p = .15$; Risk*MotivControl: $\beta = 0.002(0.05)$, $p = .95$)

Motivational Moderation Effects on Affect Weeks 2-4

Model results for examining the moderating effect of Motivation between Risky

Behavior and Positive Affect across all 4 weeks of data collection of data collection again

revealed no significant moderating effect of Motivation (MotivPos: $\beta = 0.11(0.48)$, p

$= .83$; MotivNeg: $\beta = -0.37(0.45)$, $p = .41$; MotivControl: $\beta = 0.06(0.42)$, $p = .88$). In

parallel with effects for Week 1, we also observed null effects when examining whether each Motivation Orientation moderated the effect of Risky Behavior on Positive Affect (Risk*MotivPos: $\beta = -0.05(0.13)$, $p = .67$; Risk*MotivNeg: $\beta = 0.001(0.10)$, $p = .99$; Risk*MotivControl: $\beta = 0.05(0.08)$, $p = .54$).

However, different results were observed when examining the moderating effect of Motivation between Risky Behavior and Negative Affect. Neither MotivPos ($\beta = -0.19(0.29)$, $p = .52$) nor MotivControl ($\beta = 0.47(0.29)$, $p = .11$) significantly predicted Negative Affect. We also observed null effects when examining whether each Motivation Orientation moderated the effect of Risky Behavior on Negative Affect (Risk*MotivPos: $\beta = -0.10(0.12)$, $p = .37$; Risk*MotivNeg: $\beta = 0.08(0.09)$, $p = .40$; Risk*MotivControl: $\beta = 0.02(0.08)$, $p = .82$). However, MotivNeg *did* significantly predict Negative Affect ($\beta = 0.85(0.30)$, $p < .01$). Higher motivation to decrease Negative Affect was actually associated with an *increase* in Negative Affect, suggesting that trying to avoid negative emotions did not help participants meet their emotional goals.

Relationship	Model
RB and Motivation on PA Days 1-7*	PA_Risk_MotivW1 <- lmer(PosAffect ~ RB $_{(Day\ N)}$ + Day + MotivPos + MotivNeg + MotivCtrl +(1|Subject), data = Risk)
RB x Motivation Interaction on PA Days 1-7	PA_RiskxMotivW1 <- lmer(PosAffect ~ RB $_{(Day\ N)}$ + Day + MotivPos + MotivNeg + MotivCtrl + (RBxMotivPos) + (RBxMotivNeg) + (RBxMotivCtrl) + (1|Subject), data = Risk)
RB and Motivation on PA Weeks 2-4*	PA_Risk_Motiv_Weekly <- lmer(PosAffect ~ RB $_{(Week\ N)}$ + Week + MotivPos + MotivNeg + MotivCtrl +(1|Subject), data = Risk)
RB x Motivation Interaction on PA Weeks 2-4	PA_RiskxMotiv_Weekly<- lmer(PosAffect ~ RB $_{(Week\ N)}$ + Week + MotivPos + MotivNeg + MotivCtrl + (RBxMotivPos) + (RBxMotivNeg) + (RBxMotivCtrl) + (1|Subject), data = Risk)
RB and Motivation on NA Days 1-7*	NA_Risk_MotivW1 <- lmer(NegAffect ~ RB $_{(Day\ N)}$ + Day + MotivPos + MotivNeg + MotivCtrl +(1|Subject), data = Risk)
RB x Motivation Interaction on NA Days 1-7	NA_RiskxMotivW1 <- lmer(NegAffect ~ RB $_{(Day\ N)}$ + Day + MotivPos + MotivNeg + MotivCtrl + (RBxMotivPos) + (RBxMotivNeg) + (RBxMotivCtrl) + (1|Subject), data = Risk)
RB and Motivation on NA Weeks 2-4*	NA_Risk_Motiv_Weekly <- lmer(NegAffect ~ RB $_{(Week\ N)}$ + Week + MotivPos + MotivNeg + MotivCtrl +(1|Subject), data = Risk)
RB x Motivation Interaction on NA Weeks 2-4	NA_RiskxMotiv_Weekly<- lmer(NegAffect ~ RB $_{(Week\ N)}$ + Week + MotivPos + MotivNeg + MotivCtrl + (RBxMotivPos) + (RBxMotivNeg) + (RBxMotivCtrl) + (1|Subject), data = Risk)

Table 4. Models for examining the effects of motivation and risky behavior on positive (PA) and negative affect (NA). No effect of Motivation nor Motivation by Risky Behavior interaction was found for PA. Motives also did not significantly predict NA over Week 1 of data collection. However, MotivNeg was a significant predictor of NA in Weeks 2-4. *denotes final models.

Study 1: Interim Discussion

As we predicted, reported engagement in higher numbers of Risky Behaviors predicted higher concurrent Positive Affect and lower concurrent Negative Affect in the short-term (Week 1). However, higher Risky Behavior engagement *increased* concurrent Negative Affect in the longer-term (Weeks 2-4). These findings were supported by a time-lagged analysis that demonstrated that engagement in more Risky Behaviors in the previous week predicted higher Negative Affect the following week. Additionally, our hypothesis that engagement in Risky Behavior would lead to short-term boosts in Positive Affect, and higher Negative Affect longer-term, was also supported. Linear models revealed that Positive Affect increased over Week 1, and decreased linearly in the following three weeks; in contrast, Negative Affect decreased during Week 1, and increased in Weeks 2-4 before stabilizing. When examining how motivation orientation impacted the relationship between Risky Behavior engagement and Affect, no significant effects were found for Positive Affect. For Negative Affect, increased motivation to decrease negative emotions predicted *higher* Negative Affect, in line with previous literature showing that emotional avoidance can lead to negative emotional impacts (Gross & John, 2003).

Previous research has shown that prohedonic motivations to improve positive and decrease negative affect represent only a subset of motives that may guide emotion

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regulation (Tamir, 2016). While Study 1 served as an initial test for potential effects of different motivation orientations for risky behavior with the inclusion of control motives, we aimed to conduct a more in-depth investigation into how people's motivation orientations for risky behavior might impact emotional outcomes. Therefore, in Study 2, we examined risky behavior engagement in association with an expanded range of motivation orientations, using qualitative self-report data in response to open-ended prompts.

Study 2: Methods

Overview of Experimental Procedure

      The goal of Study 2 is to characterize in more detail participants' reported motivations to engage in risky behaviors. This study will enable expanded characterizations of motivations for risky behavior as a form of emotion regulation, relative to Study 1, in two ways:

    1) While Study 1 only allowed participants to report on three motivation orientations (increase positive emotions, decrease negative emotions, and increase feelings of control), Study 2 will ask participants to report on a

broader range of motivations for behavior engagement including hedonic, contra-hedonic, social, autonomy, and control motives.

2) Study 2 will primarily consist of qualitative data (responses to open-ended questions) enabling participants to describe their motivations to engage in risky behavior, as well as any potential consequences of these behaviors, in their own words.

The goal of Study 2 is to gain a deeper understanding of motives to engage in risky behaviors and their emotional outcomes through the collection of rich qualitative data. Using a combination of a thematic analysis (Braun & Clarke, 2012) and a grounded theory approach (Heath & Cowley, 2004), we will explore how participants' hedonic and instrumental motives to engage in risky behavior impact their physical, social, and emotional well-being.

Participants

Participants for Study 2 were recruited from two sources. The first recruitment source is participants from Study 1 (i.e., adults based in the United States and United Kingdom, recruited from the Prolific online platform) who consented to being contacted for future studies (N = 254) and returned for Study 2 (N = 78, $M_{(age)}$ = 35.14, $SD_{(age)}$ = 10.23, 59% Women, 37% Men, 4% Gender Non-conforming). Full demographics for

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participants who returned from Study 1 will be included in Appendix I. Monetary compensation ($14/hr) was offered for participation. The current project does not include analyses to link Study 1 and Study 2 data across these participants. Additionally, because Study 2 was conducted in February-May 2023 with significant time passing since data collection for Study 1, an additional cohort of participants were recruited to enable a larger total sample for Study 2. The second set of participants was recruited from University of Denver's SONA pool of undergraduate college students ($N = 85$, $M_{(age)} = 19.35$, $SD_{(age)} = 1.39$, 67% Women, 31% Men, 1% did not answer) who completed the study for course credit. Study 2 was completed in one session, and all questionnaires were administered through Qualtrics.

Motivation to Engage in Risky Behavior Questionnaire

Our primary measure in Study 2 is our independently developed questionnaire on motives to engage in risky behaviors. For this questionnaire, participants were asked to reflect on risky behaviors they had engaged in within the last month. To index these behaviors and orient participants to them prior to reflection, we administered the RISQ at the beginning of the study. Then, participants were asked questions about motives to engage in reported risky behaviors based on the five motivational subtypes identified by Tamir (2016); hedonic motives, contra-hedonic motives, social motives, autonomy

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motives, and control motives. For each motivational subtype, we asked participants whether or not they endorsed the motive (Yes/No/Not Sure) as applying to their risky behavior engagement (note that this was queried globally, not by individual type of risky behavior). If a given motive was endorsed, participants were asked to describe how they use risky behavior to pursue this motive, in an open-ended fashion with as much detail as they felt comfortable with. To ensure that participants were not failing to endorse motives to move through the survey more quickly, participants who responded "No" to a given motive were asked to describe *any time* in their life when they might have engaged in risky behavior to pursue that particular motive, if applicable. We also provided an open-ended prompt asking participants to describe any other motives for risky behavior engagement that were not previously covered in the survey. The coding schema for this qualitative data is described in detail below. The full questionnaire is included in Appendix II.

Supplemental Questionnaires

Because the Motivation to Engage in Risky Behavior Questionnaire requires some ability to introspect on and describe emotional experiences, we collected previously published self-report questionnaires that characterize individual differences that previous research has shown may impact these skills.

Toronto Alexithymia Scale (TAS; (Kooiman et al., 2002). Alexithymia, or difficulty identifying, describing, and focusing on feelings and emotional states could impact capacity and tendency to describe emotional experiences. Therefore, we included the Toronto Alexithymia scale as a measure to explore whether differences in quality and length of responses may be related to participants' ability to introspect on their emotional experiences.

Short-form Trait Emotional Intelligence Questionnaire (TIEQue-SF; (A. Cooper & Petrides, 2010). Similarly to alexithymia, individual differences in emotional intelligence, or how individuals process and reason about their own emotions and the emotions of others, may also be associated with differences in the quality and length of responses. Additionally, emotional intelligence has been shown to be associated with differences in motivation to engage in problematic online behaviors, such that lower emotional intelligence is related to increased engagement in these behaviors as a strategy to cope with negative emotions (Kircaburun, Demetrovics, & Griffiths 2020; Sural, Griffiths, & Kircaburun 2019). Therefore, we included the TEIQue-SF as an additional supplementary measure to account for potential individual differences in qualitative responses.

TAS and TIEQue-SF measures in our Study 2 samples were calculated and inspected for possible outliners. Out of our total combined sample of 163 participants, 3

participants were observed to have outlying scores (> 2 SDs from sample mean) in total: 2 participants on the TAS and 1 participant on the TIEQue-SF. Given that the number of outliers was minimal and these measures were supplementary and collected on an exploratory basis, we proceeded with Study 2 analysis utilizing our full sample.

Predictions and Data Analytic Strategy

Because this is the first study, to our knowledge, that directly examines frequency of endorsement for each motivational subtype and endorsement of multiple motives for risky behavior engagement, our predictions for the frequency of each motive and their consequences remain open. By taking this open and exploratory approach, we aim to lay the groundwork for future investigations of emotionally motivated engagement in risky behavior in order to generate more tailored and effective public health interventions.

Measuring Differences in Frequency of Risky Behavior Engagement and Motive Subtypes

To examine for potential differences in frequency of engagement in specific subtypes of risky behavior as well as potential differences in frequency of the types of motives endorsed, we ran a series of Chi-Squared tests comparing frequency of reported Motivation categories (Prohedonic, Contrahedonic, Social, Epistemic, Eudaimonic), as

well as to examine how Motivation frequency differed between High and Low Risk-takers. Risk-takers were separated into two groups (High vs. Low) via a median split.

The first set of chi-squared tests aimed to determine whether our participants demonstrated a significant difference in the frequency of reported motives, within the five identified motivational subtypes, for engaging in risky behaviors. These motivational subtypes include pro-hedonic motivation, contra-hedonic motivation, social motivation, autonomy motivation, and control motivation. The next set of tests aimed to determine whether our participants demonstrated a significant difference in the frequency of reported engagement in 9 Risky Behavior subtypes (drug behavior, heavy alcohol use, aggression, risky sexual behaviors, self-harm, recklessness, gambling, eating behavior, and illegal behaviors; outlined in Sadeh & Baskin-Sommers, 2017). Next, to get a high-level view of whether differences in risky behavior engagement are associated with certain motives, we tested for potential differences in the frequency of endorsements of Motivational Subtypes between High vs. Low Risk-takers (2 Risky Behavior groups x 5 Motivation subtypes).

While this analytical approach provides a simplified view of the relationship between types of risky behaviors and associated motivations, this was necessary given that we asked participants to report motives for risky behavior engagement globally, instead of in association with individual types of risky behaviors. We opted for this

approach given that asking participants to indicate motivation orientation and provide

open-ended response information for each individual risky behavior endorsed would have

greatly increased demand on participants and could have led to high participant dropout,

particularly for high risk-takers. Because the primary focus of Study 2 was the

qualitative, open-ended responses, quality of those responses was prioritized.

Qualitative Coding of Open-Ended Responses

Qualitative data was coded on multiple dimensions of motivations and outcomes

and analyzed using (Braun & Clarke, 2006) guidelines for thematic analysis. Initial

coding categories were pre-generated using the motivational subtypes detailed in the

introduction (pro-hedonic, contra-hedonic, performance, social, epistemic, and

eudemonic). After coding for these initial themes, responses were continuously reviewed

for additional emerging themes or subthemes. Using a grounded theory approach, we

determined whether common alternative motivations or consequences of risky behavior

engagement not covered in the initial survey questions emerged as significant categories.

All responses were coded in NVivo software (QSR International Pty Ltd., 2022).

Study 2: Results

Measuring Differences in Frequency of Risky Behavior Engagement and Motive Subtypes

Frequency of Reported Motivation Subtypes

      Chi-squared tests revealed a significant difference in the reported frequencies of

Contrahedonic Motives compared to all other motives except for Social (full results with

statistice in Table 5) in that participants endorsed Contrahedonic motives less frequently

than Prohedonic, Control, and Identity motives. Social Motives were also endorsed

significantly less frequently than Control, and Identity motives, but no differences were

found between Social and either Prohedonic or Contrahedonic motives. No other

significant differences were found between Motivation Subtypes.

	Prohedonic	Contrahedonic	Social	Epistemic	Eudaimonic
Prohedonic		X^2= 18.28, p = .001*	X^2= 6.23, p = .18	X^2= 2.08, p =.72	X^2= 5.24, p =.26
Contrahedonic			X^2= 5.41, p = .25	X^2= 10.75, p = .03*	X^2= 12.78, p = .01*
Social				X^2= 9.46, p = .05*	X^2= 14.73, p < .01*
Epistemic					X^2= 6.59, p = .16
Eudaimonic					

Table 5. Chi-squared results testing for differences in frequency between Motivation subtype comparisons, combined across both Study 2 samples. Frequency of Prohedonic motive endorsement only differed from Contrahedonic. Contrahedonic motives significantly differed from all other motives except for Social. Frequency of Epistemic and Eudaimonic motives did not significantly differ.

Frequency of Reported Risky Behavior Subtypes

Participants reported engaging in reckless behaviors (i.e. overspending and reckless driving) more than any other behavioral subtypes, followed by drug use, heavy alcohol use, and overeating (overall frequency of behavioral subtypes in Figure 5). Chi-squared tests revealed that eating behaviors did not significantly differ from any other behavioral subtype. Additionally, general risky behaviors (theft/robbery, property destruction) and aggression were reported significantly less than all behavioral subtypes besides eating. Drug behaviors were endorsed significantly *more* than all behavioral subtypes besides eating. Alcohol also emerged as a significant behavior, as it was more frequently endorsed than all subtypes besides eating and self-harm. Full chi-squared results can be found in Table 6.
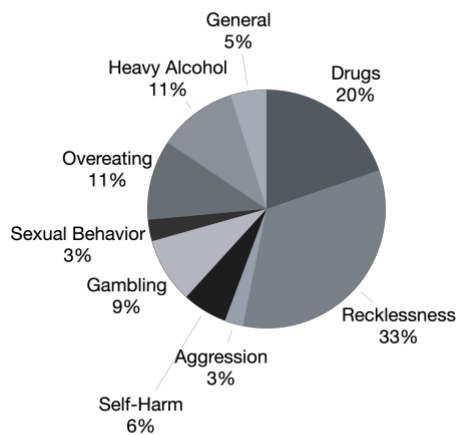
Figure 5. Pie chart showing % of reported frequencies of endorsed subtypes Behavior subtypes, combined across both Study 2 samples.

	Drugs	Alcohol	Aggression	Sexual Behav.	Gambling	Eating	Self-Harm	Reckless-ness	General
Drugs		X^2= 51.55, $p < .001^*$	X^2= 189.45, $p < .001^*$	X^2= 74.14, $p < .001^*$	X^2= 92.23, $p < .001^*$	X^2= 9.87, $p = .77$	X^2= 106.82, $p < .001^*$	X^2= 112.07, $p < .001^*$	X^2= 115.71, $p < .001^*$
Alcohol			X^2= 45.80, $p < .001^*$	X^2= 24.12, $p < .001^*$	X^2= 22.27, $p = .001^*$	X^2= 1.90, $p = .75$	X^2= 14.76, $p = .06$	X^2= 35.15, $p < .001^*$	X^2= 43.23, $p < .001^*$
Aggression				X^2= 37.23, $p < .001^*$	X^2= 59.14, $p < .001^*$	X^2= 8.43, $p = .21$	X^2= 48.44, $p < .001^*$	X^2= 55.03, $p < .001^*$	X^2= 145.33, $p < .001^*$
Sexual Behav.					X^2= 61.35, $p < .001^*$	X^2= 4.93, $p = .62$	X^2= 18.69, $p = .10$	X^2= 19.44, $p = .19$	X^2= 46.60, $p < .001^*$
Gambling						X^2= 8.76, $p = .19$	X^2= 23.69, $p = .02$	X^2= 28.52, $p = .02$	X^2= 46.41, $p < .001^*$
Eating							X^2= 17.41, $p = .03$	X^2= 18.25, $p = .05$	X^2= 14.71, $p = .07$
Self-Harm								X^2= 47.64, $p < .001^*$	X^2= 54.58, $p < .001^*$
Reckless-ness									X^2= 113.08, $p < .001^*$
General									

* = p value < .00135

Table 6. Chi-squared results testing for differences in frequency between Risky Behavior subtype comparisons, combined across both Study 2 samples. Bonferroni correction for

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37 comparisons resulted in a significant alpha of .00135. Importantly, not all Risky Behavior subtypes contained the same number of items.

Relationships Between Risky Behaviors and Frequency of Reported Motivation Subtypes

High vs. Low Risk-takers were categorized using a median split. The median number of reported Risky Behaviors for this sample was 4, so participants who reported fewer than 4 risky behaviors were categorized as "Low" while participants who reported 5 or more risky behaviors were categorized as "High". When comparing differences in frequency of Motivation endorsement in High vs. Low Risk-Takers, only the endorsement of Contrahedonic Motivations differed between the two groups, with High risk-takers more likely to endorse Contrahedonic motivation. Differences between groups were not significant for other Motivation subtypes (full results in Table 7).

	Risk-Taking
Prohedonic	$X^2 = 4.81$, $p = .31$
Contrahedonic	$X^2 = 9.93$, $p < .05*$
Social	$X^2 = 4.62$, $p = .33$
Epistemic	$X^2 = 5.98$, $p = .20$
Eudaimonic	$X^2 = 3.20$, $p = .52$

Table 7. Chi-squared results examining differences in Motivation Orientation as a function of Risk-Taking (High vs. Low Risk-Takers, as characterized by median split). High risk-takers endorsed Contrahedonic motives significantly more than low risk-takers.

Qualitative Coding of Open-Ended Responses

Social Motives

The most frequently coded motives for engaging in risky behaviors were Social Motives (N = 43), for which participants reported engaging in these behaviors as a way to impact their relationships with other people. Given that a large portion of our sample were early college students, the high frequency of social motivations may not be surprising. College is a pivotal developmental period for independently developing social

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relationships, and social integration is an important predictor for perceptions of belonging and academic success among college students (Christie & Dinham, 1991).

Many participants reported engaging in risky behaviors, particularly alcohol consumption, in order to facilitate positive social connections. One participant reported that they "feel more confident talking to some people when I have had alcohol", with another participant reporting that "it can feel easier to talk to others and create relationships while under the influence". Substance use was commonly cited as a way for people to "bond" or "celebrate with friends. Others reported engaging in these behaviors to avoid social ostracization and fit in with their social groups, whether they enjoyed engaging in the behavior or not. One such participant reported that "[I do it] to fit in. I'm still not 100% sure I like any of it, but I do it socially 99% of the time". Others reported similar feelings of engaging in these behaviors to "not feel left out."

Sympathy Seeking. One novel theme related to Social Motives that emerged from participants' qualitative responses was the motivation to get sympathy from others (Sympathy-Seeking; N = 16). Many of these participants reported that engaging in these behaviors facilitated emotional support from a particular close other, such as a romantic partner. One participant reported that they engaged in risky behavior because "I really want them to see how much I'm struggling or what I am going through", with another stating that they "seek validation for the feelings I am experiencing through my friends

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and relationships". Another participant reported that engaging in these behaviors was a way to "[look] for advice or support…without words to seek help". Some of these behaviors were more extreme, with one participant reporting that they "became anorexic as a way to receive sympathy and attention from my family". Conversely, some participants reported engaging in these behaviors as a way to influence the emotions of other people, such as one participant who reported engaging in risky behavior to "manipulate people…in order to elicit their sympathy".

25% of participants who reported this Sympathy-Seeking motivation (N=4) specifically cited the motivation to seek support in romantic relationships. One participant reported that these behaviors were a way to "get positive reinforcement and nice words from my fiancé", while another stated that engaging in risky behaviors was a way to "become distant from my [girlfriend] to get her to show she cares by asking why". Outside of risky behaviors, other participants reported up-regulating negative emotions, such as "exacerbate[ing] how stressed I am to get more attention from my boyfriend" and crying to romantic partners "just to get them out of being mad at me". Together these results suggest that risky behaviors can be used as a tool to facilitate social support, especially from romantic partners, and that interventions that improve feelings of social and emotional support may be effective in curbing engagement in risky behaviors in such contexts.

Prohedonic Motives

Prohedonic motives, or the motives to enhance one's positive affect, were the second most frequently coded within this sample (N = 33). Perhaps unsurprisingly, many participants reported engaging in risky behaviors because these behaviors "make me happy" and "bring me joy". Interestingly, 6 out of the 33 responses coded as reflecting Prohedonic motives specifically indicated a desire to *maintain* positive emotions while already in a positive state. 3 of these 6 participants reported spending behavior specifically, stating that when they feel happy, they "bought things to maintain that happiness" and "buy things as a way to treat myself when something positive happens to me." Similarly, another participant reported spending as a "reward…when I do well on something like a test or paper." Other participants reported engaging in substance use to maintain positive emotions, stating that "alcohol or drugs help alleviate the thoughts that might diminish [my] positive emotions", and that "smok[ing] a joint if I'm in a positive headspace [helps to] relax and have some fun." These results suggest that the desire to maintain positive affective states, as opposed to moving from a neutral or negative state into a positive state, may be an important motive for further empirical exploration.

Timescales of Positive Emotions

Another novel theme that emerged from qualitative coding revealed that almost half of participants who reported prohedonic motivations (N = 15) had intuitive understanding that the effects of engaging in risky behaviors to approach positive and avoid negative affective states operate on a short timescale. All 15 of these participants specifically used the phrase "in the moment" when describing the emotional boost that they got from engaging in these risky behaviors. 4 of these 15 participants also indicated the understanding that short-term positive boosts could lead to long-term negative consequences. One such participant reported that while risky behavior was "exciting and thrilling in the moment, these behaviors often amplify the negative emotions after the fact." Another reported that after impulse shopping, they "regret my actions later and I feel worse." Others reported an understanding that engagement in these behaviors for short-term pleasure could lead to "bad habits". Participants' hypotheses and reports that engaging in risky behaviors could have a short-term boost but negative consequences in the long-run reflect our Study 1 hypothesis that these behaviors have a short term positive and long term negative impact. While our Study 1 Aim 2 hypothesis was not supported statistically, these qualitative results suggest that longitudinal impacts of risky behavior engagement on emotion are still an important area of inquiry.

Eudaimonic Motives

The next most frequently coded motive for risky behavior was motive to increase feelings of control or autonomy, or eudaimonic motives (N=25). Many of the qualitative responses reflected the fact that this dataset consisted of college-aged young adults, who reported that "[engaging in] risky behavior does feel associated with independence and adulthood for me." 6 of the 25 respondents specifically reported engaging in self-harm behaviors to "control emotions", "have something that feels grounding", and assert independence either from parents (N=2) or medical providers (N=2).

Risky behaviors seemed to offer an avenue of control for participants who felt like they had little control in other areas of their lives. One participant reported that "if things aren't going as planned, and there is a risky opportunity, but it is an opportunity to make my own decision and feel like I'm in control, I usually take it." Another participant echoed this sentiment, reporting that when they felt "trapped and burdened by responsibilities, it's easy to escape using impulsive habits", while another reported that "when I am out of control in my life, I usually search for outlets to regain this control. In extreme situations, that's engaging in risky behavior." These results indicate that control is a significant motive for engaging in risky and potentially harmful and injurious behaviors, and that highlighting more positive behaviors to increase feelings of control (i.e. exercise, studies) may be an effective intervention, particularly for college-aged adults.

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Epistemic Motives

Only 7 participants provided responses that were coded for epistemic motives, or motives to validate aspects of one's identity. For these 7 participants, responses fell into two categories. The first was boosting self-esteem or positive self-image. One participant reported impulse shopping for items that "boost my perception of myself and make me feel better physically", while another echoed that risky behaviors give "a confidence and ego boost." One participant reported that engaging in risky sexual behavior helped to go against negative self-image, stating that "I don't like myself physically but If I can get someone else to then maybe I am wrong." Conversely to this participant, the second category of respondents used risky behaviors to *reinforce* negative perceptions of identity, with one participant reporting that these behaviors "make them feel worse about myself and reinforce what I already know about myself." While not a common code for this study, previous research has found that individuals with lower self-esteem often down-regulate positive emotions because they feel that negative mental states better match their self-perceptions (Wood et al., 2009). Therefore, future research could benefit from further exploring how self-esteem impacts identity and subsequent emotional states.

Contrahedonic Motives

Of our five motives of interest, contrahedonic motives, or the motivation to increase negative feelings, were endorsed less than the other four motives (N = 5) Contrahedonic motives had some overlap with identity motives, with participants reporting the desire to feel worse because it fit with their self-perception (i.e. "I do drugs to fuel the dislike I have for myself" and "the goal of [self-harm] was to make myself feel worse physically as part of me believed I deserved to be in pain." Similar to the novel code for maintaining positive emotions, other participants reported engaging in risky behaviors to maintain negative emotions such as anger (N=2) and depression (N=1).

Approach and Avoidance Motivation

More responses were coded for approach-positive motivation (N=22) than avoid-negative motivation (N=16). For approach-positive, participants used risky behavior as a way to "enhance" and "amplify" positive emotions and get out of neutral emotional states. One participant reported that when their "emotions feel dulled, risky things can make me feel euphoric." Another participant echoed the desire to feel that euphoria, stating that they "crave the feeling of strong emotions, especially positive ones. I want to feel euphoric and not just slightly happy." Others reported enjoying the *anticipation* of feeling something positive, like "[spending] a lot of money on unnecessary items so I can

have something to look forward to", with another participant reporting that "personally it is the excitement and anticipation of waiting for something that fabricates happiness."

For participants who reported engaging in risky behavior to avoid negative emotions, responses were coded to reflect a particular motivation to cope with feelings of stress and anxiety (N = 9, or 56% of Avoid-Negative codes). Participants reported using risky behaviors to "cope with" or "numb" anxious feelings and stress, stating that "drinking and using marijuana helps me feel more relaxed and have fun." Other participants reported a more avoidant coping approach with risky behavior, stating that engaging in risky behaviors "distract[s] myself from things that might be…stressing me out" and another stating that they "usually engage in risky behaviors to block negative feelings and moods." For both approach-positive and avoid-negative motivations, participants reported that they perceived risky behavior as a way to achieve their respective emotional goals but were less clear on whether these behaviors were successful in achieving those goals. While some previous research has dug into approach and avoidance motivation in the emotion regulation literature, future research may benefit from systematically investigating whether approach vs. avoidance motivations significantly impact emotional outcomes.

Study 2: Interim Discussion

Participants reported higher engagement in Drug- and Alcohol-related behaviors, and lower engagement in Aggression- and Gambling-related behaviors, relative to other subtypes of risky behavior. Given that our sample was recruited from non-clinical populations, is generally comprised of young (20's-30's) adults and university students, and is majority-women, these behaviors align with expectations of risky behavior engagement based on developmental literature (Rivers et al., 2013). While people quantitatively reported Prohedonic motives more frequently than other motives (numerically; differences were not significant), qualitative coding of short-response data revealed Social motives to emerge as the most frequent Motivation subcategory, with Prohedonic motives following closely behind. Both qualitative and quantitative characterization of data showed that Contrahedonic motives were endorsed the least, while Control and Identity motives fell in the middle. Additionally, qualitative coding indicated that participants were generally motivated to approach positive emotions and avoid negative emotions when engaging in risky behavior. Additionally, Sympathy-Seeking and Timescales of Prohedonic Motives emerged as novel themes. Characterization of Sympathy-Seeking motives suggested that participants were especially motivated to receive emotional support from close others, and the emergence of Timescales of Prohedonic Motives as a theme indicated that participants' self-reported

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some awareness regarding the timescale of emotional benefits of Risky Behavior consistent with our Study 1 predictions (i.e., short-term emotional benefits, but long-term emotional drawbacks, to risky behavior engagement).

General Discussion

Engagement in risky behaviors can have negative consequences on both the individual and societal level. While previous research has found strong links between risky behavior engagement and emotion dysregulation, little research has dug into antecedents and consequences of these behaviors as a potentially more accessible emotion regulation strategy when cognitive resources or self-regulation abilities are limited. Moreover, while motivation has been found to modulate emotion regulation outcomes, potential effects of different motivation orientations in the context of risky behaviors have not been systematically examined. To address this gap, we first investigated how engagement in Risky Behaviors and associated motives shaped both short and long-term emotional consequences by examining self-report measures of affect and risky behavior engagement over a 28-day period in individuals who had recently experienced a stressful event (Study 1). Then, we took a qualitative approach to investigating individual motives for engaging in Risky Behaviors using narrative

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responses to open-ended prompts, enabling more in-depth view of a range of motivational subtypes along with individuals' perceptions of their motives (Study 2).

For Study 1 Aim 1, we hypothesized that risky behaviors would have positive consequences on affect at the time of engagement, with higher reported risky behaviors predicting concurrent increases in positive affect and decreases in negative affect. In line with our predictions, we found that Positive Affect increased, and Negative Affect decreased with concurrent increasing risky behavior engagement in the first week of data collection. However, when looking at concurrent affect relative to risky behavior engagement in Weeks 2-4, the effect of Risky Behavior no longer significantly predicted Positive Affect, while engagement in more Risky Behaviors predicted increased Negative Affect.

In Study 1 Aim 2, we hypothesized that short-term boosts in affect with increased engagement in risky behavior would be followed by negative affective consequences, such that Negative Affect would increase while Positive Affect decreased as a function of Risky Behavior engagement in the long-term. We found partial evidence for this prediction, with regression analyses revealing that Positive Affect increased linearly with increased Risky Behavior over Week 1 but decreased linearly over Weeks 2-4. We found no significant non-linear relationships between Risky Behavior and Positive Affect. Conversely, we found that while Negative Affect *decreased* linearly with increased Risky

Behavior in the short-term (Week 1), this was followed by linear *increases* in Negative Affect with increased Risky Behavior over Weeks 2-4. Further, we found significant non-linear relationships between Risky Behavior and Negative Affect in Weeks 2-4, wherein Negative Affect increased with the quadratic term and decreased with the cubic term, suggesting short-term decreases and longer-term increases in negative affect, as well as increasing stabilization of negative affect over time.

When examining how the relationship between Risky Behavior and Affect was impacted by Motivation in Study 1 Aim 3, we did not find any significant effects for Positive Affect in either Week 1 or Weeks 2-4. Motivation also did not moderate the effect of Risky Behavior on Negative Affect. However, when examining Negative Affect as an outcome, we found that increased motivation to engage in risky behavior to decrease negative emotions (as a main effect) significantly predicted *higher* Negative Affect. This finding aligns with previous research showing that avoidance can lead to worse emotional outcomes (Gross & John, 2003). Additionally, Positive and Negative Affect could be impacted not only through motives, but through *expectations* of how engaging in a given risky behavior will make one feel. Future studies should examine how prediction errors, or discrepancies between the expected outcome and actual outcome, influence emotional consequences.

In Study 2, we aimed to deepen our understanding of different motivation orientations for engaging in risky behaviors as a way to influence both emotional and non-emotional goals. We observed higher engagement in reckless, drug, and alcohol behaviors, and lower engagement in aggression and gambling behaviors, compared to other behavioral subtypes. Given the use of non-clinical, women-majority, younger adult participant samples recruited from community and university participant pools, reported engagement in these risky behavior subtypes is consistent with previous literature characterizing risky behavior in similar populations (Prendergast, 1994). Out of the five motivation subtypes, contrahedonic motivations were endorsed least. However, we also found that high risk-takers endorsed contrahedonic motivation significantly more than low risk-takers. These results suggest that risky behaviors may be perceived as a particularly effective tool when individuals are motivated to feel worse, and that individuals with high contrahedonic motivation may engage in higher levels of risky behaviors and be particularly susceptible to associated negative health consequences. Additionally, just as some participants reported a motivation to maintain positive affect, other participants reported engaging in non-risky behaviors (such as listening to music) in order to maintain negative affect, specifically sadness. This suggests that people may be motivated to maintain negative affect (i.e. "wallow"), but may utilize non-risky behaviors to do so.

Qualitative coding results revealed that social connection is a strong motivator for engagement in risky behaviors. Many participants reported that engaging in these behaviors was a tool for facilitating social connection through emotional support (i.e., "sympathy seeking"), particularly in the context of romantic relationships. Similar to previous research, our qualitative results also indicated that people were motivated to engage in these behaviors to approach positive affective states and avoid negative affective states, particularly stress and anxiety. However, digging into identity motives showed overlap with contrahedonic motives: specifically, our qualitative data suggest that people reported higher motivation to feel bad when they endorsed more negative self-perceptions. Compared to prohedonic motives, contrahedonic motives have been explored far less in the emotion regulation literature. These results show that future work should investigate this motive further, particularly in the context of identity and self-perception, as these individuals may be particularly vulnerable to negative outcomes resulting from risky behavior engagement.

Limitations and Future Directions

The current investigation had several limitations. First, a large portion of our Study 2 sample consisted of college students in early adulthood (average age ~ 19 years), while the Prolific sample utilized in Study 1 and Study 2 consisted of slightly older adults

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(average age ~ 35 years). Additionally, our samples across both Study 1 and 2 were majority-women. Age and gender have both been associated with differences in risky behavior engagement: early adulthood, particularly for individuals in college, is a developmental period marked by increased risk-taking (Busse et al., 2021) in contrast, men tend to engage in higher rates of risky behavior than women (Griffith et al., 2020). Importantly, although some participants reported dealing with clinical disorders such as depression, anxiety, and anorexia, we utilized a convenience sample and did not recruit or screen for clinical conditions. As such, reported findings should not be considered representative of these clinical populations and future studies should recruit these populations directly to determine whether motives differ for clinical vs. non-clinical participants. These limitations of our sample could have potentially skewed our risky behavior effects. Future studies may benefit from recruiting and examining risky behavior engagement and associated outcomes in more diverse samples and along other demographic dimensions.

Next, Study 1 utilized a daily diary design as opposed to an ecological momentary assessment design with multiple timepoints per day. Such a design would offer a more fine-grained examination of how risky behaviors are impacting affect in the moment and could provide a more accurate assessment of motivation to engage in these behaviors compared to retroactive reporting. Given that we had only one measure of affect and one

measure of risky behavior engagement per day, we used average daily scores of positive, negative, and control motivations; using this approach, we observed a significant positive relationship between Negative Motivation and Negative Affect. However, when we examined motivation on a behavior-level basis (without averaging motivations for each behavior per day), we found even more significant effects of different Motivation Orientations (particularly Control) on Negative Affect (results in Appendix III). Similarly, we obtained global reports of motivation for engagement in risky behavior in Study 2, as opposed to motivations for each individual reported behavior. This approach does not allow us to fully investigate how motivation for risky behavior might differ for individual behaviors or behavioral subtypes. Future studies should explore affect and motivation at the level of the behavior, allowing for a more fine-grained analysis of potential relationships between these constructs.

Finally, while we used a previously proposed list of motives for emotion regulation in Study 2 (following Tamir et al. 2016) when examining people's motivations for engaging in risky behavior, it is possible that additional motivation subtypes could have emerged if participants did not receive any information about possible motivations in their question prompts. Taking a fully grounded-theory approach, where participants are asked why they engaged in risky behaviors without being primed to possible motive categories, could reveal further important motivational subtypes for empirical exploration.

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While the behaviors explored in the current investigation have important consequences on personal and public health, other kinds of risky behaviors are worth exploring in the context of emotion regulation. Behaviors such as drug taking, heavy alcohol use, and aggression could incur serious emotional, health, and legal consequences that exacerbate negative affect. However, more "socially acceptable" risky behaviors such as stock market trading, engaging in extreme sports, and showing emotional vulnerability with a close other could also incur emotional consequences, but are often not the focus of empirical investigations. For example, a recent study examining how motives to engage in high-risk sports such as rowing and mountaineering reported that athletes from both of these groups had greater alexithymia than age-matched controls, suggesting that these sports provided an potential outlet for coping with emotional difficulties (Woodman et al., 2010). Further, athlete participants from this study reported perceiving that emotional expression improved after engagement int their respective sports, suggesting that the sport had a regulatory effect for these athletes. Future studies should build on the current investigation by using expanded definitions and categories for risky behavior and investigating whether motives for engagement differ between risky health behaviors and risky behaviors that are generally considered more adaptive (i.e. investing, social risk, sports) but less investigated in terms of their emotional consequences.

The results of this study expand on the emotion regulation literature by considering risky behavior as a motivated emotion regulation strategy. Engagement in risky behavior provided short-term boosts in positive affect but had more pronounced effects on negative affect over time. Individual qualitative reports suggest that people have some inherent understanding that the effects of these behaviors are short-lived but choose to engage in them for the prospect of feeling good and facilitating social connections. As one participant straight-forwardly put it, "I know exactly what I am doing and am aware of the risks but simply do not care for the consequences." By gaining a deeper understanding of people's motives to participate in these behaviors despite perceived consequences, we may be better positioned to develop more individualized and effective interventions that consider multiple levels of analysis (i.e. person, emotion, motivation). While typically framed in terms of negative consequences, our results show that risky behaviors do have real and perceived positive impacts, and that people lean into these positive impacts even when they know they will be short-lived.

References

Aldao, A., & Nolen-Hoeksema, S. (2012). When are adaptive strategies most predictive of psychopathology? *Journal of Abnormal Psychology*, *121*(1), 276–281. https://doi.org/10.1037/a0023598

Arsandaux, J., Montagni, I., Macalli, M., Bouteloup, V., Tzourio, C., & Galéra, C. (2020). Health Risk Behaviors and Self-Esteem Among College Students: Systematic Review of Quantitative Studies. *International Journal of Behavioral Medicine*, *27*(2), 142–159. https://doi.org/10.1007/s12529-020-09857-w

Auerbach, R. P., Abela, J. R. Z., & Ringo Ho, M.-H. (2007). Responding to symptoms of depression and anxiety: Emotion regulation, neuroticism, and engagement in risky behaviors. *Behaviour Research and Therapy*, *45*(9), 2182–2191. https://doi.org/10.1016/j.brat.2006.11.002

Bigman, Y. E., Mauss, I. B., Gross, J. J., & Tamir, M. (2016). Yes I can: Expected success promotes actual success in emotion regulation. *Cognition and Emotion*, *30*(7), 1380–1387. https://doi.org/10.1080/02699931.2015.1067188

Bonn-Miller, M. O., Vujanovic, A. A., & Zvolensky, M. J. (2008). Emotional Dysregulation: Association With Coping-Oriented Marijuana Use Motives Among Current Marijuana Users. *Substance Use & Misuse*, *43*(11), 1653–1665. https://doi.org/10.1080/10826080802241292

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, *3*(2), 77–101. https://doi.org/10.1191/1478088706qp063oa

Busse, H., Buck, C., Stock, C., Zeeb, H., Pischke, C. R., Fialho, P. M. M., Wendt, C., & Helmer, S. M. (2021). Engagement in Health Risk Behaviours before and during the COVID-19 Pandemic in German University Students: Results of a Cross-Sectional Study. *International Journal of Environmental Research and Public Health*, *18*(4), 1410. https://doi.org/10.3390/ijerph18041410

Carstensen, L. L., & Mikels, J. A. (2005). At the Intersection of Emotion and Cognition: Aging and the Positivity Effect. *Current Directions in Psychological Science*, *14*(3), 117–121. https://doi.org/10.1111/j.0963-7214.2005.00348.x

Christie, N., & Dinham, S., (1991) Institutional and External Influences on Social Integration in the Freshman Year. *The Journal of Higher Education, 62(4)*.

Clark, L. A., & Watson, D. (1994). *The PANAS-X: Manual for the Positive and Negative Affect Schedule - Expanded Form* [Data set]. University of Iowa. https://doi.org/10.17077/48vt-m4t2

Cooper, A., & Petrides, K. V. (2010). A Psychometric Analysis of the Trait Emotional Intelligence Questionnaire–Short Form (TEIQue–SF) Using Item Response

Theory. *Journal of Personality Assessment*, *92*(5), 449–457.

    https://doi.org/10.1080/00223891.2010.497426

Cooper, M. L., Agocha, V. B., & Sheldon, M. S. (2000). A Motivational Perspective on

    Risky Behaviors: The Role of Personality and Affect Regulatory Processes.

    Journal of Personality, *68*(6), 1059–1088. https://doi.org/10.1111/1467-

    6494.00126

Cooper, M. L., Russell, M., Skinner, J. B., Frone, M. R., & Mudar, P. (1992). Stress and

    alcohol use: Moderating effects of gender, coping, and alcohol expectancies.

    Journal of Abnormal Psychology, *101*(1), 139–152. https://doi.org/10.1037/0021-

    843X.101.1.139

Cox, W. M., & Klinger, E. (n.d.). *A Motivational Model of Alcohol Use*.

Cyders, M. A., & Smith, G. T. (2008). Emotion-based dispositions to rash action:

    Positive and negative urgency. *Psychological Bulletin*, *134*(6), 807–828.

    https://doi.org/10.1037/a0013341

Dijkstra, J. K., Kretschmer, T., Lindenberg, S., & Veenstra, R. (2015). Hedonic,

    Instrumental, and Normative Motives: Differentiating Patterns for Popular,

    Accepted, and Rejected Adolescents. *The Journal of Early Adolescence*, *35*(3),

    308–328. https://doi.org/10.1177/0272431614535092

English, T., Lee, I. A., John, O. P., & Gross, J. J. (2017). Emotion regulation strategy selection in daily life: The role of social context and goals. *Motivation and Emotion*, *41*(2), 230–242. https://doi.org/10.1007/s11031-016-9597-z

Fields, S. A., Ramos, A., & Reynolds, B. A. (2015). Delay discounting and health risk behaviors: The potential role of stress. *Current Opinion in Psychology*, *5*, 101–105. https://doi.org/10.1016/j.copsyc.2015.07.003

Ganesan, B., Al-Jumaily, A., Fong, K. N. K., Prasad, P., Meena, S. K., & Tong, R. K.-Y. (2021). Impact of Coronavirus Disease 2019 (COVID-19) Outbreak Quarantine, Isolation, and Lockdown Policies on Mental Health and Suicide. *Frontiers in Psychiatry*, *12*, 565190. https://doi.org/10.3389/fpsyt.2021.565190

Gold, A. K., Otto, M. W., Deckersbach, T., Sylvia, L. G., Nierenberg, A. A., & Kinrys, G. (2018). Substance use comorbidity in bipolar disorder: A qualitative review of treatment strategies and outcomes: Substance Use Disorders in Bipolar Disorder. *The American Journal on Addictions*, *27*(3), 188–201. https://doi.org/10.1111/ajad.12713

Griffith, D. M., Sharma, G., Holliday, C. S., Enyia, O. K., Valliere, M., Semlow, A. R., Stewart, E. C., & Blumenthal, R. S. (2020). Men and COVID-19: A Biopsychosocial Approach to Understanding Sex Differences in Mortality and

Recommendations for Practice and Policy Interventions. *Preventing Chronic Disease*, *17*, 200247. https://doi.org/10.5888/pcd17.200247

Gross, J. J. (2015). Emotion Regulation: Current Status and Future Prospects. *Psychological Inquiry*, *26*(1), 1–26. https://doi.org/10.1080/1047840X.2014.940781

Gross, J. J., & John, O. P. (2003). Individual differences in two emotion regulation processes: Implications for affect, relationships, and well-being. *Journal of Personality and Social Psychology*, *85*(2), 348–362. https://doi.org/10.1037/0022-3514.85.2.348

Gutentag, T., Halperin, E., Porat, R., Bigman, Y. E., & Tamir, M. (2017). Successful emotion regulation requires both conviction and skill: Beliefs about the controllability of emotions, reappraisal, and regulation success. *Cognition and Emotion*, *31*(6), 1225–1233. https://doi.org/10.1080/02699931.2016.1213704

Hirschberger, G., Florian, V., Mikulincer, M., Goldenberg, J. L., & Pyszczynski, T. (2002). GENDER DIFFERENCES IN THE WILLINGNESS TO ENGAGE IN RISKY BEHAVIOR: A TERROR MANAGEMENT PERSPECTIVE. *Death Studies*, *26*(2), 117–141. https://doi.org/10.1080/074811802753455244

Hofmann, W., Schmeichel, B. J., & Baddeley, A. D. (2012). Executive functions and

    self-regulation. *Trends in Cognitive Sciences*, *16*(3), 174–180.

    https://doi.org/10.1016/j.tics.2012.01.006

Hoyle, R. H., Fejfar, M. C., & Miller, J. D. (2000). Personality and Sexual Risk Taking:

    A Quantitative Review. *Journal of Personality*, *68*(6), 1203–1231.

    https://doi.org/10.1111/1467-6494.00132

Hu, T., Zhang, D., Wang, J., Mistry, R., Ran, G., & Wang, X. (2014). Relation between

    Emotion Regulation and Mental Health: A Meta-Analysis Review. *Psychological*

    Reports, *114*(2), 341–362. https://doi.org/10.2466/03.20.PR0.114k22w4

Kline, N. K., Prichett, B., McKim, K. G., & Palm Reed, K. (2022). Interpersonal Emotion

    Regulation in Betrayal Trauma Survivors: A Preliminary Qualitative Exploration.

    Journal of Aggression, Maltreatment & Trauma, 1–19.

    https://doi.org/10.1080/10926771.2022.2133658

Kooiman, C. G., Spinhoven, P., & Trijsburg, R. W. (2002). The assessment of

    alexithymia A critical review of the literature and a psychometric study of the

    Toronto Alexithymia Scale-20. *Journal of Psychosomatic Research*.

Liston, C., McEwen, B. S., & Casey, B. J. (2009). Psychosocial stress reversibly disrupts

    prefrontal processing and attentional control. *Proceedings of the National*

    Academy of Sciences, *106*(3), 912–917. https://doi.org/10.1073/pnas.0807041106

Magar, E. C. E., Phillips, L. H., & Hosie, J. A. (2008). Self-regulation and risk-taking. *Personality and Individual Differences*, *45*(2), 153–159. https://doi.org/10.1016/j.paid.2008.03.014

McRae, K. (2013). Emotion Regulation Frequency and Success: Separating Constructs from Methods and Time Scale: Emotion Regulation Frequency and Success. *Social and Personality Psychology Compass*, *7*(5), 289–302. https://doi.org/10.1111/spc3.12027

Nock, M. K., & Prinstein, M. J. (2004). A Functional Approach to the Assessment of Self-Mutilative Behavior. *Journal of Consulting and Clinical Psychology*, *72*(5), 885–890. https://doi.org/10.1037/0022-006X.72.5.885

Ochsner, K. N., Silvers, J. A., & Buhle, J. T. (2012). Functional imaging studies of emotion regulation: A synthetic review and evolving model of the cognitive control of emotion: Functional imaging studies of emotion regulation. *Annals of the New York Academy of Sciences*, *1251*(1), E1–E24. https://doi.org/10.1111/j.1749-6632.2012.06751.x

Peçanha, T., Goessler, K. F., Roschel, H., & Gualano, B. (2020). Social isolation during the COVID-19 pandemic can increase physical inactivity and the global burden of cardiovascular disease. *American Journal of Physiology-Heart and Circulatory Physiology*, *318*(6), H1441–H1446. https://doi.org/10.1152/ajpheart.00268.2020

Pellmar, T. C., Brandt, E. N., & Baird, M. A. (2002). Health and Behavior: The Interplay

    of Biological, Behavioral, and Social Influences: Summary of an Institute of

    Medicine Report. *American Journal of Health Promotion*, *16*(4), 206–219.

    https://doi.org/10.4278/0890-1171-16.4.206

Prendergast, M. L. (1994). Substance Use and Abuse among College Students: A Review

    of Recent Literature. *Journal of American College Health*, *43*(3), 99–113.

    https://doi.org/10.1080/07448481.1994.9939094

Raio, C. M., Orederu, T. A., Palazzolo, L., Shurick, A. A., & Phelps, E. A. (2013).

    Cognitive emotion regulation fails the stress test. *Proceedings of the National*

    Academy of Sciences, *110*(37), 15139–15144.

    https://doi.org/10.1073/pnas.1305706110

Riediger, M., Schmiedek, F., Wagner, G. G., & Lindenberger, U. (2009). Seeking

    Pleasure and Seeking Pain: Differences in Prohedonic and Contra-Hedonic

    Motivation From Adolescence to Old Age. *Psychological Science*, *20*(12), 1529–

    1535. https://doi.org/10.1111/j.1467-9280.2009.02473.x

Rivers, S. E., Brackett, M. A., Omori, M., Sickler, C., Bertoli, M. C., & Salovey, P.

    (2013). Emotion Skills as a Protective Factor for Risky Behaviors Among College

    Students. *Journal of College Student Development*, *54*(2), 172–183.

    https://doi.org/10.1353/csd.2013.0012

Rodham, K., Brewer, H., Mistral, W., & Stallard, P. (2006). Adolescents' perception of

    risk and challenge: A qualitative study. *Journal of Adolescence*, *29*(2), 261–272.

    https://doi.org/10.1016/j.adolescence.2005.05.012

Sadeh, N., & Baskin-Sommers, A. (2017). Risky, Impulsive, and Self-Destructive

    Behavior Questionnaire (RISQ): A Validation Study. *Assessment*, *24*(8), 1080–

    1094. https://doi.org/10.1177/1073191116640356

Sadeh, N., & Bredemeier, K. (2021). Engaging in Risky and Impulsive Behaviors to

    Alleviate Distress Mediates Associations Between Intolerance of Uncertainty and

    Externalizing Psychopathology. *Journal of Personality Disorders*, *35*(3), 393–

    408. https://doi.org/10.1521/pedi_2019_33_456

Seehuus, M., & Rellini, A. H. (2013). Gender differences in the relationship between

    sexual satisfaction and propensity for risky sexual behavior. *Sexual and*

    Relationship Therapy, *28*(3), 229–244.

    https://doi.org/10.1080/14681994.2013.791748

Sheehan, B. E., Lau-Barraco, C., & Linden, A. N. (2013). An Examination of Risky

    Drinking Behaviors and Motivations for Alcohol Use in a College Sample.

    Journal of American College Health, *61*(8), 444–452.

    https://doi.org/10.1080/07448481.2013.831352

Suzuki, Y., & Tanaka, S. C. (2021). Functions of the ventromedial prefrontal cortex in

    emotion regulation under stress. *Scientific Reports*, *11*(1), 18225.

    https://doi.org/10.1038/s41598-021-97751-0

Tamir, M. (2016). Why Do People Regulate Their Emotions? A Taxonomy of Motives in

    Emotion Regulation. *Personality and Social Psychology Review*, *20*(3), 199–222.

    https://doi.org/10.1177/1088868315586325

Tamir, M., & Millgram, Y. (2017). Motivated Emotion Regulation. In *Advances in*

    Motivation Science (Vol. 4, pp. 207–247). Elsevier.

    https://doi.org/10.1016/bs.adms.2016.12.001

Tamir, M., Vishkin, A., & Gutentag, T. (2020). Emotion regulation is motivated.

    Emotion, *20*(1), 115–119. https://doi.org/10.1037/emo0000635

Taylor, J. K., Theiler, S., Nedeljkovic, M., & Moulding, R. (2019). A qualitative analysis

    of emotion and emotion regulation in hoarding disorder: TAYLOR ET AL. *Journal*

    of Clinical Psychology, *75*(3), 520–545. https://doi.org/10.1002/jclp.22715

Umberson, D., Crosnoe, R., & Reczek, C. (2010). Social Relationships and Health

    Behavior Across the Life Course. *Annual Review of Sociology*, *36*(1), 139–157.

    https://doi.org/10.1146/annurev-soc-070308-120011

Uzuntiryaki-Kondakci, E., Kirbulut, Z. D., Oktay, O., & Sarici, E. (2022). A Qualitative

    Examination of Science Teachers' Emotions, Emotion Regulation Goals and

Strategies. *Research in Science Education*, *52*(4), 1131–1155.

https://doi.org/10.1007/s11165-020-09986-y

Vilhena-Churchill, N., & Goldstein, A. L. (2014). Child maltreatment and marijuana

problems in young adults: Examining the role of motives and emotion

dysregulation. *Child Abuse & Neglect*, *38*(5), 962–972.

https://doi.org/10.1016/j.chiabu.2013.10.009

Weilenmann, S., Schnyder, U., Parkinson, B., Corda, C., von Känel, R., & Pfaltz, M. C.

(2018). Emotion Transfer, Emotion Regulation, and Empathy-Related Processes

in Physician-Patient Interactions and Their Association With Physician Well-

Being: A Theoretical Model. *Frontiers in Psychiatry*, *9*, 389.

https://doi.org/10.3389/fpsyt.2018.00389

Weiss, N. H., Sullivan, T. P., & Tull, M. T. (2015). Explicating the role of emotion

dysregulation in risky behaviors: A review and synthesis of the literature with

directions for future research and clinical practice. *Current Opinion in

Psychology*, *3*, 22–29. https://doi.org/10.1016/j.copsyc.2015.01.013

Weiss, N. H., Tull, M. T., Dixon-Gordon, K., & Gratz, K. L. (2018). Assessing the

Negative and Positive Emotion-Dependent Nature of Risky Behaviors Among

Substance Dependent Patients. *Assessment*, *25*(6), 702–715.

https://doi.org/10.1177/1073191116665906

Whiteside, U., Chen, E., Neighbors, C., Hunter, D., Lo, T., & Larimer, M. (2007). Difficulties regulating emotions: Do binge eaters have fewer strategies to modulate and tolerate negative affect? *Eating Behaviors*, *8*(2), 162–169. https://doi.org/10.1016/j.eatbeh.2006.04.001

Wood, J. V., Heimpel, S. A., Manwell, L. A., & Whittington, E. J. (2009). This mood is familiar and I don't deserve to feel better anyway: Mechanisms underlying self-esteem differences in motivation to repair sad moods. *Journal of Personality and Social Psychology*, *96*(2), 363–380. https://doi.org/10.1037/a0012881

Woodman, T., Hardy, L., Barlow, M., & Le Scanff, C. (2010). Motives for participation in prolonged engagement high-risk sports: An agentic emotion regulation perspective. *Psychology of Sport and Exercise*, *11*(5), 345–352. https://doi.org/10.1016/j.psychsport.2010.04.002

Appendix A. Demographics

Demographics for Prolific sample from Study 1 and Study 2

	Study 1	Study 2
Ethnicity (%)		
Hispanic	10	4
Non-Hispanic	90	96
Race (%)		
American Indian	0	0
Alaskan Native	0	0
Asian	7	5
Black	12	9
Central/South American	.5	0
Native Hawaiian/Pacific Islander	.5	0
Multiracial	7	10
White	69	76
No response	3	0
Sex (%)		
Female	49	62
Male	50	37
No Response	1	1
Gender (%)		
Female	46	59
Genderqueer/ Gender non-conforming	3.5	4
Male	49	37
No Response	1.5	0
Education (years)	M = 15.24 SD = 2.95	M = 15.40 SD = 2.16

Demographics for university student sample Study 2

	Study 1
Ethnicity (%)	
Hispanic	10
Non-Hispanic	90
Race (%)	
American Indian	0
Alaskan Native	0
Asian	7
Black	4
Central/South American	1
Native Hawaiian/Pacific Islander	0
Multiracial	6
White	82
No response	0
Sex (%)	
Female	66
Male	29
No Response	5
Gender (%)	
WOMAN	67
Genderqueer/ Gender non-conforming	0
Man	31
No Response	2
Education (years)	M = 12.62 SD = 0.83

Appendix B. Motivation to Engage in Risky Behavior Questionnaire

The following questions will ask about your thoughts, feelings, and motivations related to engaging in the risky behaviors you indicated engaging in in the previous survey. Some of these questions may apply to you and some may not. In your own words, *please be as detailed as you can*. As a reminder, all of your answers are **confidential** and will not be linked to any personal information. In this study, we are trying to understand the impacts these behaviors may have on your emotions, behaviors, relationships, etc.

People have different reasons for engaging in different behaviors, and those behaviors may impact people's lives in different ways. We would like you to tell us about different reasons you may have for engaging in risky behaviors and what impact (if any) those behaviors have had on you. Here is an example from a person who reported engaging in impulse shopping:

"I use online shopping to give me something to look forward to. Looking at things online when I'm bored is fun and helps distract me from my day to day. It does put more stress on my marriage because my partner thinks I'm spending too much."

When answering the following questions, please think about the risky you just reported in the previous survey.

1. Sometimes people engage in behaviors as a way to try to feel **better** by amplifying *positive emotions*. For example, someone might have their favorite dessert to celebrate a promotion at work. When engaging in risky behaviors behaviors, are you trying to amplify your positive emotions?
    a. Yes
    b. No
    c. Not sure
    d. (IF Yes/Not Sure) → In as much detail as you feel comfortable with, please tell us more about engaging in this behavior to amplify your positive emotions
    e. (If NO) Sometimes the reasons people engage in these behaviors can change over time. In as much detail as you feel comfortable with, please tell us more about *any time in your life* when you engaged in this behavior amplify your positive emotions (please write "NA" if not applicable).

2. Sometimes people engage in behaviors as a way to try to feel **worse** by amplifying *negative emotions*. For example, someone already feeling sad on a rainy day someone might decide to listen to sad music. When engaging in risky behaviors, are you trying to amplify your negative emotions?
   a. Yes
   b. No
   c. Not sure
   d. (If Yes/Not Sure) In as much detail as you feel comfortable with, please tell us more about engaging in this behavior to amplify your negative emotions
   e. (If NO) Sometimes the reasons people engage in these behaviors can change over time. In as much detail as you feel comfortable with, please tell us more about *any time in your life* when you engaged in this behavior to amplify your negative emotions (please write "NA" if not applicable).

3. Sometimes instead of amplifying positive emotions, people engage in behaviors as a way to try to feel **better** by diminishing *negative emotions*. For example, someone might take a scenic walk after a difficult day at work. When engaging in risky behaviors, are you trying to diminish your negative emotions?
   a. Yes
   b. No
   c. Not sure
   d. (IF Yes/Not Sure) → In as much detail as you feel comfortable with, please tell us more about engaging in this behavior to amplify your positive emotions
   e. (If NO) Sometimes the reasons people engage in these behaviors can change over time. In as much detail as you feel comfortable with, please tell us more about *any time in your life* when you engaged in this behavior amplify your positive emotions (please write "NA" if not applicable).

4. Sometimes instead of amplifying negative emotions, people engage in behaviors as a way to try to feel **worse** by diminishing *positive emotions*. For example, someone might take a scenic walk after a difficult day at work. When engaging in risky behaviors, are you trying to diminish your positive emotions?
   a. Yes
   b. No
   c. Not sure

d. (IF Yes/Not Sure) → In as much detail as you feel comfortable with, please tell us more about engaging in this behavior to amplify your positive emotions

e. (If NO) Sometimes the reasons people engage in these behaviors can change over time. In as much detail as you feel comfortable with, please tell us more about *any time in your life* when you engaged in this behavior amplify your positive emotions (please write "NA" if not applicable).

5. Sometimes people engage in behaviors as a way to *impact their relationships* with other people. For example, someone might cry to a friend when they're upset in order to get support. When engaging in risky behaviors, are you trying to impact your relationships with other people?

a. Yes

b. No

c. Not sure

d. (If Yes/Not Sure) In as much detail as you feel comfortable with, please tell us more about engaging in this behavior to try to impact your relationships with other people.

e. (If NO) Sometimes the reasons people engage in these behaviors can change over time. In as much detail as you feel comfortable with, please tell us more about *any time in your life* when you engaged in this behavior to impact your relationships (please write "NA" if not applicable).

6. Sometimes people engage in behaviors as a way to feel more independent or *in control* of their lives. For example, someone may start training for a marathon because they feel it will help them make time for themselves and enforce discipline. When engaging in risky behaviors, are you trying to feel more independent or in control in any way?

a. Yes

b. No

c. Not sure

d. (If Yes/Not Sure) In as much detail as you feel comfortable with, please tell us more about engaging in this behavior to feel more independent or in control.

e. (If No) Sometimes the reasons people engage in these behaviors can change over time. In as much detail as you feel comfortable with, please tell us more about *any time in your life* when you engaged in this behavior

to feel more independent or in control (please write "NA" if not applicable).

7. Sometimes people engage in behaviors as a way to reinforce beliefs about themselves and their identity. For example, a business executive may start playing golf if their superiors play golf because their job is an important part of their identity, and they feel it's part of the company culture. When engaging in risky behaviors, are you trying to reinforce aspects of your identity?
    a. Yes
    b. No
    c. Not sure
    d. (If Yes/Unsure) In as much detail as you feel comfortable with, please tell us more about engaging in this behavior to validate beliefs about yourself.
    e. (If No) Sometimes the reasons people engage in these behaviors can change over time. In as much detail as you feel comfortable with, please tell us more about *any time in your life* when you engaged in this behavior to validate beliefs about yourself (please write "NA" if not applicable).

8. Please share any other reasons you engage in these behaviors that we haven't covered in previous questions.

9. What else you feel is important for us to know about why you engage in these behaviors?

Appendix C. Results for Motivation by Risky Behavior on Affect at the *Behavioral* level

In Study 1, Aim 3 presented in the main text, we aggregated Motivation scores (MotivPos, MotivNeg, MotivControl) across days because we only had one daily measure of Affect and Risky Behavior. When we ran the same models described above (Study 1, Aim 3) on the level of behavior (as opposed to averaged across behaviors for each day) we found a different pattern of results.

For Positive Affect, Motivation was still not a significant predictor (MotivPos: β = -0.04(0.06), p =.52; MotivNeg: β = 0.14(0.07), p =.06; MotivControl: β = 0.13(0.07), p =.08). Additionally, Motivation did not moderate the relationship between Positive Affect and Risky Behavior (Risk*MotivPos: β = 0.002(0.007), p =.70; Risk*MotivNeg: β = 0.007(0.008), p =.37; Risk*MotivControl: β = 0.009(0.008), p =.25).

For Negative Affect, MotivControl emerged as a significant predictor (β = .25(0.08), p <.01) where increased motivation to feel in control increased Negative Affect. Further, all motivation orientations moderated the relationship between Negative Affect and Risky Behavior (Risk*MotivPos: β = -0.02(0.007), p < .05; Risk*MotivNeg: β = 0.02(0.009), p < .01; Risk*MotivControl: β = 0.03(0.009), p < .001) such that motives to increase positive emotions, decrease negative emotions, and increase control all strengthened the relationship between engagement in risky behavior and Negative Affect. These results suggest that when motivation is measured for each behavior, we may be better situated to predict emotional outcomes.