

7-1-2020

Components of Psychological Flexibility and Inflexibility That Predict Risk-Taking Behaviors

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COMPONENTS OF PSYCHOLOGICAL FLEXIBILITY AND INFLEXIBILITY THAT PREDICT RISK-TAKING BEHAVIORS

A Dissertation

Submitted to the Graduate Faculty of the
Louisiana State University and
Agricultural and Mechanical College
in partial fulfillment of the
requirements for the degree of
Doctor of Philosophy

in

The Department of Psychology

by

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August 2020

ACKNOWLEDGEMENTS

Completing a PhD has proven to be one of the most grueling exercises in endurance that I have ever completed, but I did not complete it alone. I must start with thanking my parents. To Jim and Melanie Upton, thank you for your endless support. I will never be able to repay what you have provided for me. Thank you for pushing me to be, and do, my best at all times. You fostered a love of school and education, as well as humility and compassion for others. Every child in this world deserves parents like you, and it is my greatest hope that I can make a positive difference in the lives of children through my career. Thank you to my sister, Hillary Millen, and my brother in law, Travis Millen. Thank you for your love, support, and for all the FaceTime calls with Laura and James. Thank you to my nana, Gwynn Morris, my aunt, Pat Smith, and to my entire family for being my biggest cheerleaders.

I am interminably grateful to Dr. Tyler Renshaw, my advisor throughout graduate school, for nurturing my research interests and guiding me to this project. I hope to never stop learning from you. To Dr. Anna Long, I want to also thank you for being my advisor and accepting me into your team. You fostered an environment that challenged me and helped me develop into the psychologist I am today. I would also like to thank the members of my committee, Dr. Amy Copeland, Dr. Frank Gresham, and Dr. Lynne Baggett. Your knowledge and tutelage over the past few years has been invaluable.

A very special thank you to Elizabeth Wilson. I knew when we met on Interview Day in January 2015 that we would become friends, but I never could have imagined how much that friendship would sustain me over the ensuing 5+ years of graduate school. For the study sessions, for the pep talks, for the cookies, for the yoga, for the trips to La Carreta, and for so much more, I am indebted to you. You are the best kind of friend and the best kind of person.

Thank you for making me better. I would also like to thank the many friends who have provided their support from afar. Moving away from North Carolina from the first time was a challenge by itself—not to mention beginning graduate school—but staying connected with you all was life giving. To Becca Dorning, Grayson Price, Krysta Gahagen, Jordan Johnson, Hillary Griffin, Noelle Brundige, Kasi Robinson, Adam Robinson, and Jason Rights: you all are wonderful, brilliant people. I do not know how I became so blessed to have such rich friendships, but I won't dare question it.

To the members of my lab, cohort, and other students that were with me along the way: Tony Roberson, Claire Burns, Thanh Le, Ilayna Mehrtens, Ryan Cummins, Kaitlin Cassidy, Jennifer Piscitello, Erica Lozy, James Upright, Philip Richard, Sarah Bolognino, and Georgia Shaheen. You are all inextricable from my graduate school experience and made my time in Baton Rouge one of the best times of my life. I am so excited for all of your future careers and to be a part of the next chapters in your lives.

I am also grateful to the mentors, colleagues, and friends that have entered my life during my predoctoral internship. Completing a dissertation while also completing a yearlong clinical internship has been my final test of endurance and your support has made it possible. To Dr. Cindy Ewell-Foster, Dr. Kristen Kalymon, Dr. Erin Hunter, Dr. Chantal Boucher, Catie Cole, Julia Popper, and Emily Fisher, I wish we could have more time together and I hope we remain lifelong friends.

Finally, thank you to those who kindled my love of psychology and provided instrumental mentorship over the years: Dr. Sarah Helms, Dr. Alison Parker, Dr. Janis Kupersmidt, and Dr. Mitch Prinstein. I truly would not have made it here without you showing me the way.

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ABSTRACT

Psychological flexibility is conceptualized as contact with the present moment and the ability to persist or change one's behavior to achieve valued ends. The opposite of this process is known as psychological inflexibility, which is posited to lead to the development and maintenance of various psychological disorders. There are 6 components underlying psychological inflexibility—these are cognitive fusion, experiential avoidance, fixating on the past or future, self-conceptualization, lacking contact with values, and inaction toward valued ends, as well as 6 components underlying psychological flexibility (i.e., defusion, acceptance, present moment awareness, self-as-context, contact with values, and committed action). Psychological inflexibility may be implicated in risk-taking behaviors (e.g., substance use, sexual risk behaviors, binge eating); however, the nature of the relationship between these two constructs has not been explicitly examined. The proposed study aimed to understand how the various components underlying psychological flexibility and inflexibility predict various types and domains of risk-taking behaviors and beliefs. Participants completed various self-report measures on each psychological flexibility/inflexibility component, as well as measures assessing their perceptions of and engagement in risk-taking behaviors. Responses to these measures were analyzed via path analyses. Each of the models tested in this study demonstrated poor model fit, however several interesting findings are noted. In particular, many of the individual psychological flexibility and inflexibility components significantly predicted self-harming behavior. Implications, future directions, and limitations are discussed.

INTRODUCTION

Origins of Psychological Flexibility Theory

Psychological Flexibility Theory (PFT) is a theory that is transdiagnostic in nature and arose specifically to explain the underlying processes that lead to the development and maintenance of various psychological disorders (Levin, MacLane, Daflos, Seeley, Hayes, Biglan, & Pistorello, 2014). Psychological flexibility allows an individual to be in contact with the present moment and to persist or change their behavior to come into contact with their goals and achieve valued ends (Fletcher & Hayes, 2005; Hayes, Levin, Plumb-Vilardega, Villate, & Pistorello, 2013). Those who behave inflexibly are unable to break free from their psychological reactions and come into contact with their values, leading to psychological distress.

PFT was developed to be a functional explanation of the processes traditionally called “mindfulness” (Fletcher & Hayes, 2005). Mindfulness formally entered the psychological literature relatively recently and is traditionally defined as being aware of each moment as it is happening and observing that moment without judgment (Kabat-Zinn, 1994). Those who practice mindfulness are often instructed to pay attention to the sensations in their body, the emotions they feel, their thoughts, and their interactions with others and the outside world (Nhat Hanh, 2006). Components of a mindfulness practice often include exercises such as yoga, focusing on the breath, body scan meditations, and compassion meditations (Kabat-Zinn, 1990). It is important to note the distinction between mindfulness and mindfulness-based practices and exercises: the exercises are not themselves “mindfulness”—rather, they facilitate the psychological processes we call mindfulness. When one is engaging in a mindfulness-based exercises (e.g., the mindful body scan) and is practicing contacting one's thoughts and feelings in an open and non-judgmental way, then one can be considered to be “being mindful.” From the

perspective of PFT, practicing mindfulness facilitates desired outcomes because it promotes psychological flexibility (Hayes et al., 2013).

Therapies that incorporate mindfulness-based practices (e.g., Acceptance and Commitment Therapy, Dialectical Behavior Therapy) and programs that are solely focused on developing mindfulness (e.g., mindfulness-based stress reduction, mindfulness-based cognitive therapy) have become increasingly popular in recent years as both treatments for clinical populations and as interventions for nonclinical populations (Ederth & Sedlmeier, 2012; Khoury et al., 2013). These therapies are known as “third wave” behavior therapies because they combine cognitive behavior therapy techniques with acceptance and mindfulness techniques (Fletcher & Hayes, 2005). Given the importance of theory in guiding practice, PFT has emerged as a way to scientifically explain how these acceptance and mindfulness techniques work.

Basics of Psychological Flexibility Theory

PFT is grounded in relational frame theory (RFT), which is a behavioral account of language and cognition (Fletcher & Hayes, 2005). In RFT, a concept known as derived relational responding is a core component of how language and cognition is developed and maintained. This simply means that we learn to relate stimuli to each other first mutually, and then in combination with other stimuli. For instance, we learn that a picture of a chair goes with the spoken word “chair” and vice versa. Then, we learn that the spoken word “chair” goes with the written word “chair.” We are then able to derive, without being directly taught, that the written word chair goes with the picture of a chair—a derived relation. Our ability to relate things to one another is not confined to physical forms and can often be arbitrary. These derived relations may become maladaptive and lead to thoughts that are distressing even when there are direct environmental contingencies that are in contrast (Fletcher & Hayes, 2005). For example, a

teacher may experience an aversive stimulus in a classroom, such as a child throwing something at her. This experience of fear may transfer to all situations inside of a classroom—even when that child is absent. The teacher—now with a derived relation that classrooms are to be feared—may begin to avoid any classroom even though there is no actual present danger. Her behavior has come under control of her cognitions via the derived relational responding processes outlined by RFT.

PFT posits six underlying processes that facilitate psychological flexibility—the ability to persist or change behavior to achieve valued ends (Fletcher & Hayes, 2005; Hayes et al., 2013). The six processes that facilitate psychological flexibility are cognitive defusion, acceptance, being present, self-as-context, being in contact with one’s values, and committed action towards valued ends (Fletcher & Hayes, 2005; Hayes et al., 2013). The opposite of psychological flexibility is considered psychological inflexibility, and this process is posited to lead to the development and maintenance of many psychological disorders (Fletcher & Hayes, 2005; Hayes et al., 2013). The six underlying processes of psychological flexibility theory are outlined below.

Cognitive defusion. Cognitive defusion is present when an individual is “unstuck” from their thoughts and examines them in context, which allows them to behave flexibly (Fletcher & Hayes, 2005; Hayes et al., 2013). This is in contrast with the cognitive behavior therapy (CBT) view of changing the content of thoughts—defusing from a thought means altering the context, not the content (Fletcher & Hayes, 2005). The opposite of cognitive defusion is cognitive fusion, which facilitates psychological inflexibility. Cognitive fusion occurs when an individual views their thoughts and feelings as literal directions for action (Fletcher & Hayes, 2005; Hayes et al., 2013). An example of this would be when an individual becomes “glued to their thoughts” and acts upon their thoughts and feelings. Individuals who are experiencing difficulty with cognitive

fusion may be also experiencing high levels of psychological distress—such as depression, anxiety, and post-traumatic stress (Bardeen & Fergus, 2016). Regarding these disorders, it appears that the construct of cognitive fusion may play a mediating role between emotion dysregulation and anxiety and depression (Akbari, Mohamadkhani, & Zarghami, 2016). Cognitive fusion is also implicated in disordered eating, experiences of chronic pain, and health anxiety (Trindade & Ferreira, 2014; McCracken, DaSilva, Skillicorn, & Doherty, 2014; Fergus, 2015).

Acceptance. Acceptance is the process of experiencing distressing thoughts or emotions completely and without trying to change or alter them (Fletcher & Hayes, 2005; Hayes et al., 2013). The opposite of acceptance is experiential avoidance, which facilitates psychological inflexibility. Experiential avoidance occurs when an individual avoids a public event to reduce the likelihood or the severity of a private event. This might happen when an individual avoids the classroom because academic situations make them nervous. Like cognitive fusion, experiential avoidance is associated with various aspects of psychological distress (i.e., depression, anxiety, post-traumatic distress; Bardeen & Fergus, 2016). Regarding risk-taking behaviors, experiential avoidance is associated with shorter durations of smoking abstinence (Farris, DiBello, Heggeness, Reitzel, Vidrine, Schmidt, & Zvolensky, 2016) and emotional eating behaviors (Litwin, Goldbacher, Cardaciotto, & Gambrel, 2017). Experiential avoidance is also implicated in obsessive-compulsive personality disorder—it is highly correlated with each dimension as well as the severity of the disorder (Wheaton & Pinto, 2017).

Present moment awareness (PMA). Coming into contact with the present moment consists of focusing on sensations within the body, thoughts, feelings, and anything happening outside of the individual (Fletcher & Hayes, 2005; Hayes et al., 2013). This component of PFT is

encouraged to happen in a non-judgmental manner. The opposite of being present is fixating on the past or the future, which facilitates psychological inflexibility. Fixating on the past or the future are common behaviors that occur when a person is lacking contact with the present moment. They may be ruminating over something that happened in the past or worrying about something that may happen in the future (Fletcher & Hayes, 2005; Hayes et al., 2013). Being present predicts higher levels of positive emotions (Kiken, Lundberg, & Fredrickson, 2017), as well as higher levels of life satisfaction (Felsman, Verduyn, Ayduk, & Kross, 2017). This component of PFT is also associated with overall psychological well-being and reductions in distress (Brown & Ryan, 2003)—this may be because being present aids in the amelioration of rumination which contributes to depressive symptoms (Schut & Boelen, 2017).

Self-as-context. Self-as-context refers to the experience of viewing oneself as the context for private events (e.g., thoughts, emotions) rather than the private events themselves (Fletcher & Hayes, 2005; Hayes et al., 2013). This allows an individual to understand themselves as different from the emotions and thoughts they experience. Viewing the self as the context for private events allows for a shift in perspective that facilitates psychological flexibility. The opposite of self-as-context is self-conceptualization, which facilitates psychological inflexibility. Self-conceptualization is the idea that an individual is the same as the private events they experience. People may have an idea of themselves and can become upset when their behavior or other's behavior does not match their concept of the self (Fletcher & Hayes, 2005; Hayes et al., 2013). This component of the psychological flexibility model is less studied than the others; however, detaching from the conceptualized self has been found to reduce experiences of pain in a lab setting (Carrasquillo & Zettle, 2014).

Contact with values. The four preceding processes empower an individual to come into contact with their values and engage in committed action (Fletcher & Hayes, 2005; Hayes et al., 2013). Values—although related to goal setting—are different from discrete goals and are the purposeful directions one has chosen in their life. Values may include “being a good student” or “maintaining a healthy relationship with my family,” for example. The individual may set goals in order to act in accordance with these values, but the values themselves do not contain action steps. Lack of contact with values facilitates and results from psychological inflexibility (Fletcher & Hayes, 2005; Hayes et al., 2013). Exploring one’s values can lead to a variety of advantageous outcomes including improved academic performance (Chase, Houmanfar, Hayes, Ward, Vilardaga, & Follete, 2013), reduced cortisol levels following exposure to a stressor (Gregg, Namekata, Louie, & Chancellor-Freeland, 2014), and ameliorated distress outcomes associated with experiencing racism (Graham, West, & Roemer, 2015; West, Graham, & Roemer, 2013). Additionally, coming into contact with one’s values is implicated in functional impairment associated with post-traumatic stress disorder symptoms (Donahue, Khan, Huggins, & Marrow, 2017) and improving interactions and engagement with patients on the part of caretakers (Castro, Rehfeldt, & Root, 2016).

Committed action. Committed action involves an individual acting in ways that allow them to achieve goals that are consistent with their values (Fletcher & Hayes, 2005; Hayes et al., 2013). These actions may be short- or long-term and are actively chosen by an individual. Inaction toward valued ends facilitates and results from psychological inflexibility (Fletcher & Hayes, 2005; Hayes et al., 2013). The purpose of targeting any of the above-mentioned PFT components in intervention is to reduce barriers to and facilitate committed action. A lack of committed action is less documented in research than other components of psychological

flexibility; however, preliminary studies have demonstrated that it is associated with procrastination behaviors (Gagnon, Dionne, & Pychyl, 2016) and that targeting committed action leads to improved academic performance in college-aged samples (Chase et al., 2013). Additionally, increasing committed action leads to improvements in interactions and engagements in care by caretaking professionals (Castro et al., 2016).

In summary, whereas the components outlined above are posited to contribute to psychological flexibility, the opposite of these processes are posited to contribute to psychological inflexibility: the inability to persist or change behavior to achieve valued ends (Fletcher & Hayes, 2005; Hayes et al., 2013). The six components of psychological flexibility are understood as the mechanisms driving mental health and wellbeing, whereas the opposite components—cognitive fusion, experiential avoidance, lack of contact with the present moment, self-conceptualization, lack of contact with valued, and inaction toward valued ends—are seen as the processes underlying the development and maintenance of various psychological disorders. Of the six psychological flexibility components, responding to one's thoughts and feelings as possibilities (defusion) and responding to one's thoughts and feelings in an open and receptive way (acceptance) are considered to be the most pivotal therapeutic processes and are the most common targets of PFT-based treatments (Hayes et al., 2013).

Psychological Flexibility Theory in Treatment

PFT is the basis of Acceptance and Commitment Therapy (ACT). The goal of ACT is to foster psychological flexibility through various exercises (Fletcher & Hayes, 2005). Each of the core components of psychological inflexibility are targeted through traditional behavior therapy techniques as well as “third wave” behavior therapy techniques, such as acceptance and mindfulness activities. These techniques may include metaphorical exercises and other activities

that encourage the development of the various components of psychological flexibility (Fletcher & Hayes, 2005).

To promote acceptance, for example, a client might sit with their emotion and notice all of the components of it (i.e., accompanying bodily sensations and thoughts) without actively trying to change it (Fletcher & Hayes, 2005). Cognitive defusion can occur when the context surrounding a thought is changed, rather than the content of the thought itself. An exercise to promote cognitive defusion might include having a client write down their thoughts on sheets of paper, balling them up, and then throwing them at the client. This allows the client to see their thoughts in a different context that is non-threatening. The process of being present can be facilitated through practices that are traditionally thought of as mindfulness exercises. These can include breathing meditations, body scan meditations, mindful eating, etc.—any activity that requires the client to focus on current physical sensations, emotions, and thoughts. In order to promote the client’s view of their self as context, ACT encourages the use of metaphorical and experiential exercises. For example, the client can imagine themselves as the sky, with the weather coming and going. Although there are sometimes clouds or storms, the sky remains unaffected. This metaphor encourages the client to view themselves as an observer in their lives and therefore become “unstuck” from any conceptualizations that they have created for themselves. The combination of these four psychological flexibility processes work together and allow the client to act in ways that allow them to achieve their goals and come in contact with their values. In ACT, the client works with the clinician to define their values and outline ways to achieve goals that are in line with their values (Fletcher & Hayes, 2005).

ACT with adults. Research examining the therapeutic effectiveness of ACT with adults has been promising. Meta-analyses demonstrate that targeting the components of PFT is a valid

and reliable way to impact outcomes of interest (Levin, Hildebrandt, Lillis, & Hayes, 2012). Component analyses are an important step in determining the utility of the underlying processes and confirming the theoretical basis of treatments. One meta-analysis of ACT component analyses found large effect sizes in community as well as clinical samples (Levin et al., 2012). Importantly, another meta-analysis showed that compared to traditional CBT, ACT effected change in outcomes of interest via its proposed processes, whereas CBT did not (Ruiz, 2012). This meta-analysis also demonstrated that ACT was just as effective, and sometimes more effective, as CBT at impacting therapeutic outcomes (Ruiz, 2012).

Meta-analyses have consistently shown that ACT is just as effective as existing psychological interventions and more effective than placebo, wait-list control, and treatment as usual conditions for intervening with various psychological disorders, including depression, anxiety, and somatic complaints (A-Tjak, Davis, Morina, Powers, Smits, & Emmelkamp, 2015; Veehof, Trompetter, Bohlmeijer, & Schreurs, 2016). Additionally, ACT has also been found to be an effective treatment for depression when delivered via the web (Brown, Glendenning, Hoon, & John, 2016). However, more recent meta-analyses demonstrate that there may be insufficient evidence to conclusively say that ACT is more efficacious than active control conditions for treating anxiety and depression (Hacker, Stone, & MacBeth, 2016).

Regarding substance use disorders, ACT was found to have a small effect on treatment outcomes when compared to active controls (including traditional CBT) on smoking and other drug cessation (e.g., opiates and methamphetamines; Lee, An, Levin, & Twohig, 2015). Importantly, this meta-analysis demonstrated that ACT had a significant small to medium effect over and above other treatments regarding substance use abstinence at follow-up (Lee et al., 2015). More recent neuroimaging studies have shown preliminary evidence that brain activity is

reduced in reaction to pain stimuli following ACT treatment in individuals who suffer from opioid addiction and co-occurring chronic pain (Smallwood, Potter, & Robin, 2016). Research is also emerging that is examining how to effectively use ACT to target substance use disorders when they are comorbid with other psychological disorders (Hermann, Meyer, Schnurr, Batten, & Walser, 2016).

ACT with youth. In recent years, ACT has increasingly been used with adolescent and child samples. Given that mindfulness and psychological flexibility (i.e., the absence of experiential avoidance and cognitive fusion) are considered to be the underlying mechanisms that affect change following ACT, these two outcomes are of particular interest. Thus, these are two of the most well documented outcomes seen following ACT with youth (i.e., Armstrong, Morrison, & Twohig, 2013; Biglan, Layton, Jones, Hankins, & Rusby, 2013; Livheim et al., 2014; Luciano, Ruiz, Vizcaino Torres, Martin, Martinez, & Lopez, 2011). These underlying mechanisms may affect change across a variety of outcome domains; however, of particular interest is how they may lead to decreases in problem behaviors and increases in socially desirable behaviors.

Many studies have examined how ACT may impact the severity and frequency of conduct problems in youth (Brown, Whittingham, Boyd, McKinlay, & Sofronoff, 2014; Gomez, Luciano, Paez-Blarrina, Ruiz, Valdivia-Salas, & Gil-Luciano, 2014; Luciano et al., 2011; Whittingham, Sanders, McKinlay, & Boyd, 2014). Each of these research studies implemented ACT protocols over several sessions and examined changes in disruptive behavior problems following the treatment. Gomez and colleagues (2014) observed a large effect of ACT on the reduction in problem behaviors. The other studies found medium to large effects of ACT with youth on problem behaviors that were maintained at follow up time periods (Brown et al., 2014;

Luciano et al., 2011). Furthermore, one study implemented ACT with only parents and saw a decrease in conduct problems in their children (Whittingham et al., 2014). This approach may be of benefit to schools with the resources and desire to train their teachers in ACT principles. Moreover, ACT may also increase socially desirable or positive behaviors, such as prosocial behavior and social adjustment (Gomez et al., 2014; Pahnke, Lundgren, Hursti, & Hirvikoski, 2014; Whittingham et al., 2014; Woidneck, Morrison, & Twohig, 2013; Franklin, Best, Wilson, Loew, & Compton, 2011).

Additional behaviors that were targeted by Gomez and colleagues (2014) were impulsivity, self-control, alcohol/drug use, and other illegal behaviors. These researchers implemented ACT with five adolescents diagnosed with Conduct Disorder, all of whom had not responded to other treatments. The protocol involved four 90-minute sessions over the course of two weeks, and the adolescents were assessed both before and after the implementation. Results showed a large effect of the ACT treatment on reducing disruptive behaviors, a large decrease in impulsivity, as well as a large increase in self-control. Further, at the one year follow up, all four of the participants who were using alcohol, tobacco, and/or cannabis had quit using those substances (Gomez et al., 2014). Taken together with the findings from the adult literature, it appears that ACT has positive therapeutic effects on a variety of outcome domains, including reductions in risk-taking behavior (e.g., substance use and aggressive behavior). Such evidence suggests an applied and indirect linkage between psychological flexibility/inflexibility and risk-taking. Yet there is a paucity of direct evidence explicitly investigating these constructs together.

Basics of Risk-Taking Behavior

Risk-taking is defined by the Diagnostic and Statistical Manual of Mental Disorders—Fifth Edition (DSM-5; American Psychiatric Association, 2013) as:

engagement in dangerous, risky, and potentially self-damaging activities, unnecessarily and without regard to consequences; lack of concern for one's limitations and denial of the reality of personal danger; reckless pursuit of goals regardless of the level of risk involved. Risk-taking is a facet of the broad personality trait domain DISINHIBITION (p. 828).

Risk-taking behaviors, therefore, arise due to an individual's personality and are a component of numerous psychological disorders outlined in the DSM-5 (APA, 2013). These disorders include attention-deficit/hyperactivity disorder (ADHD), bipolar disorder and related disorders, binge-eating disorder, intermittent explosive disorder, conduct disorder, antisocial personality disorder, borderline personality disorder, and substance-related and addictive disorders (APA, 2013). These disorders consist of discrete risk-taking behaviors (e.g., engaging in substance use, eating large quantities of food beyond the point of feeling full) or more generalized impulsive or risky behavior that is not contained to a specific behavior, such as the impulsive symptoms outlined in ADHD (APA, 2013). Consequently, risk-taking behaviors can be conceptualized as maladaptive behaviors that present themselves in many different forms and contribute to numerous psychological disorders. This conceptualization is most salient to mental health and other medical providers who may encounter these maladaptive behaviors and disorders in their practice.

Another conceptualization of risk-taking behavior is not clinical in nature and focuses more on everyday activities and attitudes that may lead to undesirable consequences. These behaviors do not necessarily contribute to a diagnosis of a psychological disorder and may be more akin to a personality trait that extends to multiple domains—sometimes referred to as “risk attitude” (Weber, 2010; Blais & Weber, 2006). Personality traits were originally conceptualized to be stable in their nature and to not vary across situations (Allport & Allport, 1921); however, this belief has shifted and more current theories posit that risk-taking behavior and attitudes do

vary based on context and the emotion felt at the time of the decision (Lowenstein, Hsee, Weber, & Welch, 2001). Domains of risk-taking attitudes and behavior based on this conceptualization fall into five categories (Blais & Weber, 2006): ethical decisions (e.g., revealing a secret that was told to you in confidence), financial decisions (e.g., investing in an unknown stock), health/safety decisions (e.g., sunbathing without protection), recreational decisions (e.g., base jumping from a tall structure), and social decisions (e.g., disagreeing with an authority figure on a sensitive issue) (Blais & Weber, 2006). This conceptualization of risk-taking is of particular importance in Judgment/Decision Making (JDM) research in the field of industrial/organizational psychology, economics, and public policy (Weber, 2010).

Although risk-taking behaviors can be observed throughout the lifespan, they have been shown to begin their development in early childhood, as elementary-school age youth already display intentions to use alcohol or other substances (van der Vorst, Schuck, Engels, & Hermans, 2014). Risk-taking behaviors may develop for numerous reasons, and genetics seem to play some role in level of risk-taking behavior an individual engages in (Wang, Zheng, Xuan, Chen, & Li, 2016). One meta-analysis demonstrated that risk-taking within the moral, financial, and natural/physical domains all share a common genetic factor (Wang et al., 2016). Preliminary research has also demonstrated that young children who exhibit a daring temperament—that is, a propensity for sensation seeking and general behavioral disinhibition—may be more likely to engage in risk-taking behaviors and suffer from conduct problems later in their life (Bai & Lee, 2017). Additional research on personality traits shows that preadolescents who score high on openness to experience and extraversion, but low on conscientiousness (as outlined by the Five-Factor Model), also score high on measures of risk-taking (McGhee, Ehrler, Buckhalt, &

Phillips, 2012). Similar associations among risk-taking behaviors and personality traits are found in adult populations (McGhee et al., 2012).

One study demonstrated that a child's level of activation control—the ability to persist with a task that is difficult—may impact how likely they are to engage in risk-taking behavior (Nystrom & Bengtsson, 2016). They found that children who exhibited high levels of drive—defined as “the persistent pursuit of desired goals” (p. 178)—demonstrated increased risk-taking behaviors when their level of activation control was low (Nystrom & Bengtsson, 2016). The researchers also measured level of fearlessness, and the children who had the least amount of fear were the riskiest when it they also exhibited high levels of drive and low activation control (Nystrom & Bengtsson, 2016). The children who exhibited the least amount of risk-taking behaviors were the ones who had low levels of fear, high drive, and high activation control (Nystrom & Bengtsson, 2016).

Furthermore, a child's level of attentional control may moderate how anger and fear impact their development of risk-taking behaviors (Kim-Spoon, Holmes, & Deater-Deckard, 2015). A longitudinal study found that children who exhibited high levels of anger at 9-years were more likely to engage in risk-taking behaviors at 15-years, but not if they had high levels of attentional control. This study also found that children who exhibited high levels of fear were less likely to engage in risk-taking behaviors when they had high attentional control (Kim-Spoon et al., 2015). The researchers underscore the importance of promoting attentional control as it appears to serve as a protective factor by promoting the effects of fear and tempering the effects of anger (Kim-Spoon et al., 2015). This may have relevance for the research that shows that children may be able to recognize varying situations as “risky,” but they often underestimate the likelihood of harm and engage in risky behavior anyway. The authors suggest that promoting the

effects of fear may make these children less likely to put themselves into those risky situations (Morromgiello, Schell, & Stewart, 2015; Kim-Spoon et al., 2015).

Beyond personality traits, several other indicators throughout development have been shown to have meaningful associations with risk-taking. For example, sleep disturbances in adolescence have been shown to lead to poor working memory, which then leads to increased risk-taking behaviors during later adolescence (Thomas, Monahan, Lukowski, & Cauffman, 2015). Regarding gender differences, meta-analyses have shown that males are more likely to engage in risk-taking behaviors than females (Byrnes, Miller, & Schafer, 1999). However, it is also clear that patterns of risk-taking differ across age and context (Byrnes, Miller, & Schafer, 1999).

Risk-taking behaviors may also develop due to more active processes. Meta-analyses have shown that media that glorifies risk-taking has a significant impact on increased levels of risk-taking in individuals (Fischer, Greitemeyer, Kastenmuller, Vogrincic, & Sauer, 2011). This meta-analysis also found that the effect was greater when the media consumed was active (i.e., playing a video game) rather than passive (i.e., listening to music; Fischer et al., 2011). Notably, engagement in risk-taking behaviors is often higher in underserved and minority populations (Factor, Kawachi, & Williams, 2011). These researchers posit that this may be explained by active resistance to social norms of dominant groups within society (Factor et al., 2011). Thus, risk-taking behaviors may be influenced by a variety of personal and environmental factors, and may even be deliberately developed.

Outcomes Associated with Risk-Taking Behavior

Risk-taking behaviors can lead to a host of deleterious consequences, including patterns of behavior characteristic of the psychological disorders listed above as well as physical injury or

death to self and/or others (Turner, McClure, & Pirozzo, 2004). In fact, as children age and become adolescents, their increased levels of risk-taking behaviors lead to a 200% increase in mortality rates and become their leading cause of death (i.e., accidents and unintended injuries; Centers for Disease Control, 2010; Dahl, 2004). Sexual risk-taking behaviors (i.e., unprotected sex, increased number of partners) are of particular importance because these behaviors can lead directly to increased rates of sexually transmitted infections (STIs) and unwanted pregnancy (CDC, 2016). In fact, in 2016, the three most common STIs—chlamydia, gonorrhea, and syphilis—all had the highest prevalence rates ever recorded by the CDC (CDC, 2016). Regarding unintended pregnancy, although rates declined in younger teenaged women, rates have actually been increasing in women over the age of 18 (CDC, 2011). Additionally, adolescent females who reported not using a condom during their first sexual experience were twice as likely to become teenaged mothers than adolescent females who did use a condom during their first sexual experience (CDC, 2011). Thus, examining how risk-taking behaviors develop and what factors contribute to their maintenance is a worthwhile scientific endeavor, as it may help improve practical efforts to prevent undesirable outcomes.

Functional consequences of risk-taking behaviors that are a part of psychological diagnoses are outlined within the DSM-5. Consequences for disordered gambling behavior include strained family and personal relationships, as well as poor finances (APA, 2013). Various substance use disorders (e.g., alcohol use disorder, cannabis use disorder, stimulant use disorder) can lead to poor health, increased risk of other diseases, interference with work performance, and increased risk of injury or death (APA, 2013). Those diagnosed with ADHD with predominantly hyperactive/impulsive presentation or combined presentation, which is characterized by impulsivity, are more likely to be involved in traffic accidents and are more

likely to exhibit conduct problems or substance abuse (APA, 2013). Similarly, conduct disorder leads to various deleterious consequences related to risk-taking behaviors such as legal problems, issues at work, poor social relationships, and physical injury (APA, 2013). Binge eating behaviors may lead to weight gain, increased health problems, and decreased life satisfaction (APA, 2013). Taken together, these findings suggest that risk-taking behaviors are maladaptive in that they lead to various outcomes that impact multiple domains within an individual's life.

Additionally, risk-taking behaviors often co-occur or lead to other risk-taking behaviors. Notably, alcohol use is related to an increased risk for contracting human immunodeficiency virus (HIV) and other STIs by way of increased sexual risk-taking behavior (Scott-Sheldon, Carey, Cunningham, Johnson, & Carey, 2016). The suggested mechanism through which this occurs is that consumption of alcohol causes increased intentions to engage in sexual risk-taking behavior, which is a direct antecedent to the behavior itself (Scott-Sheldon et al., 2016). Furthermore, methamphetamine use is also associated with increased levels of sexual risk-taking behaviors (Hittner, 2016). In adolescents, substance use and sexual risk-taking behaviors have small to moderate correlations, with the effect being larger in older adolescents and in female adolescents (Ritchwood, Ford, DeCoster, Sutton, & Lochman, 2015). In adult men, sexual risk-taking behavior prevalence is higher in men who are educated, wealthy, and live in urban areas (Berhan & Berhan, 2013).

Intervention of Risk-Taking Behavior

Risk-taking behaviors can lead to devastating consequences and interventions targeting risk-taking behaviors are necessary. There are various ways in which risk-taking behaviors are targeted within treatment settings—either on their own or as part of a broader treatment plan. As described previously, ACT is a useful, transdiagnostic therapy that has successfully targeted and

impacted substance use disorders in adult populations (Lee et al., 2015; Smallwood et al., 2016). Additionally, ACT has been shown to impact risky behaviors including substance use and illegal behaviors in youth populations (Gomez et al., 2014). Other interventions that target risk-taking behavior include traditional CBT, single-session or brief interventions, and mindfulness-based interventions.

Cognitive behavior therapy. CBT is a treatment that focuses on the direct teaching of various coping strategies and targets negative automatic thoughts that are thought to contribute to various psychological disorders. Cognitive behavior therapy (CBT) has been a well-documented treatment of various risk-taking behaviors and in disorders that may be characterized by risk taking. Regarding specific risk-taking behaviors, CBT has been shown to directly reduce risky-driving tendencies when delivered in a group format (Strom et al., 2013). This treatment has also been shown to reduce unprotected (i.e., condomless) sex in sexual minority (i.e., gay, bisexual) men who are at a high risk for contracting HIV (Smith, Hart, Moody, Willis, Andersen, Blais, & Adam, 2016). Furthermore, one meta-analysis has shown that CBT is an effective treatment for gambling behaviors and that these effects are still significant up to 24 months following treatment (Gooding & Tarrier, 2009). Preliminary evidence regarding non-suicidal self-injury suggests that CBT may be effective for treating self-injurious behaviors in adolescence (Glenn, Franklin, & Nock, 2015). This review found that individually delivered CBT appeared to be the most effective when it was grouped with family-based CBT and parent training (Glenn et al., 2015).

Regarding those with diagnosable psychological disorders, CBT may also have a substantive impact on their level of risk-taking behaviors. In individuals who use amphetamines, CBT significantly reduced drug use, as well as other behaviors that are considered risky—

including other drug use, injecting, and criminal activity (Baker et al., 2005). Meta-analyses have demonstrated that CBT has moderate effects sizes regarding reducing use of various substances (Dutra, Stathopoulou, Basden, Leyro, Powers, & Otto, 2008). One meta-analysis also showed that this effect can be magnified when CBT is combined with contingency management practices (Dutra et al., 2008). CBT is an effective treatment for substance use across racial groups; however, it may need to be adapted in order to be culturally appropriate (Windsor, Jemal, & Alessi, 2015). Additionally, CBT is an effective treatment for reducing binge eating and purging behaviors in binge eating disorder (Ghaderi & Andersson, 1999; Wilson, 2011). Although CBT does not lead to sustained weight loss over time in those with binge eating disorder, it does significantly reduce disordered eating behaviors (Wilson, 2011). Conversely, CBT may actually increase levels of social risk in individuals diagnosed with generalized anxiety disorder (Lorian, Titov, & Grisham, 2012). This is an advantageous outcome, as this group may typically be more socially risk-averse, which maintains their anxiety over time (Lorian et al., 2012).

Single session or brief interventions. Several studies have demonstrated that risk-taking behaviors can be effectively targeted and reduced via single session or brief interventions. This type of intervention is desirable because it eliminates the need for retention, which is sometimes cited as a barrier to implementation. Regarding sexual risk-taking behaviors, one meta-analysis demonstrated that single session interventions have a small but significant effect on the reduction of risky sexual behavior (Sagherian, Huedo-Medina, Pellowski, Eaton, & Johnson, 2016). The sessions in the studies included communication skills training, condom use training, goal setting, risky situation identification techniques, risk awareness training, STI education, and self-management skills training (Sagherian et al., 2016). Several of these studies also demonstrated significant reduction of sexual risk-taking behavior even at follow-up (Sagherian et al., 2016).

Preliminary research suggests that single session motivational interviewing interventions may also significantly reduce risk-taking behaviors—namely, substance use in those diagnosed with substance use disorder (Berman, Forsberg, Durbeej, Kallmen, & Hermansson, 2010). Another study found similar reductions in smoking following a single session intervention in individuals also diagnosed with psychosis (Tantirangsee, Assanangkornchai, & Marsden, 2015).

Brief interventions may also have a meaningful impact on risk-taking behaviors as demonstrated by Castellanos and Conrod (2006). This study delivered an intervention in two 90-minute sessions wherein psychoeducational, motivational, and cognitive-behavioral strategies were used. They found that their brief intervention significantly reduced shoplifting behaviors in an adolescent sample (Castellanos & Conrod, 2006). Additionally, meta-analytic research has demonstrated that brief interventions can successfully target alcohol use and that these benefits are maintained over time (Tanner-Smith & Lipsey, 2015). Brief and single-session interventions are less studied in individuals with binge eating behaviors; however, there is some preliminary evidence that these interventions may impact some of the underlying components associated with binge eating (i.e., food addiction; Hilker et al., 2016).

Mindfulness. Mindfulness may play a role in mediating risk-taking behaviors. Trait mindfulness, which is conceptualized as an individual's general mindful state, has been associated with numerous well-being behaviors, including reduced risk-taking frequency and severity (Brown & Ryan, 2003; Lakey, Campbell, Brown, & Goodie, 2007). Higher levels of trait mindfulness, for example, may be a protective factor concerning the decision to smoke in adolescence (Black, Sussman, Johnson, & Milam, 2012). In regard to alcohol use, research has shown that trait mindfulness is negatively correlated with drinking behaviors (Reynolds, Keough, & O'Connor, 2015). Lower levels of trait mindfulness (e.g., not acting with awareness,

reactivity, being judgmental) are also associated with more severe levels of substance use disorders, such as alcohol use disorder (Levin, Dalrymple, & Zimmerman, 2014).

Beyond correlational research, mindfulness-based exercises have shown utility for reducing risk-taking behaviors. Notably, dialectical behavior therapy (DBT) was developed specifically to treat disorders characterized by risk-taking (Linehan, 1993). DBT, considered a “third wave” behavior therapy, incorporates mindfulness-based exercises that target self-harming and other risky behavior in individuals diagnosed with borderline personality disorder. Meta-analyses that examine the efficacy of DBT have shown that the therapy substantially improves suicidal and self-injurious behaviors (Panos, Jackson, Hasan, & Panos, 2014). Beyond DBT as a general treatment approach, a study by Hendrickson and Rasmussen (2013) demonstrated that a single mindfulness-based practice—mindful eating—can reduce risk-taking behavior in obese individuals, who have a higher propensity for risk-taking. Meta-analyses confirm that other mindfulness-based treatments have moderate to large effects on binge eating behaviors (Godfrey, Gallo, & Afari, 2015). Training in mindfulness has also been shown to improve externalizing behaviors, such as those related to ADHD and conduct disorder, which are often characterized by increased risk-taking (Bogels, Hoogstad, van Dun, de Schutter, & Restifo, 2008). Additionally, newer research investigating mindfulness-based addiction treatment (MBAT) shows that this approach to intervention may be more effective at treating disorders characterized by addiction than traditional CBT (Vidrine et al., 2016).

Psychological Flexibility Theory and Risk-Taking Behavior

As outlined previously, it has been demonstrated that ACT is a useful therapy regarding substance use disorders in adult populations (Lee et al., 2015; Smallwood et al., 2016; Hermann et al., 2016). Additionally, ACT has shown some utility regarding reducing impulsivity and risk-

taking behaviors in adolescent populations (Gomez et al., 2014). Although not broadly studied, some components of psychological flexibility theory have been shown to be related to various risk-taking behaviors. In an article by Wilson & Hayes (2000), the authors outline how relational frame theory and psychological flexibility may help us to understand how drug addiction works and how these principles can be utilized in treatment. They argue that treatment modalities that are already in use (e.g., motivational interviewing) can be understood via the processes underlying relational frame theory and psychological flexibility (Wilson & Hayes, 2000). In the example of motivational interviewing, the client is encouraged to outline their values and is empowered to begin behaving in ways that are consistent with how they want to begin seeing themselves (Wilson & Hayes, 2000). However, it is noteworthy that direct research examining the relationships among the six components of PFT and the many types and domains of risk-taking behavior is sparse.

In preliminary research regarding psychological inflexibility and its relationship to risk-taking behaviors, cognitive fusion has been shown to contribute to the severity and maintenance of binge eating behaviors in individuals diagnosed with binge eating disorder (Duarte, Pinto-Gouveia, & Ferreira, 2017; Lucena-Santos, Trindade, Oliveira, & Pinto-Gouveia, 2017). Experiential avoidance is also implicated in self-injurious behaviors, disordered eating behaviors, sexual risk behaviors, and tobacco use (Skinner, Rojas, & Veilleux, 2017; Litwin, Goldbacher, Cardaciotto, & Gambrel, 2017; Brem, Shorey, Anderson, & Stuart, 2017; Farris, DiBello, Heggeness, Reitzel, Vidrine, Schmidt, & Zvolensky, 2016). This research, although promising, is in its infancy, as only two of the six components of PFT have been examined in relation to risk taking. The proposed study aims to address this shortcoming in the literature by examining the

relationships between all components of psychological flexibility/inflexibility and perceptions of/engagement in a host of risk-taking behaviors.

The Present Study

PFT is a notable theory that is transdiagnostic in nature and is theoretically linked to both wellbeing and mental health problems. As discussed above, psychological flexibility is facilitated through six core components: acceptance, cognitive defusion, self-as-context, being present, contact with values, and committed action (Fletcher & Hayes, 2005; Hayes et al., 2013). The opposite of this process—psychological inflexibility—is argued to contribute to the development and maintenance of various psychological disorders. There is extensive research regarding the theoretical basis of psychological flexibility and the positive effects of treatments based on PFT, and some of these studies extend to disorders characterized by risk-taking behaviors (e.g., substance use, binge eating, illegal activity). There is also some correlational evidence indicating associations between select components of PFT (i.e., cognitive fusion and experiential avoidance) and specific risk-taking behaviors. However, no study has examined how each of the underlying components of PFT—including flexibility and inflexibility indicators—are broadly associated with the various types (i.e., substance use, binge eating, unprotected sex) and domains (i.e., ethical, financial, health/safety, recreational, social) of risk-taking behaviors. Given that risk-taking behaviors comprise various psychological disorders while also contributing to a host of deleterious consequences (e.g., injury, loss of resources), determining the theoretical processes underlying these behaviors is an important endeavor that can lead to improved understanding and treatment outcomes.

The current study aimed to understand the relationships among the six components of psychological flexibility theory and the various types and domains of risk-taking behaviors. This

study was conducted with English-speaking adults who completed a survey entirely online in one short session. They were recruited via Prolific—an online study participation system—and received payment for completing the survey. Participants completed a self-report measure assessing the six core components of psychological flexibility and the six core components of psychological inflexibility. Participants also completed various self-report measures assessing domains (e.g., recreational, social, health/safety, financial, ethical) and types (e.g., substance use, sexual risk behaviors) of risk-taking behaviors and beliefs. These measures address attitudes surrounding risk-taking behaviors (i.e., how risky the behavior is, how beneficial the behavior might be, how likely they are to engage in the behavior), as well as their actual engagement in the behavior (i.e., how old they were the first time they engaged in the behavior, how many times they have done the behavior, how recently they have done the behavior), whether there has been any consequences to them engaging in the behavior, and the reasons they believe explain why they engaged in the behavior. The relationships between these variables were analyzed via structural equation modeling using path analysis among observed variables.

The main research questions of interest in this study concerns how the concepts of psychological flexibility and inflexibility—as well as their underlying components—are broadly related to risk-taking attitudes and behaviors:

1. Are psychological flexibility and psychological inflexibility differentially related to risk taking behaviors?
2. How do the six underlying components of psychological flexibility and psychological inflexibility individually predict risk-taking behaviors?

Given the research question in the context of extant literature, the following hypotheses were noted:

1. High levels of overall psychological flexibility will be associated with low levels of actual engagement in risk-taking behaviors (lifetime and past month).
2. High levels of overall psychological inflexibility will be associated with high levels of actual engagement in risk-taking behaviors (lifetime and past month).
3. High levels of overall psychological flexibility will be associated with high levels of risk-averse perceptions and low likelihood of engagement.
4. High levels of overall psychological inflexibility will be associated with low levels of risk-averse perceptions and high likelihood of engagement.
5. Each of the underlying components of psychological flexibility will be negatively associated with actual engagement in risk-taking behaviors (lifetime and past month).
6. Each of the underlying components of psychological inflexibility will be positively associated with actual engagement in risk-taking behaviors (lifetime and past month).
7. Each of the underlying components of psychological flexibility will be positively associated risk-averse perceptions and low likelihood of engagement.
8. Each of the underlying components of psychological inflexibility will be negatively associated with risk-averse perceptions and high likelihood of engagement.

It may be that psychological flexibility is negatively associated with risk-taking behaviors and that psychological inflexibility is positively associated with risk-taking behaviors, but that inflexibility is more strongly related. However, due to a lack of research, there are no specific

hypotheses regarding the relationship between the differential predictive power of psychological flexibility and psychological inflexibility.

METHOD

Participants

Adults for this study were recruited via Prolific, an online survey recruitment website. IRB approval was provided by Louisiana State University (see Appendix A) and informed consent was collected from each participant. Study participants were paid \$2.28 each for their participation. Partial funding for this study was provided by the Strategic Research Grant awarded to students at LSU. A total of 1101 participants completed the study and were included in the data analysis. Data from an additional 4 participants were collected but were excluded due to the failure of attention checks throughout the survey. Participants were eligible for the study if their native language was English and they were over the age of 18. If a participant took longer than 61 minutes to complete the study, they were rejected by the Prolific platform and were replaced by another participant. The study participants were 50.77% male, 45.96% female, and 3.27% transgender, gender non-conforming, or genderfluid. They were 72.84% White, 6.09% Black, 9.72% Asian, 3.36% Latinx, and 7.99% multiracial or of other races. Ages of participants ranged from 18 to 76, with a mean age of 32.64.

Procedure

Participants signed up for this study through their Prolific accounts. The participants then completed all measures online whenever they were available to do so. They received their informed consent prior to beginning the survey and had the option to opt out or not answer a question at any point. On average, the study took about 23.15 minutes to complete. Given that many survey questions asked about participant's thoughts, feelings, and behaviors that may potentially be distressing, at the completion of the survey participants were provided with

various community and mental health resources that they could access, if they were interested in doing so. Study participants who endorsed self-harming behaviors received additional resources.

Measures

Psychological flexibility and inflexibility. Psychological flexibility and inflexibility were measured using the Multidimensional Psychological Flexibility Inventory (MPFI) (see Appendix B; Rolffs, Rogge, & Wilson, 2016). This is a self-report scale that consists of 60 items (Rolffs et al., 2016). Each of the items in the MPFI reflect one of the underlying components of psychological flexibility and psychological inflexibility—there are 5 items per 12 subscales. The 6 flexibility subscales are entitled “Acceptance”, “Present Moment Awareness”, “Self as Context”, “Defusion”, “Values”, and “Committed Action”. These 6 subscales can be combined to create a global composite score reflecting psychological flexibility. This composite score has demonstrated good internal consistency (Cronbach's $\alpha = .96 - .97$; Rolffs et al., 2016). The 6 inflexibility subscales are entitled “Experiential Avoidance”, “Lack of Contact with the Present Moment”, “Self as Content”, “Fusion”, “Lack of Contact with Values”, and “Inaction”. These 6 subscales can be combined to create a global composite score reflecting psychological inflexibility. This composite score has demonstrated good internal consistency (Cronbach's $\alpha = .87 - .91$; Rolffs et al., 2016). Additionally, each of the 6 subscales within the psychological flexibility composite are negatively associated with each of the 6 subscales within the psychological inflexibility composite and positively associated with each other. The 6 subscales within the psychological inflexibility subscale are positively associated with each other. Sample items include “I was receptive to observing unpleasant thoughts and feelings without interfering with them” (acceptance) and “I tried to connect with what is truly important to me on a daily basis” (contact with values; Rolffs et al., 2016). Participants answer these items based upon their

experiences during the past two weeks with a 6-point Likert scale (1 = *never true*, 2 = *rarely true*, 3 = *occasionally true*, 4 = *often true*, 5 = *very often true*, 6 = *always true*).

Risk-taking behaviors. Risk-taking perceptions and likelihood were measured using the Domain-Specific Risk-Taking (DOSPERT) scale (see Appendix C; Blais & Weber, 2006). This is a self-report scales that lists 30 behaviors and asks two questions about each of these behaviors. For example, item 20 is “riding a motorcycle without a helmet”—the follow up questions pertain to how likely you are to engage in that behavior and how risky you perceive that behavior to be. Participants answer each of these questions using a 7-point Likert scale (risk likelihood: 1 = *extremely unlikely*, 2 = *moderately unlikely*, 3 = *somewhat unlikely*, 4 = *not sure*, 5 = *somewhat likely*, 6 = *moderately likely*, 7 = *extremely likely*; risk perception: 1 = *not at all risky*, 2 = *slightly risky*, 3 = *somewhat risky*, 4 = *moderately risky*, 5 = *risky*, 6 = *very risky*, 7 = *extremely risky*). The risk likelihood scale has demonstrated adequate internal consistency (Cronbach's α = .71 - .86), as does the risk perception scale (Cronbach's α = .74 - .83; Blais & Weber, 2006). The risk-behaviors and perceptions assessed by this measure fall into five domains: ethical, financial, health/safety, recreational, and social. This scale assesses the domains of risk-behaviors that are more associated with judgment and decision-making research. The DOSPERT assesses risk-taking from a personality trait and belief perspective and does not address past engagement in any of the behaviors (Blais & Weber, 2006).

Risk-taking behaviors were also measured using the Risky, Impulsive, and Self-Destructive Behavior Questionnaire (RISQ) (see Appendix D; Sadeh & Baskin-Sommers, 2017). This is a self-report scale that lists 38 behaviors and asks 6 questions about each of these behaviors. For example, item 4 is “used cocaine or crack”—the follow up questions consist of “How many times total have you done this in your life?”, “How many times have you done this

in the past month?”, “How old were you the first time?”, “Did it ever cause you any problems, such as going to the hospital, legal trouble, problems at work, with family or friends?”, “I do this behavior to stop feeling upset, distressed, or overwhelmed” and “I do this behavior to feel excitement, to get a thrill, or to feel pleasure”. Participants answer with a number (representing behavioral frequency) to the first three questions, a “yes” or a “no” to the fourth question, and with a 5-point Likert-type scale to the final two questions (0= *strongly disagree*, 1 = *somewhat disagree*, 2 = *equally disagree/agree*, 3 = *somewhat agree*, 4= *strongly agree*). The two dependent variables of interest from this measure are engagement in risk-taking behaviors throughout the lifetime and engagement within the past month. The risk behaviors assessed with this measure fall into 8 subtypes: drug behaviors, aggression, gambling, risky sexual behavior, heavy alcohol use, self-harm, impulsive eating, and reckless behaviors. The total risk-taking behavior score generated by the RISQ has demonstrated excellent internal consistency (Cronbach's $\alpha = .92$) and is moderately correlated with the likelihood of future risk-taking behaviors as measured by the DOSPERT (Sadeh & Baskin-Sommers, 2017). This scale assesses the risk-behaviors that are often thought to contribute to or comprise various psychological disorders.

Data Analysis

Descriptive statistics (e.g., mean, standard deviation) were analyzed for all variables of interest. Furthermore, bivariate correlations were run for each of the predictor variables (i.e., psychological flexibility/inflexibility overall scores and subscale scores) and outcome variables (i.e., risk-taking behaviors and perceptions). The primary data analyses were structural equation modeling conducted in AMOS via path analyses. Sixteen separate path analyses will be conducted—two for each hypothesis. The four dependent variables are (a) likelihood of engaging

in risk-taking behavior, (b) perception of risk-taking behaviors, (c) lifetime engagement in risk-taking behaviors, and (d) engagement in risk-taking behaviors over the past month. The first series of path analyses examined two overall composite scores (i.e., psychological flexibility and inflexibility) as predictors of each of the outcome variables. The second series of path analyses looked at how the individual components underlying psychological flexibility and psychological inflexibility (12 subscale scores in total) predict each of the outcome variables. These analyses were chosen to gain more precise insight into how psychological flexibility and psychological inflexibility and their underlying components uniquely predict several aspects of risk-taking behavior.

RESULTS

Preliminary Analyses

Preliminary analyses were conducted using JASP Statistical Software. Descriptive statistics were examined for the total sample for each of the study variables (see Tables 1-3). Each of the subscales within the MPFI were normally distributed. For the DOSPERT, each of the subscales were normally distributed, with the exception of the Ethical Risk Likelihood subscale. Regarding the RISQ, the following subscales were normally distributed: Lifetime Gambling, Lifetime, Heavy Alcohol Use, and Past Month Total Risk. All other subscales were not normally distributed. Each of the subscales of the MPFI had excellent internal consistency—except for the Acceptance subscale, which demonstrated good internal consistency—as measured by Cronbach’s alpha. The overall Risk Perception and Risk Likelihood scales demonstrated good internal consistency. Each of the Risk Perception subscales had internal consistency that ranged from acceptable to good. The Ethical, Health/Safety, and Social subscales of the Risk Likelihood measure demonstrated questionable internal consistency. The Financial subscale had acceptable internal consistency, while the Recreational subscale had good internal consistency. Internal consistency analyses were not conducted for the subscales of the RISQ given that these items are a frequency count and not measured on a Likert scale.

Table 1. Descriptive Statistics for MPFI Subscales

	<i>M (SD)</i>	Skewness	Kurtosis	alpha
Total Inflexibility	3.05 (.47)	0.27	-0.44	0.965
Experiential Avoidance	3.97 (.09)	-0.3	-0.42	0.941
Lack of Contact with the Present Moment	2.74 (.12)	0.52	-0.41	0.957
Self as Content	2.86 (.11)	0.47	-0.55	0.945
Fusion	3.21 (.09)	0.24	-0.85	0.956
Lack of Contact with Values	2.63 (.12)	0.6	-0.28	0.93
Inaction	2.88 (.04)	0.44	-0.79	0.959
Total Flexibility	3.59 (.34)	0.28	-0.11	0.964
Acceptance	3.09 (.18)	0.42	-0.08	0.894
Present Moment Awareness	3.81 (0.13)	0.15	-0.53	0.931
Self as Context	3.79 (.08)	-0.08	-0.46	0.933
Defusion	3.21 (.05)	0.34	-0.31	0.941
Values	3.81 (.04)	0.02	-0.49	0.935
Committed Action	3.82 (.14)	-0.08	-0.5	0.943

Table 2. Descriptive Statistics for DOSPERT Subscales

	<i>M (SD)</i>	Skewness	Kurtosis	alpha
Total Risk Perception	4.53 (1.10)	-0.07	0.06	0.882
Social	3.04 (.63)	0.37	0.08	0.741
Recreational	4.68 (.88)	-0.12	-0.46	0.782
Health/Safety	5.06 (.59)	-0.28	-0.22	0.717
Financial	5.07 (.86)	-0.42	0.25	0.756
Ethical	4.77 (1.12)	-0.09	-0.27	0.729
Total Risk Likelihood	3.22 (0.74)	0.6	0.76	0.839
Social	5.22 (.92)	-0.28	-0.24	0.615
Recreational	2.89 (1.40)	0.6	-0.48	0.81
Health/Safety	2.98 (1.18)	0.44	-0.21	0.642
Financial	2.70 (1.08)	0.83	0.99	0.77
Ethical	2.30 (.40)	0.99	1.03	0.691

Table 3. Descriptive Statistics for RISQ Subscales

	<i>M (SD)</i>	Skewness	Kurtosis
Lifetime Total Risk	3.17 (1.22)	-1.25	0.36
Drug Behaviors	1.41 (1.57)	0.68	-1.1
Aggression	0.68 (0.88)	1.58	2.93
Gambling	1.19 (1.35)	0.95	-0.29
Risky Sexual Behavior	0.48 (0.70)	1.74	4.25
Heavy Alcohol Use	1.25 (1.36)	0.85	-0.48
Self-Harm	1.15 (1.42)	1.03	-0.31
Impulsive Eating	1.26 (1.62)	0.78	-1.08
Reckless Behaviors	1.97 (1.40)	0.16	-1.21
Past Month Total Risk	1.15 (0.91)	0.73	0.62
Drug Behaviors	0.30 (0.68)	2.35	5.26
Aggression	0.04 (0.21)	6.27	51.81
Gambling	0.20 (0.47)	2.58	8.4
Risky Sexual Behavior	0.04 (0.22)	6.48	52.8
Heavy Alcohol Use	0.19 (0.43)	2.05	3.37
Self-Harm	0.31 (0.65)	2.51	7.55
Impulsive Eating	0.42 (0.69)	1.6	2.2
Reckless Behaviors	0.49 (0.59)	0.87	0.31

Bivariate correlations were also examined for each of the study variables. Total summary variables were the first bivariate correlations examined (see Table 4). These analyses revealed a moderate, positive correlation between past month risk behaviors and lifetime risk behaviors. Similarly, there was a moderate, negative correlation between psychological flexibility and psychological inflexibility. Weak, but significant positive correlations were observed for risk perception and psychological inflexibility, past month risk behaviors and risk perception, lifetime risk behaviors and psychological inflexibility, risk likelihood and psychological inflexibility, past month risk behaviors and psychological flexibility, risk perception and

psychological flexibility, lifetime risk behaviors and risk likelihood, and past month risk behaviors and risk likelihood. Weak, but significant negative correlations were observed for lifetime risk and flexibility, past month risk behaviors and flexibility, risk perception and risk likelihood, lifetime risk behaviors and risk perception, and past month risk behaviors and risk perception. Finally, bivariate correlations were examined for each individual subscale of the MPFI, the DOSPERT, and the RISQ (see Tables 5-12). Any significant correlations fell in the weak to moderate range.

Table 4. Bivariate Correlations for Summary Variables

	1	2	3	4	5	6
1. Inflexibility	1	-0.42***	0.18***	0.07*	0.10***	0.27***
2. Flexibility		1	0.03	0.15***	-0.16***	-0.17***
3. Risk Likelihood			1	-0.34***	0.15***	0.20***
4. Risk Perception				1	-0.08**	-0.07*
5. Lifetime Risk					1	0.54***
6. Past Month Risk						1

* $p < .05$, ** $p < .01$, *** $p < .001$

Table 5. Bivariate Correlations for Flexibility Subscales and Risk Perception

	1	2	3	4	5	6	7	8	9	10
1. Acceptance	1	0.47***	0.48***	0.49***	0.38***	0.37***	0.10**	0.09**	0.13***	0.04
2. Present Moment Awareness		1	0.58***	0.46***	0.59***	0.51***	-0.02	0.13***	0.18***	0.08*
3. Self as Context			1	0.67***	0.65***	0.63***	-0.04	0.10***	0.12***	0.05
4. Defusion				1	0.59***	0.61***	-0.04	0.04	0.06	0.00
5. Values					1	0.79***	-0.07*	0.13***	0.17	0.07*
6. Committed Action						1	-0.08*	0.12***	0.18***	0.03
7. Social Risk Perception							1	0.32***	0.34***	0.22***
8. Recreational Risk Perception								1	0.55***	0.36***
9. Health & Safety Risk Perception									1	0.39***
10. Financial Risk Perception										1
11. Ethical Risk Perception										

* $p < .05$, ** $p < .01$, *** $p < .001$

(table cont'd)

Table 5 Cont'd

	11
1. Acceptance	0.14***
2. Present Moment Awareness	0.18***
3. Self as Context	0.15***
4. Defusion	0.12***
5. Values	0.20***
6. Committed Action	0.16***
7. Social Risk Perception	0.33***
8. Recreational Risk Perception	0.40***
9. Health & Safety Risk Perception	0.63***
10. Financial Risk Perception	0.34***
11. Ethical Risk Perception	1

* $p < .05$, ** $p < .01$, *** $p < .001$

Table 6. Bivariate Correlations for Flexibility Subscales and Risk Likelihood

	7	8	9	10	11
1. Acceptance	0.15***	0.15***	0.03	0.13***	-0.01
2. Present Moment Awareness	0.11***	-0.02	-0.08*	0.02	-0.16***
3. Self as Context	0.17***	0.06*	-0.03	0.08*	-0.12***
4. Defusion	0.06	0.07*	-0.03	0.07*	-0.08**
5. Values	0.13***	0.02	-0.10***	0.04	-0.08**
6. Committed Action	0.12***	0.05	-0.07*	0.05	-0.15***
7. Social Risk Likelihood	1	0.18***	0.20***	0.11***	0.07*
8. Recreational Risk Likelihood		1	0.45***	0.34***	0.24***
9. Health & Safety Risk Likelihood			1	0.34***	0.51***
10. Financial Risk Likelihood				1	0.36***
11. Ethical Risk Likelihood					1

* $p < .05$, ** $p < .01$, *** $p < .001$

Table 7. Bivariate Correlations for Flexibility Subscales and Lifetime Risk Behaviors

	7	8	9	10	11	12	13	14
1. Acceptance	-0.02	-0.05	-0.06*	0.00	-0.08**	-0.13***	-0.11***	-0.08*
2. Present Moment Awareness	-0.07*	-0.03	-0.01	0.00	-0.10***	-0.12***	-0.14***	-0.09**
3. Self as Context	-0.01	-0.03	0.04	0.05	0.00	-0.19***	-0.12***	-0.06
4. Defusion	-0.05	-0.09**	0.00	-0.01	-0.06*	-0.32***	-0.18***	-0.11
5. Values	-0.05	-0.03	0.04	0.05	-0.07*	-0.26***	-0.16***	-0.10**
6. Committed Action	-0.04	-0.02	0.06	0.06*	-0.05	-0.29***	-0.15***	-0.09**
7. Lifetime Drug Behaviors	1	0.20***	0.26***	0.40***	0.55***	0.22***	0.13***	0.31***
8. Lifetime Aggression		1	0.18***	0.18***	0.19***	0.22***	0.11***	0.23***
9. Lifetime Gambling			1	0.28***	0.30***	-0.01	0.07*	0.29***
10. Lifetime Risky Sex				1	0.43***	0.11***	0.05	0.29***
11. Lifetime Alcohol Use					1	0.14***	0.19***	0.37***
12. Lifetime Self-Harm						1	0.26***	0.18***
13. Lifetime Impulsive Eating							1	0.38***
14. Lifetime Reckless Behaviors								1

* $p < .05$, ** $p < .01$, *** $p < .001$

Table 8. Bivariate Correlations for Flexibility Subscales and Past Month Risk Behaviors

	7	8	9	10	11	12	13	14
1. Acceptance	0.02	-0.08*	-0.02	0.03	-0.01	-0.08**	-0.07*	-0.08**
2. Present Moment Awareness	-0.02	-0.07*	0.00	-0.03	-0.04	-0.09**	-0.10***	-0.08**
3. Self as Context	0.02	-0.06	0.05	-0.01	0.00	-0.15***	-0.10***	-0.07*
4. Defusion	-0.02	-0.07*	0.02	0.01	-0.06	-0.26***	-0.13***	-0.09**
5. Values	0.00	-0.03	0.03	-0.02	-0.03	-0.24***	-0.14***	-0.1***
6. Committed Action	-0.02	-0.04	0.06*	-0.02	-0.02	-0.26***	-0.15***	-0.10***
7. Past Month Drug Behaviors	1	0.13***	0.08**	0.09**	0.23**	0.10**	0.05	0.11***
8. Past Month Aggression		1	0.07*	-0.01	0.08**	0.09**	0.03	0.13***
9. Past Month Gambling			1	0.02	0.07*	-0.02	-0.01	0.11***
10. Past Month Risky Sex				1	0.13***	0.05	-0.01	0.14***
11. Past Month Alcohol Use					1	0.05	0.09**	0.16***
12. Past Month Self-Harm						1	0.17***	0.07
13. Past Month Impulsive Eating							1	0.23***
14. Past Month Reckless Behaviors								1

* $p < .05$, ** $p < .01$, *** $p < .001$

Table 9. Bivariate Correlations for Inflexibility Subscales and Risk Perception

	2	3	4	5	6	7	8	9
1. Experiential Avoidance	0.32***	0.44***	0.47***	0.34***	0.39***	0.14***	0.09**	0.12***
2. Lack of Contact with the Present Moment	1	0.46***	0.44***	0.53***	0.51***	0.16***	-0.08**	-0.06*
3. Self as Content		1	0.70***	0.51***	0.65***	0.20***	-0.02	0.02
4. Fusion			1	0.56***	0.79***	0.19***	0.00	0.05
5. Lack of Contact with Values				1	0.69***	0.22***	-0.03	-0.01
6. Inaction					1	0.20***	0.00	0.02
7. Social Risk Perception						1	0.32***	0.34***
8. Recreational Risk Perception							1	0.55***
9. Health & Safety Risk Perception								1
10. Financial Risk Perception								
11. Ethical Risk Perception								

* $p < .05$, ** $p < .01$, *** $p < .001$

(table cont'd)

Table 9 Cont'd

	10	11
1. Experiential Avoidance	0.07*	0.06*
2. Lack of Contact with the Present Moment	0.00	-0.10***
3. Self as Content	0.03	0.02
4. Fusion	0.05	0.00
5. Lack of Contact with Values	0.02	-0.04
6. Inaction	0.02	-0.04
7. Social Risk Perception	0.22***	0.33***
8. Recreational Risk Perception	0.36***	0.40***
9. Health & Safety Risk Perception	0.39***	0.63***
10. Financial Risk Perception	1	0.34***
11. Ethical Risk Perception		1

* $p < .05$, ** $p < .01$, *** $p < .001$

Table 10. Bivariate Correlations for Inflexibility Subscales and Risk Likelihood

	7	8	9	10	11
1. Experiential Avoidance	0.14***	0.09**	.012***	0.07*	0.06*
2. Lack of Contact with the Present Moment	0.16***	-0.08**	-0.06*	0.00	-0.10***
3. Self as Content	0.20***	-0.02	0.02	0.03	0.02
4. Fusion	0.19***	0.00	0.05	0.05	0.00
5. Lack of Contact with Values	0.22***	-0.03	-0.01	0.02	-0.05
6. Inaction	0.20***	0.00	0.02	0.02	-0.05
7. Social Risk Likelihood	1	0.32***	0.34***	0.22***	0.33***
8. Recreational Risk Likelihood		1	0.55***	0.36***	0.40***
9. Health & Safety Risk Likelihood			1	0.39***	0.63***
10. Financial Risk Likelihood				1	0.34***
11. Ethical Risk Likelihood					1

* $p < .05$, ** $p < .01$, *** $p < .001$

Table 11. Bivariate Correlations for Inflexibility Subscales and Lifetime Risk Behaviors

	7	8	9	10	11	12	13	14
1. Experiential Avoidance	0.03	0.01	-0.05	0.04	-0.01	0.20***	0.08*	0.04
2. Lack of Contact with the Present Moment	0.05	0.04	-0.07*	-0.01	0.02	0.20***	0.09**	0.12***
3. Self as Content	0.04	0.05	-0.10***	-0.01	0.01	0.34***	0.15** *	0.05
4. Fusion	0.06	0.07*	-0.13***	0.01	0.04	0.40***	0.16** *	0.08*
5. Lack of Contact with Values	0.06*	0.05	-0.10**	0.01	0.04	0.26***	0.17** *	0.13***
6. Inaction	0.06*	0.08*	-0.12***	0.00	0.01	0.42***	0.19** *	0.10**
7. Lifetime Drug Behaviors	1	0.20** *	0.26***	0.40***	0.55** *	0.22***	0.13** *	0.31***
8. Lifetime Aggression		1	0.18***	0.18***	0.19** *	0.22***	0.11** *	0.23***
9. Lifetime Gambling			1	0.28***	0.30** *	-0.01	0.07*	0.29***
10. Lifetime Risky Sex				1	0.43** *	0.11***	0.04	0.29***
11. Lifetime Alcohol Use					1	0.14***	0.19** *	0.37***
12. Lifetime Self-Harm						1	0.26** *	0.18***
13. Lifetime Impulsive Eating							1	0.38***
14. Lifetime Reckless Behaviors								1

* $p < .05$, ** $p < .01$, *** $p < .001$

Table 12. Bivariate Correlations for Inflexibility Subscales and Past Month Risk Behaviors

	7	8	9	10	11	12	13	14
1. Experiential Avoidance	0.08*	0.08*	0.01	0.04	0.04	0.18***	0.09**	0.11***
2. Lack of Contact with the Present Moment	0.08*	0.06	-0.02	0.08**	0.04	0.21***	0.14***	0.18***
3. Self as Content	0.11***	0.07*	-0.01	0.04	0.07*	0.33***	0.17***	0.11***
4. Fusion	0.09**	0.07*	-0.06*	0.06*	0.05	0.40***	0.14**	0.13***
5. Lack of Contact with Values	0.06	0.07**	-0.02	0.05	0.05	0.26***	0.19***	0.19***
6. Inaction	0.09**	0.08**	-0.06	0.04	0.02	0.43***	0.19***	0.13***
7. Past Month Drug Behaviors	1	0.13***	0.08**	0.09**	0.23***	0.10**	0.05	0.11***
8. Past Month Aggression		1	0.07*	-0.01	0.08**	0.09**	0.03	0.13***
9. Past Month Gambling			1	0.02	0.07*	-0.02	-0.01	0.11***
10. Past Month Risky Sex				1	0.13***	0.05	-0.01	0.14***
11. Past Month Alcohol Use					1	0.05	0.09**	0.16***
12. Past Month Self-Harm						1	0.17***	0.06*
13. Past Month Impulsive Eating							1	0.23***
14. Past Month Reckless Behaviors								1

* $p < .05$, ** $p < .01$, *** $p < .001$

Primary Analyses

Primary analyses were conducted using IBM SPSS Amos 26 software. They are presented in order of hypothesis. Evaluation of data-model fit involved comparison to the following indices and decision rules: comparative fit index (CFI) $\geq .90$ and root mean square of approximation (RMSEA) $\leq .08$ (Hu & Bentler, 1999).

Hypothesis 1. The first hypothesis—high levels of overall psychological flexibility will be associated with low levels of actual engagement in risk taking behaviors—was examined via two models of path analysis. The first model (Model 1, see Figure 1) examined overall psychological flexibility and risk-taking behaviors occurring over the past month. Model 1 demonstrated poor model fit ($\chi^2 = 1843.72$, $df = 36$, $p < .001$, CFI = .065, RMSEA [90% CI] = .214 [.205, .222]). Overall psychological flexibility was significantly associated with decreased total past month risk-taking behaviors ($p < .001$). Regarding sub-domains, overall psychological flexibility is significantly associated with reduced self-harm, reckless behaviors, and eating. In this model, psychological flexibility was the strongest predictor of self-harm behaviors. The second model (Model 2, see Figure 2) examined overall flexibility and risk-taking behaviors occurring over one's lifetime. Model 2 also demonstrated poor model fit ($\chi^2 = 2434.17$, $df = 36$, $p < .001$, CFI = .067, RMSEA [90% CI] = .246 [.238, .254]). Similar to Model 1, overall psychological flexibility was significantly associated with decreased total lifetime risk-taking behaviors ($p < .001$). Regarding sub-domains, overall psychological flexibility is significantly associated with reduced self-harm, reckless behaviors, and eating. In this model, psychological flexibility was the strongest predictor of self-harm behaviors.

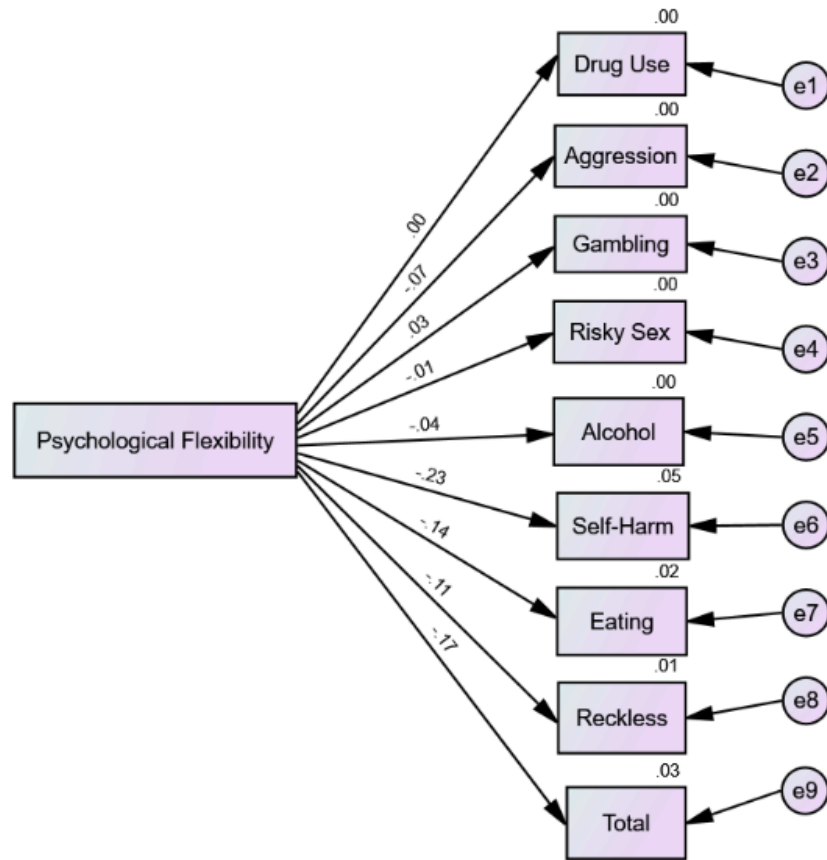


Figure 1. Overall Psychological Flexibility and Past Month Risk-Taking Behaviors

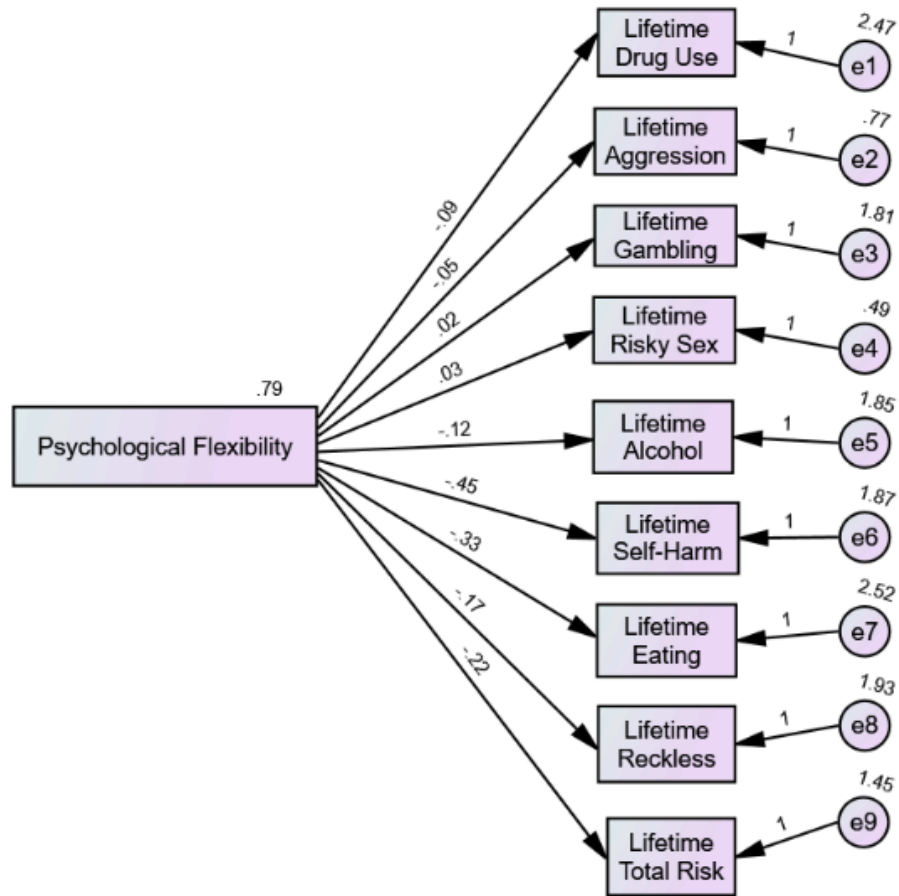


Figure 2. Overall Psychological Flexibility and Lifetime Risk-Taking Behaviors

Hypothesis 2. In order to examine the second hypothesis, two models of path analysis were run. The first model (Model 3) examined overall psychological inflexibility and risk-taking behaviors occurring over the past month. Model 3 (see Figure 3) demonstrates poor model fit ($\chi^2 = 1756.82$, $df = 36$, $p < .001$, $CFI = .179$, $RMSEA [90\% CI] = .208 [.200, .217]$). Overall psychological inflexibility was predictive of increased total risk behaviors occurring in the past month ($p < .001$). Inflexibility significantly predicted increased impulsive eating, drug use, self-harm, and reckless behavior, with the strongest prediction for self-harm. The second model (Model 4, see Figure 4) examined overall inflexibility and risk-taking behaviors occurring over one's lifetime. Model 4 also demonstrates poor model fit ($\chi^2 = 2454.29$, $df = 36$, $p < .001$, $CFI =$

.100, RMSEA [90% CI] = .247 [.239, .255]). Inflexibility significantly predicted increased lifetime totals of impulsive eating, self-harm, and reckless behaviors. Inflexibility also significantly predicted decreased lifetime totals of gambling behavior.

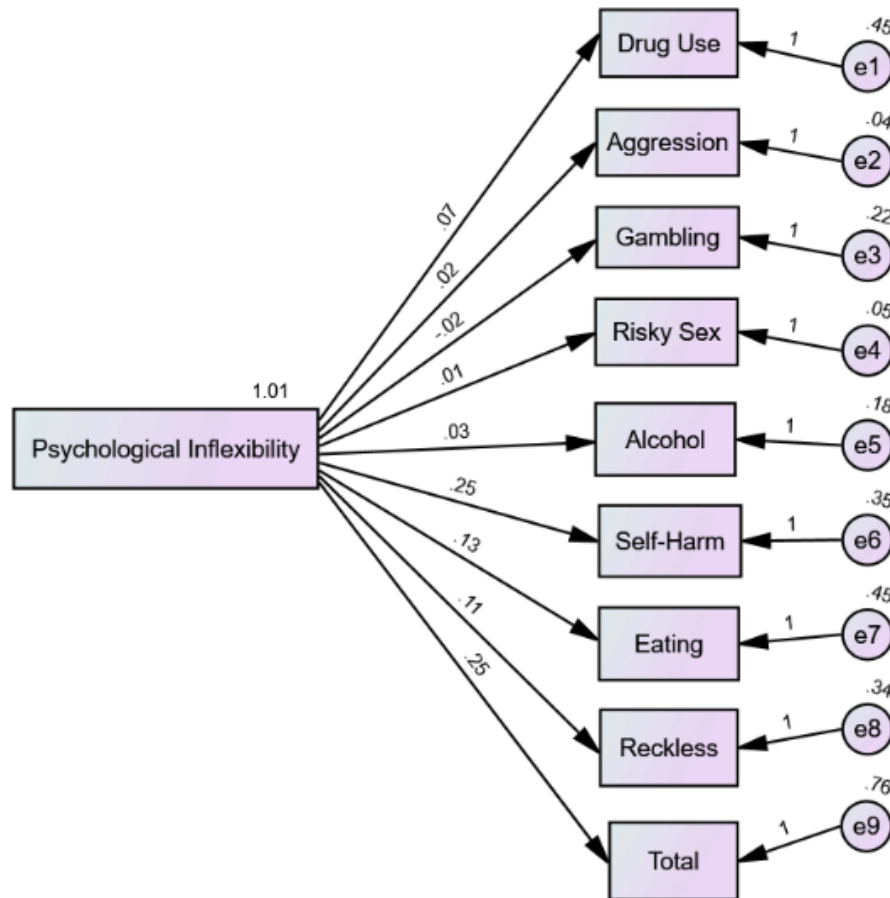


Figure 3. Overall Psychological Inflexibility and Past Month Risk-Taking Behaviors

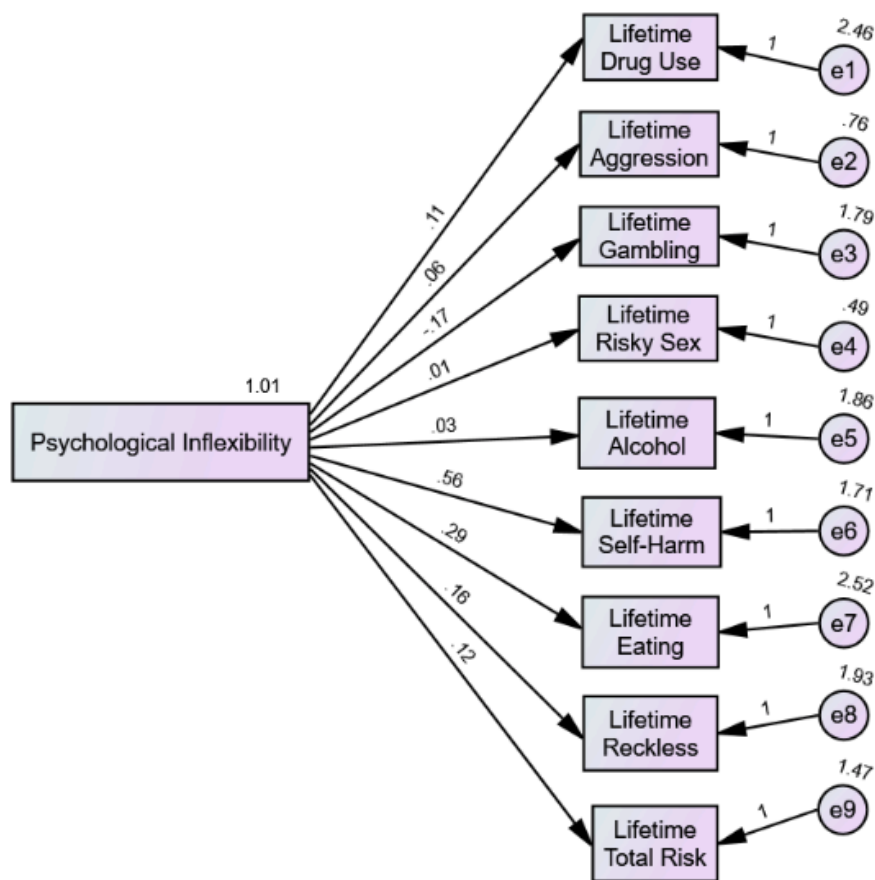


Figure 4. Overall Psychological Inflexibility and Lifetime Risk-Taking Behaviors

Hypothesis 3. Overall psychological flexibility and its relationship to risk perceptions and likelihood of engagement were examined via two path analyses (Models 5 and 6). Model 5 (see Figure 5) demonstrates poor model fit ($\chi^2 = 12189.26$, $df = 15$, $p < .001$, CFI = .009, RMSEA [90% CI] = .859 [.846, .872]). Psychological flexibility significantly predicted increased overall risk perceptions—specifically recreational risk, health and safety risk, and ethical risk ($p < .001$). Model 6 (see Figure 6) also demonstrates poor model fit ($\chi^2 = 10306.29$, $df = 15$, $p < .001$, CFI = .006, RMSEA [90% CI] = .790 [.777, .803]). Psychological flexibility significantly predicted decreased ethical risk likelihood and increased social risk likelihood.

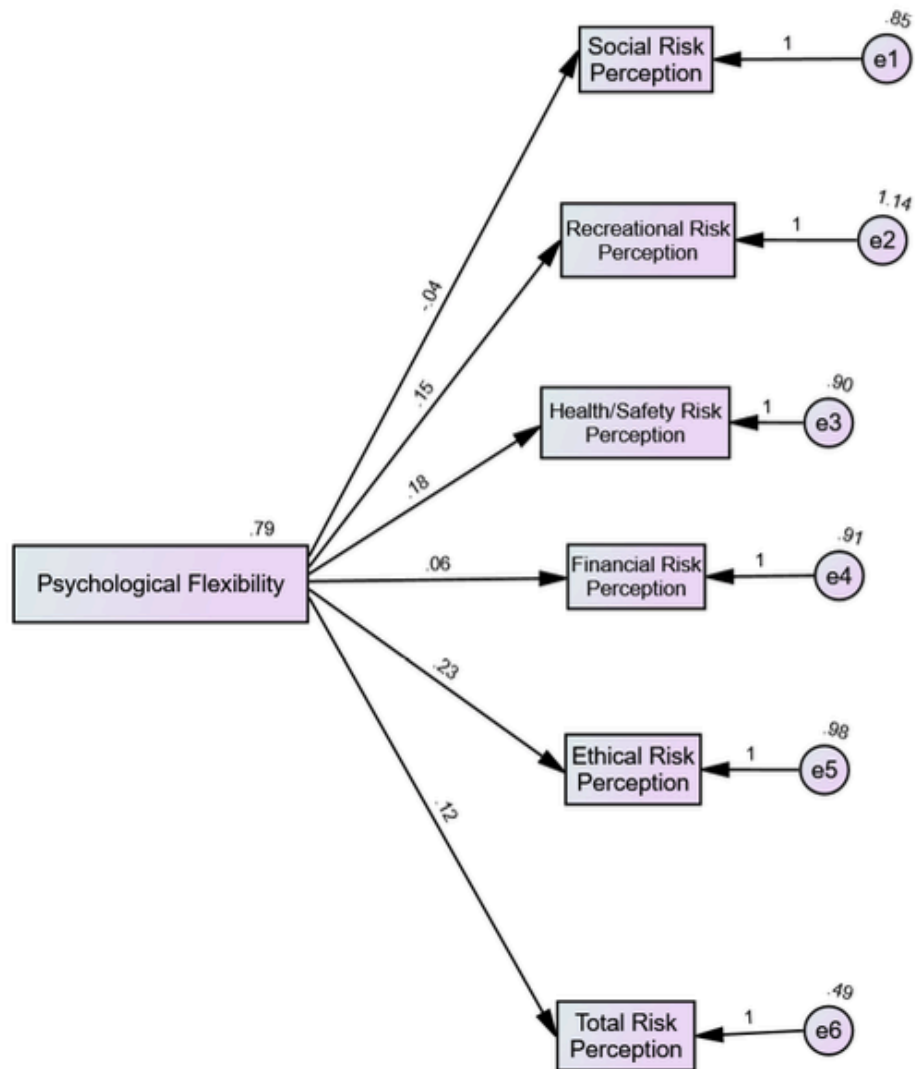


Figure 5. Overall Psychological Flexibility and Risk Perceptions

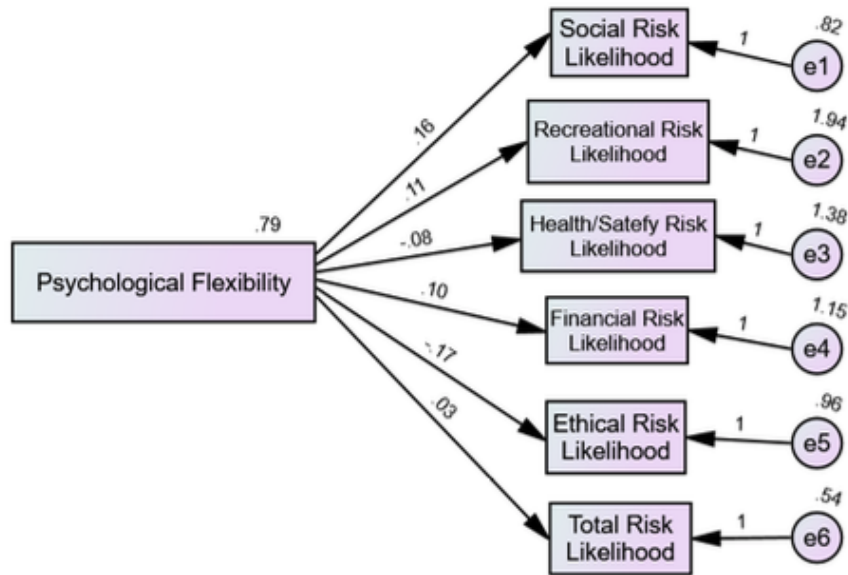


Figure 6. Overall Psychological Flexibility and Risk Likelihood

Hypothesis 4. Overall psychological inflexibility and its relationship to risk perceptions and likelihood of engagement were examined via two path analyses (Models 7 and 8). Model 7 (see Figure 7) demonstrated poor model fit ($\chi^2 = 12266.73$, $df = 15$, $p < .001$, CFI = .005, RMSEA [90% CI] = .862 [.849, .875]). Overall psychological inflexibility significantly predicted increased social risk perception. Model 8 (see Figure 8) also demonstrated poor model fit ($\chi^2 = 10218.18$, $df = 15$, $p < .001$, CFI = .016, RMSEA [90% CI] = .786 [.774, .799]). Overall psychological inflexibility significantly predicted increased total risk likelihood, as well as increased ethical risk likelihood and health and safety risk likelihood.

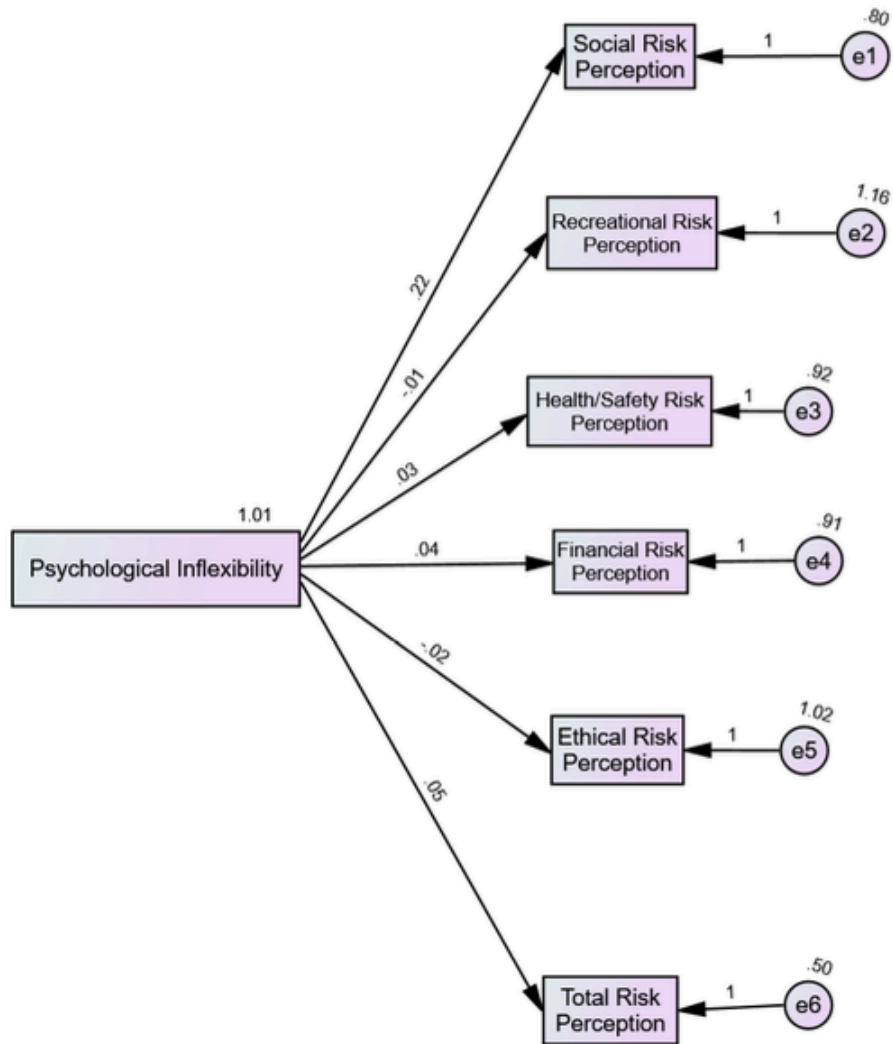


Figure 7. Overall Psychological Inflexibility and Risk Perceptions

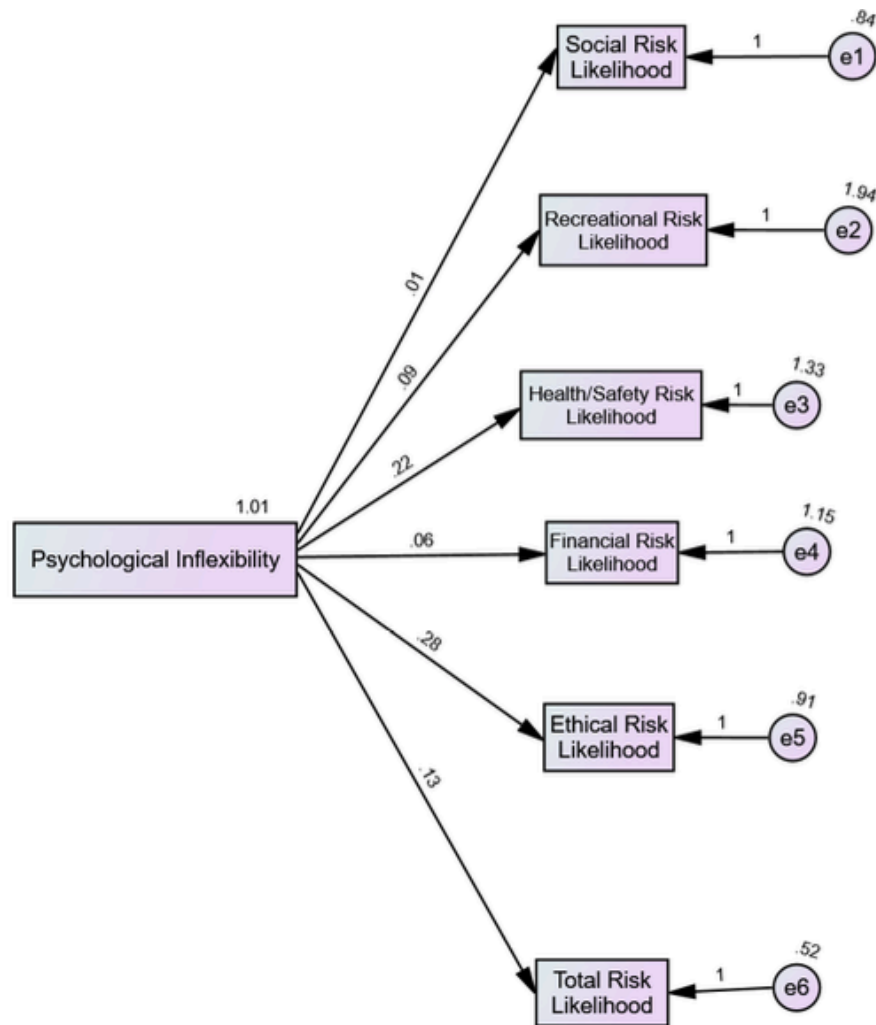


Figure 8. Overall Psychological Inflexibility and Risk Likelihood

Hypothesis 5. Next, two models were run to examine how each of the underlying components of psychological flexibility are associated with actual engagement in risk-taking behaviors—past month and lifetime (Models 9 and 10). Model 9—which examined the components of psychological flexibility and past month risk behaviors—(see Table 13) demonstrated poor model fit ($\chi^2 = 1823.08$, $df = 36$, $p < .001$, CFI = .674, RMSEA [90% CI] = .212 [.204, .221]). Defusion was the only psychological flexibility component that significantly predicted a decrease in total risk behaviors over the previous month. Defusion further significantly predicted decreased alcohol use and self-harm. Alternately, Self-as-Context

significantly predicted an increase in past month total risk. Self-as-Context and Present Moment Awareness significantly predicted increased self-harming behaviors. Contact with one's values significantly predicted a decreased in self-harming behaviors. Committed Action significantly predicted an increase in gambling behaviors over the past month. This model had the most success with predicting self-harming behaviors, and about 10.1% of the variance in self-harm can be explained by this model. Model 10—an examination of psychological flexibility components and lifetime risk behaviors (see Table 14) demonstrated poor model fit ($\chi^2=2386.77$, $df=36$, $p<.001$, CFI = .617, RMSEA [90% CI] = .244 [.235, .252]). Similar to Model 9, Defusion was a significant predictor of decreased lifetime risk behaviors, while Self-as-Context was a significant predictor of increased lifetime risk behaviors. Defusion was also significantly predictive of decreased aggression, risky sexual behaviors, self-harm, impulsive eating, and reckless behaviors. Self-as-Context was significantly predictive of increased risky sexual behavior, alcohol use, self-harm, and reckless behavior. Present Moment Awareness significantly predicted decreased drug behaviors and alcohol use. Acceptance was associated with decreased gambling, and Committed Action was predictive of decreased self-harm. This model also had the most success with predicting self-harming behaviors and performed slightly better than Model 9, explaining about 13.1% of the variance in self-harm.

Table 13. Standardized Regression Weights for Model 9

	Acceptance	PMA	Self-as-Context	Defusion	Contact w/ Values	Committed Action
Past Month Total Risk	.017	-.003	.098*	-.155***	-.100	-.061
Drug Behaviors	.042	-.062	.076	-.051	.032	-.041
Aggression	-.041	-.055	-.008	-.041	.037	.008
Gambling	-.050	-.029	.069	-.020	-.055	.106*
Risky Sex	.054	-.051	.007	.016	-.016	-.013
Alcohol Use	.023	-.053	.082	-.097*	-.024	.022
Self-Harm	.040	.082*	.116*	-.230***	-.107*	-.166***
Impulsive Eating	.010	-.025	.035	-.063	-.057	-.076
Reckless Behavior	-.045	-.023	.047	-.029	-.043	-.054

*p < .05, **p < .01, ***p < .001

Table 14. Standardized Regression Weights for Model 10

	Acceptance	PMA	Self-as-Context	Defusion	Contact w/ Values	Committed Action
Lifetime Total Risk	-.042	-.074	.162***	-.193***	-.042	-.025
Drug Behaviors	.019	-.086*	.089	-.068	-.019	-.002
Aggression	-.027	-.011	.057	-.129**	-.011	.048
Gambling	-.097**	-.034	.067	-.035	.011	.078
Risky Sex	-.012	-.057	.098*	-.101*	.020	.080
Alcohol Use	-.053	-.109**	.155***	-.061	-.049	.000
Self-Harm	.012	.074	.114*	-.296***	-.090	-.150**
Impulsive Eating	-.012	-.064	.059	-.137**	-.053	-.026
Reckless Behavior	-.025	-.055	.093*	-.098*	-.044	-.017

*p < .05, **p < .01, ***p < .001

Hypothesis 6. To test hypothesis 6, two models were run to examine how each of the underlying components of psychological inflexibility are associated with actual engagement in risk-taking behaviors—past month and lifetime (Models 11 and 12). The path model for

psychological inflexibility components and past month risk behavior (Model 11, see Table 15) demonstrated poor model fit overall ($\chi^2 = 1761.29$ $df = 36$, $p < .001$, CFI = .685, RMSEA [90% CI] = .209 [.200, .217]). Inaction was the only psychological inflexibility component that significantly predicted an increase in past month risk behaviors. Inaction also significantly predicted decreased alcohol use and increased impulsive eating and self-harm. Lack of Contact with Values predicted significantly decreased impulsive eating and increased reckless behavior. Fusion significantly predicted increased self-harm and Lack of Contact with the Present Moment significantly increased reckless behavior. Model 11 was most successful at predicting self-harming behaviors, accounting for about 19.7% of the variance. Model 12 (see Table 17) demonstrated poor model fit as well ($\chi^2 = 2459.37$, $df = 36$, $p < .001$, CFI = .600, RMSEA [90% CI] = .247 [.239, .256]). Similar to Model 11, Inaction was the only psychological inflexibility component that significantly predicted increased risk-taking behaviors over the lifetime. Inaction and Fusion significantly predicted increased self-harming behavior. Lack of Contact with Values significantly predicted increased impulsive eating and reckless behavior. Lack of Contact with the Present Moment significantly predicted increased reckless behavior. Model 12 performed similarly to Model 11 at predicting self-harming behaviors, also accounting for about 19.7% of the variance.

Table 15. Standardized Regression Weights for Model 11

	Experiential Avoidance	Lack of Contact w/ PM	Self as Content	Fusion	Lack of Contact w/ Values	Inaction
Past Month Total Risk	.024	.025	.071	.073	.003	.136*
Drug Behaviors	.032	.030	.073	-.018	-.034	.054
Aggression	.050	.009	.009	-.012	.004	.061
Gambling	.044	-.013	.054	-.088	.036	-.060
Risky Sex	.002	.070	-.024	.073	.021	-.049
Alcohol Use	.002	.013	.077	-.062	.068	-.135*
Self-Harm	-.017	-.012	.057	.155**	-.067	.327***
Impulsive Eating	.003	.024	.084	-.072	-.085*	.123*
Reckless Behavior	.033	.109**	-.020	.047	.138**	-.056

*p < .05, **p < .01, ***p < .001

Table 16. Standardized Regression Weights for Model 12

	Experiential Avoidance	Lack of Contact w/ PM	Self as Content	Fusion	Lack of Contact w/ Values	Inaction
Lifetime Total Risk	-.011	.008	-.066	.058	-.023	.139*
Drug Behaviors	.004	.018	-.018	.026	.030	.024
Aggression	-.026	-.002	-.011	.024	-.001	.082
Gambling	.011	.001	-.019	-.092	-.025	-.018
Risky Sex	.046	-.018	-.031	.006	.022	-.005
Alcohol Use	-.034	.003	-.026	.101	.066	-.086
Self-Harm	.005	-.023	.071	.143**	-.072	.325***
Impulsive Eating	-.014	-.028	.046	.019	.085*	.102
Reckless Behavior	-.008	.075*	-.054	.014	.112*	.010

*p < .05, **p < .01, ***p < .001

Hypothesis 7. Each of the underlying components psychological flexibility and their relationship to risk perceptions and likelihood were examined via two path models (Models 13

and 14). Model 13 examined psychological flexibility and risk perception (see Table 17) and demonstrated poor model fit ($\chi^2 = 12156.74$, $df = 15$, $p < .001$, CFI = .233, RMSEA [90% CI] = .858 [.845, .871]). In Model 13, Acceptance, Present Moment Awareness, and Contact w/ Values significantly predicted increased in overall perceptions of risk. Alternately, Defusion significantly predicted decreased overall perceptions of risk. Defusion similarly predicted decreased perceptions of recreational and health and safety risk behaviors. Acceptance predicted significantly increased perceptions of social, health and safety, and ethical risk behaviors. Present Moment Awareness significantly predicted increased perceptions of health and safety risk behaviors. Contact with Values significantly predicted increased perceptions of health and safety and ethical risk behaviors. Overall, this model had the most success with predicting health and safety risk perceptions; this success was modest, accounting for about 5% of the variance.

Model 14 examined psychological flexibility and risk likelihood (see Table 18) and demonstrated poor model fit ($\chi^2 = 10224.86$, $df = 15$, $p < .001$, CFI = .266, RMSEA [90% CI] = .787 [.774, .799]). In Model 14, Present Moment Awareness significantly predicted decreased overall risk likelihood, while Acceptance significantly predicted increased overall risk likelihood. Acceptance significantly predicted increased risk likelihood in all subdomains of risk. Present Moment Awareness significantly predicted decreased recreational, health and safety, and ethical risk likelihood. Defusion significantly predicted decreased social risk likelihood, while Self-as-Context predicted increased social risk likelihood. Contact with Values significantly predicted decreased health and safety and ethical risk likelihood. Overall, this model had the most success predicting ethical and social risk likelihood, predicting about 4.7% of the variance for each.

Table 17. Standardized Regression Weights for Model 13

	Acceptance	PMA	Self-as-Context	Defusion	Contact w/ Values	Committed Action
Total Risk Perception	.108**	.082*	.016	-.109*	.131*	-.026
Social	.171***	-.015	-.035	-.032	-.036	-.060
Recreational	.048	.076	.043	-.123**	.077	.044
Health & Safety	.081*	.106**	.001	-.111*	.182***	-.044
Financial	.023	.055	.035	-.080	.081	-.040
Ethical	.072*	.067	.008	-.043	.156**	-.004

*p < .05, **p < .01, ***p < .001

Table 18. Standardized Regression Weights for Model 14

	Acceptance	PMA	Self-as-Context	Defusion	Contact w/ Values	Committed Action
Total Risk Likelihood	.199***	-.136***	.091	-.030	-.092	.034
Social	.124***	-.019	.166***	-.157***	.054	.034
Recreational	.183***	-.139***	.042	.008	-.046	.063
Health & Safety	.094*	-.082*	.072	-.016	-.132*	.008
Financial	.143***	-.076	.049	.005	-.023	.019
Ethical	.102**	-.113**	-.015	.032	-.145**	-.024

*p < .05, **p < .01, ***p < .001

Hypothesis 8. Finally, each of the underlying components psychological inflexibility and their relationship to risk perceptions and likelihood were examined via two path models (Models 15 and 16). Model 15 (see Table 19) examined psychological inflexibility and perceptions of risk behaviors and demonstrated poor model fit ($\chi^2 = 12222.90$, $df = 15$, $p < .001$, CFI = .221, RMSEA [90% CI] = .860 [.847, .873]). Experiential Avoidance significantly predicted increased total risk perception, while Lack of Contact with the Present Moment significantly predicted decreased total risk perception. Experiential Avoidance significantly predicted increased recreational,

health and safety, financial, and ethical risk perception. Lack of Contact with the Present Moment significantly predicted decreased recreational, health and safety, and ethical risk perception. Lack of Contact with Values significantly predicted increased social risk perception. This model was most successful at predicting social risk perception, accounting for about 6% of the variance. Model 16 (see Table 20) examined psychological inflexibility and risk likelihood; overall this model demonstrated poor model fit ($\chi^2 = 10111.64$, $df = 15$, $p < .001$, CFI = .267, RMSEA [90% CI] = .782 [.769, .795]). In this model, Lack of Contact with Present Moment, Self as Content, and Lack of Contact with Values significantly predicted increased total risk likelihood, while Inaction and Experiential Avoidance significantly predicted decreased total risk likelihood. Lack of Contact with Present Moment significantly predicted increased recreational, health and safety, financial, and ethical risk likelihood. Self as Content significantly predicted increased recreational, health and safety, and financial risk likelihood. Lack of Contact with Values significantly predicted increased recreational, health and safety, and ethical risk likelihood. Experiential Avoidance and Inaction significantly predicted decreased recreational risk likelihood. Model 16 had the most success with predicting ethical risk likelihood, accounting for about 12.8% of the variance.

Table 19. Standardized Regression Weights for Model 15

	Experiential Avoidance	Lack of Contact w/ PM	Self as Content	Fusion	Lack of Contact w/ Values	Inaction
Total Risk Perception	.135***	-.107**	.023	.034	.017	.000
Social	.039	.023	.080	.006	.131**	.027
Recreational	.139***	-.116**	-.039	-.010	-.020	.049
Health & Safety	.139***	-.111**	-.015	.036	-.025	.023
Financial	.069*	-.030	-.004	.069	.002	-.044
Ethical	.091**	-.138***	-.068	.026	-.014	-.058

*p < .05, **p < .01, ***p < .001

Table 20. Standardized Regression Weights for Model 16

	Experiential Avoidance	Lack of Contact w/ PM	Self as Content	Fusion	Lack of Contact w/ Values	Inaction
Total Risk Likelihood	-.069*	.192***	.156***	-.045	.135**	-.118*
Social	-.003	-.014	.026	.087	-.048	-.038
Recreational	-.098**	.140***	.158***	-.009	.096*	-.192***
Health & Safety	-.043	.162***	.137**	-.089	.114**	-.021
Financial	-.064	.096**	.115**	-.056	.066	-.080
Ethical	.002	.230***	.045	-.065	.205***	-.024

*p < .05, **p < .01, ***p < .001

DISCUSSION

Psychological Flexibility Theory is a robust functional explanation of various processes that underlie ACT and has extensive research regarding its utility and application with internalizing and externalizing disorders (e.g., Levin et al., 2012; Ruiz, 2012). Much of the research regarding ACT and disorders characterized by risk-taking (e.g., substance use disorders) is indirect and has not measured each of the components of PFT (e.g., Lee et al., 2015; Hermann et al., 2016). The purpose of this dissertation was to provide a preliminary examination of the relationship between psychological flexibility, its counterpart, and various aspects of risk-taking behaviors and beliefs. This study aimed to be an in-depth look at how psychological flexibility and inflexibility might influence our understanding of externalizing, risky behaviors. Evaluating each domain of psychological flexibility and inflexibility and how they map on to risky behaviors can aid in refining future research, in particular component analyses. Participants in this study completed one measure of risk perceptions and likelihood of engagement, one measure of actual engagement in risk behaviors, and a measure of the components of psychological flexibility and inflexibility. Data were analyzed via path analyses to gain more precise insight into these relationships. Overall, each of the models ran for this study demonstrated poor data model fit—meaning that the models did a poor job of predicting the outcomes of interest (i.e., the data do not fit the hypothesized models). This suggests that PFT does not significantly account for risk-taking behaviors and beliefs. The poor model fit observed may also be a function of low base rates of some of the risk-taking behaviors measured in this study, especially those occurring within the past month. However, there were several interesting findings that are highlighted below.

Overview of Findings

Based on the data collected in this study, it appears that the more psychologically flexible someone is, the riskier they perceive certain situations to be—in particular for the domains of recreational risk, ethical risk, and health and safety risk. Regarding risk likelihood, overall psychological flexibility is associated with decreased likelihood of engagement in ethical risk behaviors, but increased likelihood of engagement in social risk behaviors—going against the initial hypothesis. A possible explanation for this finding is that the items assessing “social risk” may mimic assertive behaviors, and previous research has shown that ACT interventions may improve an individual’s assertiveness (Quinlan, Deane, & Crowe, 2018). In context of those findings, it may be that someone who is high on psychological flexibility, may be more assertive, and therefore more likely to engage in social risk. Regarding actual engagement in risk-taking behaviors, overall psychological flexibility is associated with decreased engagement in risk-taking behaviors over the past month and across one’s lifetime. In particular, overall psychological flexibility was associated with decreased self-harming behaviors, reckless behaviors, and impulsive eating. In much of the extant PFT literature on risk, researchers measure inflexibility; however, this finding is indirectly consistent with studies that show cognitive fusion and experiential avoidance are linked with increased self-harm and impulsive eating (e.g., Duarte et al., 2017; Skinner et al., 2017).

Conversely, the more psychologically inflexible someone is, the more likely they are to report future engagement in risk-taking behaviors—particularly ethical and health and safety risk. Psychological inflexibility only predicted increased social risk perception. Additionally, the more inflexible someone is, the more likely they are to have engaged in risk-taking behaviors over the past month and impulsive eating, self-harm, and reckless behaviors over their lifetime.

Contrary to the second hypothesis, overall psychological inflexibility predicted decreased gambling behaviors over one's lifetime. One possible explanation of this finding could be that when someone is "good" at gambling, they have a higher tolerance of potential risks and lowered risk perceptions (e.g., Leonard & Williams, 2015), thus if someone is psychologically inflexible, they may have increased risk perceptions (partially supported by the data in this study) and subsequently decreased engagement in gambling. Of all risk-taking behaviors measured, both flexibility and inflexibility were most successful at predicting self-harming behavior. These findings provide further support for the use of third wave behavior (e.g., DBT and ACT), and mindfulness-based, therapies in the treatment of self-harming behavior. Given that mindfulness is a core component of DBT (e.g., Linehan 1993), and that PFT is purported to be a functional explanation of the processes underlying mindfulness, these findings contribute to the literature and provide a nuanced understanding of how DBT may work to reduce self-harm. Interestingly, across each of these eight models, psychological flexibility and inflexibility performed differently. Although inflexibility and flexibility are conceptualized as opposites, their predictive abilities were not opposite of each other in all cases.

Acceptance as a construct was most successful at predicting increased total risk likelihood and each of its subdomains as measured by the DOSPERT. As someone's level of acceptance increased, so did their report of their likelihood of engagement in risk behaviors. An explanation of this may be that someone who is high on acceptance will likely be low in anxious symptoms (e.g., Bardeen & Fergus, 2016), and thus less avoidant of risk (Tripp, Tan, & Milne, 1995). Although these associations were weak, they are in direct opposition to what was predicted. Acceptance was also a significant, albeit weak, predictor of increased risk perception—meaning that the higher someone's acceptance was, the more likely they were to

judge a situation as risky. Overall, acceptance was a poor predictor of actual engagement in risk-taking behaviors, both over the course of one's lifetime and in the past month. The only significant outcome was a decrease in gambling behaviors—consistent with the fifth hypothesis. This association, however, was very weak.

Experiential Avoidance—which is conceptualized as the opposite of Acceptance—was not a significant predictor of any measure of actual engagement in risk-taking behaviors which is counter to hypothesis six. This finding is notable, especially given the numerous research studies linking Experiential Avoidance to various risk-taking behaviors (e.g., Skinner et al., 2017; Litwin et al., 2017; Brem et al., 2017; Farrisy et al., 2016). Regarding the eighth hypothesis, the more avoidant someone was, the less likely they were to report future engagement in risk behaviors, particularly recreational risk. This was a very weak association and also opposite of what was predicted. However, Experiential Avoidance did predict a weak, but significant increase in one's perception of how risky a situation is—consistent with the eighth hypothesis. Thus, although Acceptance and Experiential Avoidance are conceptualized as opposites, they both predicted an increase in risk perceptions.

Present Moment Awareness was a significant predictor of decreased drug use and alcohol use over one's lifetime, but a slight, significant increase in self-harming behaviors over the past month. This is an interesting and unexpected finding, given that “mindfulness” has been found to be a protective factor against self-harming behavior (Caltabiano & Martin, 2017). Of course, PMA is one facet of mindfulness and perhaps further research should examine this relationship to determine its replicability. Present Moment Awareness was also associated with decreased risk likelihood, in particular recreational, health & safety, and ethical, along with an increase in how risky one perceives a situation to be—consistent with what was predicted. Conversely, Lack

of Contact with the Present Moment was a significant predictor of increased lifetime and past month reckless behavior. Additionally, Lack of Contact with the Present Moment significantly predicted decreased risk perceptions and increased risk likelihood. The strongest of these predictions was for ethical risk likelihood. These findings are consistent with extant literature regarding trait mindfulness and its relationship with risk-taking behaviors (e.g., Brown & Ryan, 2003; Lakey et al., 2007).

Self as Context displayed weak, but significant associations for increased total risk over one's lifetime and within the past month. This is opposite of what was predicted in the fifth hypothesis. Regarding specific risk behaviors, Self as Context predicted increased self-harm in the past month and increased risky sex, alcohol use, self-harm, and reckless behavior over one's lifetime. This flexibility component also predicted increased social risk likelihood—also in contrast to what was predicted. As discussed in the introduction, Self as Context is one of the least studied PFT components, but data from this study reveal that it might be an important piece of our understanding of risk, especially that it appears to function as a protective and a risk factor. The MPFI is one of the only PFT measures that assesses this component and future studies could utilize this subscale to further develop theories of risk and the unique role that Self as Context might play. Self as Content was not able to significantly predict any actual engagement in risk-taking behaviors, either over the lifetime or over the past month. This inflexibility component had no significant association with risk-perceptions, but did significantly predict increased total risk likelihood, particularly recreational, health and safety, and financial, consistent with hypothesis eight.

Being connected with one's values was significantly associated with decreased self-harming behaviors over the past month. Additionally, contact with values led to a significant

increase in total risk perception—particularly health and safety and ethical risk—along with significantly decreased reductions in health and safety and ethical risk likelihood. Each of these associations were weak but were consistent with the predictions made in hypotheses five and seven. Lack of contact with values was associated with weak, but significant, decreased impulsive eating (contrary to hypothesis six) and increased reckless behavior over the past month, as well as increased impulsive eating and reckless behavior over one’s lifetime. This construct was also associated with significant increases in social risk perception (contrary to hypothesis eight) and increases in total risk likelihood, recreational risk likelihood, health and safety risk likelihood, and ethical risk likelihood. Similar to Self as Context, Lack of Contact with Values appears to perform as both a protective and a risk factor. This should be examined in future studies.

Committed Action was significantly associated with increased gambling behaviors (contrary to hypothesis five) and decreased self-harm over the past month, as well as decreased self-harm over one’s lifetime. Committed action had no significant associations with risk perceptions or risk likelihood. Inaction was significantly associated with increased total risk behaviors over the past month and across one’s lifetime. Regarding past month behaviors, inaction significantly predicted increased self-harm and impulsive eating, along with decreased alcohol use (contrary to hypothesis six). Inaction only significantly predicted increased self-harm over one’s lifetime. This association fell within the weak to moderate range. Committed Action, Self as Context, and Contact with Values—along with their counterparts—are among the least studied components of PFT, especially regarding risk-taking behaviors, and this study provides preliminary evidence of their differential utility.

Throughout data analyses, any significant associations observed fell within the weak range. Regarding actual risk engagement, psychological flexibility and inflexibility, along with many of their components, were most successful at predicting self-harming behaviors—with associations falling within the weak to moderate range. This suggests that promoting psychological flexibility—and consequently “mindfulness”—might be highly indicated in the amelioration of self-harming behaviors. As discussed, DBT is one of the most successful treatments of these behaviors (Panos et al., 2004), and mindfulness is an important component of this treatment. Defusion, a flexibility component, and Inaction, an inflexibility component, were the most successful constructs. It is important to note that while their opposites (Fusion and Committed Action respectively) were significantly associated with self-harm, they were not as strong predictors.

Throughout the analyses, it became apparent that these constructs, while conceptualized as opposites, do not always perform in opposite ways. Inflexibility and flexibility are closed related constructs but may operate on two distinct continuums. Being in contact with one’s values and Experiential Avoidance appear to be the strongest predictors of risk perceptions, with Experiential Avoidance predicting in the opposite direction than what was expected. Given that Experiential Avoidance is highly indicated in persons with anxiety (Bardeen & Fergus, 2016), it may logically follow that Experiential Avoidance would predict an increase in risk perceptions, given that anxious individuals often overestimate the level of risk in various situations (e.g., Tripp, Tan, & Milne, 1995). Acceptance and Lack of Contact with the Present Moment appear to be the strongest predictors of risk likelihood, with Acceptance predicting in the opposite direction than was expected.

Limitations

There are several limitations to note in the current study. First, this was an exploratory study that specifically looked at Psychological Flexibility Theory and its utility in understanding risk-taking behaviors, therefore it is outside the scope to fully compare this theory to other theories of risk. Future studies could focus on determining how improving psychological flexibility might add differential utility to existing theories of risk behavior development, such as those that posit poor attentional control, low levels of conscientiousness, and low activation control are significant predictors (e.g., Kim-Spoon et al., 2015; McGhee et al., 2012; Nystrom & Bengtsson, 2016). This study also examined risk-taking behaviors and beliefs very broadly and further research is needed to determine how PFT may help us to more specifically understand substance use disorder, binge eating disorder, and other disorders characterized by risk-taking behaviors. Clinicians can then use PFT and ACT in an informed, targeted manner when working with individuals who engage in more risk-taking behaviors. Another limitation is that data from this study were only collected at one time point and thus no directional or causal inferences can be made.

Limitations for this study also include how the data were measured. First, the DOSPERT is a personality measure, and may not accurately represent risk-taking in a clinically relevant way. In other words, this study aimed to understand how risk-taking behaviors, which underly various psychological disorders, develop and the DOSPERT may not have measured risk-taking in this way. Second, although the sample in this study was large and fairly heterogenous, the data were collected online via a participant recruitment system and may not be a representative sample. It notably excludes individuals without a computer or internet access. The data in this study were also collected via one measurement modality—self-report—and could potentially be

biased. One measure, the RISQ, relied on participants to enter an estimate of how many times they have engaged in a certain behavior and may not reflect the true value of those behaviors. Future studies could employ the use of multiple methodologies—for example ecological momentary assessment (EMA)—so that participants need not rely on their memories to answer questions. Additionally, the data gleaned from the RISQ was often skewed—with many participants never having engaged in certain behaviors that were measured. Populations that engage in these behaviors more regularly might provide a more accurate picture of how PFT influences these behaviors. Finally, the survey was presented to each participant in the same order, potentially creating an order effect. Future studies should implement counterbalancing to offset any order effects.

Future Directions

The main goal of this study was to gather preliminary data on how PFT may aid in understanding various risk-taking behaviors and beliefs. None of the tested models exhibited good data model fit, and future studies could aim to optimize model fit and extend the findings presented here. Interestingly, several components of psychological flexibility were associated with increased gambling behaviors. This was contrary to what was predicted by may be explained by a higher tolerance of potential risks. Future research should examine these associations to aid in our understanding of gambling and the utility of ACT in the amelioration of gambling. Further studies should also examine how PFT may explain self-harm—one of the best predicted outcomes across each model—and how ACT can aid in its reduction. It may also be relevant to understand how the promotion of PFT may happen via DBT interventions. Self-harming behavior is implicated in several DSM-5 diagnoses (e.g., borderline personality disorder, major depressive disorder) and future studies could incorporate clinical, rather than

community, populations. Gaining information about these processes in clinical populations could then lead to intervention studies. Experimental studies and component analyses can further examine causality and how specific components of ACT may aid in the amelioration of risk-taking behaviors, particularly self-as-context, committed action, and contact with values. These are the least studied components of psychological flexibility; however, this study showed their importance and distinctiveness from the other components in predicting risk-taking behaviors. Future theoretical studies could aim to improve the models tested in this study and examine data over time to better understand causality between PFT and risk-taking behaviors and beliefs.

Additionally, the information gleaned from these data should be replicated in youth populations. Delaying the onset of risk-taking behaviors can reduce some of the devastating consequences often brought on by engagement. Understanding how PFT might influence risk-taking behaviors and beliefs in adolescence could lead to significant reductions in these behaviors and perhaps prevent the development of certain disorders.

Summary

The present study provided a preliminary examination of PFT and its utility in understanding various risk-taking behaviors and beliefs. This is the first study of its kind, one that examines each of the components of PFT and their relation to risk-taking. Many studies of PFT involve measures of avoidance, cognitive fusion, and present moment awareness, however, ACT actively involves the promotion of all six components. Thus, in order to understand PFT and ACT, and utilize them to the best of their ability, we should aim to understand all underlying components. Participants were recruited via an online recruitment system and completed the study online in one short session. It was hypothesized that psychological flexibility and its components would be associated with lower levels of actual risk-taking engagement, lower

perceptions of risk, and lower risk likelihood. It was also hypothesized that psychological inflexibility and its components would be associated with higher levels of actual risk-taking engagement, higher perceptions of risk, and higher risk likelihood. Each of the models tested in this study demonstrated poor data model fit and each of the significant associations fell within the weak range. Many of the significant findings in this study were within the expected direction, with the notable exception of gambling. The strongest of these significant associations were for self-harming behaviors, and further research is needed to fully understand how PFT may influence self-harm. This study also provided further evidence that although these constructs are conceptualized as opposites, they do not always perform oppositely. Furthermore, while an overall construct (i.e., psychological flexibility) may indicate decreased risk-taking behaviors, the data here have shown a more nuanced story.

This was a preliminary study and it is not without limitations. However, the results here lay the foundation for future PFT and ACT-based studies and aid in our understanding of how ACT and other third-wave interventions (e.g., mindfulness-based interventions) may work at a psychological process level. Understanding interventions in this way will allow for interventions to be easily translated into applied settings. When we know more about how interventions work in relation to specific outcomes—in this case risk-taking—practitioners can then tailor treatment for specific presenting problems and exclude unnecessary intervention components. This study adds to a growing body of PFT literature and furthers extant knowledge about various risk-taking behaviors and beliefs.

APPENDIX A. INSTITUTIONAL REVIEW BOARD APPROVAL



ACTION ON EXEMPTION APPROVAL REQUEST

TO: Shelly Upton
Psychology

FROM: Dennis Landin
Chair, Institutional Review Board

DATE: July 26, 2018

RE: IRB# E11106

TITLE: Personality Factors and Risk-Taking Study

Institutional Review Board
Dr. Dennis Landin, Chair
130 David Boyd Hall
Baton Rouge, LA 70803
P: 225.578.8892
F: 225.578.5983
irb@lsu.edu
lsu.edu/research

New Protocol/Modification/Continuation: New Protocol

Review Date: 6/20/2018

Approved X Disapproved

Approval Date: 7/26/2018 Approval Expiration Date: 7/25/2021

Exemption Category/Paragraph: 2a

Signed Consent Waived?: Yes

Re-review frequency: (three years unless otherwise stated)

LSU Proposal Number (if applicable):

Protocol Matches Scope of Work in Grant proposal: (if applicable)

By: Dennis Landin, Chairman 

PRINCIPAL INVESTIGATOR: PLEASE READ THE FOLLOWING –
Continuing approval is **CONDITIONAL** on:

1. Adherence to the approved protocol, familiarity with, and adherence to the ethical standards of the Belmont Report, and LSU's Assurance of Compliance with DHHS regulations for the protection of human subjects*
2. Prior approval of a change in protocol, including revision of the consent documents or an increase in the number of subjects over that approved.
3. Obtaining renewed approval (or submittal of a termination report), prior to the approval expiration date, upon request by the IRB office (irrespective of when the project actually begins); notification of project termination.
4. Retention of documentation of informed consent and study records for at least 3 years after the study ends.
5. Continuing attention to the physical and psychological well-being and informed consent of the individual participants, including notification of new information that might affect consent.
6. A prompt report to the IRB of any adverse event affecting a participant potentially arising from the study.
7. Notification of the IRB of a serious compliance failure.
8. **SPECIAL NOTE: When emailing more than one recipient, make sure you use bcc. Approvals will automatically be closed by the IRB on the expiration date unless the PI requests a continuation.**

* All investigators and support staff have access to copies of the Belmont Report, LSU's Assurance with DHHS, DHHS (45 CFR 46) and FDA regulations governing use of human subjects, and other relevant documents in print in this office or on our World Wide Web site at <http://www.lsu.edu/irb>

APPENDIX B. MULTIDIMENSIONAL PSYCHOLOGICAL FLEXIBILITY INVENTORY

FLEXIBILITY SUBSCALES

ACCEPTANCE

IN THE LAST TWO WEEKS...	Never TRUE	Rarely TRUE	Occasionally TRUE	Often TRUE	Very Often TRUE	Always TRUE
I was receptive to observing unpleasant thoughts and feelings without interfering with them.	○	○	○	○	○	○
I tried to make peace with my negative thoughts and feelings rather than resisting them	○	○	○	○	○	○
I made room to fully experience negative thoughts and emotions, breathing them in rather than pushing them away	○	○	○	○	○	○
When I had an upsetting thought or emotion, I tried to give it space rather than ignoring it	○	○	○	○	○	○
I opened myself to all of my feelings, the good and the bad	○	○	○	○	○	○

PRESENT MOMENT AWARENESS

IN THE LAST TWO WEEKS...	Never TRUE	Rarely TRUE	Occasionally TRUE	Often TRUE	Very Often TRUE	Always TRUE
I was attentive and aware of my emotions	○	○	○	○	○	○
I was in tune with my thoughts and feelings from moment to moment	○	○	○	○	○	○
I paid close attention to what I was thinking and feeling	○	○	○	○	○	○
I was in touch with the ebb and flow of my thoughts and feelings	○	○	○	○	○	○
I strived to remain mindful and aware of my own thoughts and emotions	○	○	○	○	○	○

SELF AS CONTEXT

IN THE LAST TWO WEEKS...	Never TRUE	Rarely TRUE	Occasionally TRUE	Often TRUE	Very Often TRUE	Always TRUE
Even when I felt hurt or upset, I tried to maintain a broader perspective	○	○	○	○	○	○
I carried myself through tough moments by seeing my life from a larger viewpoint	○	○	○	○	○	○
I tried to keep perspective even when life knocked me down	○	○	○	○	○	○
When I was scared or afraid, I still tried to see the larger picture	○	○	○	○	○	○

When something painful happened, I tried to take a balanced view of the situation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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DEFUSION

IN THE LAST TWO WEEKS...	Never TRUE	Rarely TRUE	Occasionally TRUE	Often TRUE	Very Often TRUE	Always TRUE
I was able to let negative feelings come and go without getting caught up in them	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I was upset, I was able to let those negative feelings pass through me without clinging to them	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I was scared or afraid, I was able to gently experience those feelings, allowing them to pass	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was able to step back and notice negative thoughts and feelings without reacting to them	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In tough situations, I was able to notice my thoughts and feelings without getting overwhelmed by them	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

VALUES

IN THE LAST TWO WEEKS...	Never TRUE	Rarely TRUE	Occasionally TRUE	Often TRUE	Very Often TRUE	Always TRUE
I was very in-touch with what is important to me and my life	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I stuck to my deeper priorities in life	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I tried to connect with what is truly important to me on a daily basis	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Even when it meant making tough choices, I still tried to prioritize the things that were important to me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My deeper values consistently gave direction to my life	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

COMMITTED ACTION

IN THE LAST TWO WEEKS...	Never TRUE	Rarely TRUE	Occasionally TRUE	Often TRUE	Very Often TRUE	Always TRUE
Even when I stumbled in my efforts, I didn't quit working toward what is important	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Even when times got tough, I was still able to take steps toward what I value in life	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Even when life got stressful and hectic, I still worked toward things that were important to me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I didn't let set-backs slow me down in taking action toward what I really want in life	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I didn't let my own fears and doubts get in the way of taking action toward my goals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

INFLEXIBILITY SUBSCALES

EXPERIENTIAL AVOIDANCE

IN THE LAST TWO WEEKS...	Never TRUE	Rarely TRUE	Occasionally TRUE	Often TRUE	Very Often TRUE	Always TRUE
When I had a bad memory, I tried to distract myself to make it go away	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I tried to distract myself when I felt unpleasant emotions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When unpleasant memories came to me, I tried to put them out of my mind	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When something upsetting came up, I tried very hard to stop thinking about it	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If there was something I didn't want to think about, I would try many things to get it out of my mind	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

LACK OF CONTACT WITH THE PRESENT MOMENT

IN THE LAST TWO WEEKS...	Never TRUE	Rarely TRUE	Occasionally TRUE	Often TRUE	Very Often TRUE	Always TRUE
I did most things on "automatic" with little awareness of what I was doing.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I did most things mindlessly without paying much attention.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I went through most days on auto-pilot without paying much attention to what I was thinking or feeling	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I floated through most days without paying much attention.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Most of the time I was just going through the motions without paying much attention	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

SELF AS CONTENT

IN THE LAST TWO WEEKS...	Never TRUE	Rarely TRUE	Occasionally TRUE	Often TRUE	Very Often TRUE	Always TRUE
I thought some of my emotions were bad or inappropriate and I shouldn't feel them	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I criticized myself for having irrational or inappropriate emotions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believed some of my thoughts are abnormal or bad and I shouldn't think that way	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I told myself that I shouldn't be feeling the way I'm feeling	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I told myself I shouldn't be thinking the way I was thinking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

FUSION

IN THE LAST TWO WEEKS...	Never TRUE	Rarely TRUE	Occasionally TRUE	Often TRUE	Very Often TRUE	Always TRUE
Negative thoughts and feelings tended to stick with me for a long time.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Distressing thoughts tended to spin around in my mind like a broken record.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It was very easy to get trapped into unwanted thoughts and feelings.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I had negative thoughts or feelings it was very hard to see past them.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When something bad happened it was hard for me to stop thinking about it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

LACK OF CONTACT WITH VALUES

IN THE LAST TWO WEEKS...	Never TRUE	Rarely TRUE	Occasionally TRUE	Often TRUE	Very Often TRUE	Always TRUE
My priorities and values often fell by the wayside in my day to day life	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When life got hectic, I often lost touch with the things I value	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The things that I value the most often fell off my priority list completely	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I didn't usually have time to focus on the things that are really important to me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When times got tough, it was easy to forget about what I truly value	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

INACTION

IN THE LAST TWO WEEKS...	Never TRUE	Rarely TRUE	Occasionally TRUE	Often TRUE	Very Often TRUE	Always TRUE
Negative feelings often trapped me in inaction	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Negative feelings easily stalled out my plans	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Getting upset left me stuck and inactive	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Negative experiences derailed me from what's really important	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Unpleasant thoughts and feelings easily overwhelmed my efforts to deepen my life	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

APPENDIX C. DOMAIN-SPECIFIC RISK-TAKING SCALE

For each of the following statements, please indicate the **likelihood** that you would engage in the described activity or behavior if you were to find yourself in that situation. Provide a rating from *Extremely Unlikely* to *Extremely Likely*, using the following scale:

1	2	3	4	5	6	7
Extremely Unlikely	Moderately Unlikely	Somewhat Unlikely	Not Sure	Somewhat Likely	Moderately Likely	Extremely Likely

1. Admitting that your tastes are different from those of a friend. (S)
2. Going camping in the wilderness. (R)
3. Betting a day's income at the horse races. (F)
4. Investing 10% of your annual income in a moderate growth mutual fund. (F)
5. Drinking heavily at a social function. (H/S)
6. Taking some questionable deductions on your income tax return. (E)
7. Disagreeing with an authority figure on a major issue. (S)
8. Betting a day's income at a high-stake poker game. (F)
9. Having an affair with a married man/woman. (E)
10. Passing off somebody else's work as your own. (E)
11. Going down a ski run that is beyond your ability. (R)
12. Investing 5% of your annual income in a very speculative stock. (F)
13. Going whitewater rafting at high water in the spring. (R)
14. Betting a day's income on the outcome of a sporting event (F)
15. Engaging in unprotected sex. (H/S)
16. Revealing a friend's secret to someone else. (E)
17. Driving a car without wearing a seat belt. (H/S)
18. Investing 10% of your annual income in a new business venture. (F)
19. Taking a skydiving class. (R)
20. Riding a motorcycle without a helmet. (H/S)
21. Choosing a career that you truly enjoy over a more prestigious one. (S)
22. Speaking your mind about an unpopular issue in a meeting at work. (S)
23. Sunbathing without sunscreen. (H/S)
24. Bungee jumping off a tall bridge. (R)
25. Piloting a small plane. (R)
26. Walking home alone at night in an unsafe area of town. (H/S)
27. Moving to a city far away from your extended family. (S)
28. Starting a new career in your mid-thirties. (S)
29. Leaving your young children alone at home while running an errand. (E)
30. Not returning a wallet you found that contains \$200. (E)

Note. E = Ethical, F = Financial, H/S = Health/Safety, R = Recreational, and S = Social.

People often see some risk in situations that contain uncertainty about what the outcome or consequences will be and for which there is the possibility of negative consequences. However, riskiness is a very personal and intuitive notion, and we are interested in **your gut level assessment of how risky** each situation or behavior is.

For each of the following statements, please indicate **how risky you perceive** each situation. Provide a rating from *Not at all Risky* to *Extremely Risky*, using the following scale:

1	2	3	4	5	6	7
Not at all Risky	Slightly Risky	Somewhat Risky	Moderately Risky	Risky	Very Risky	Extremely Risky

1. Admitting that your tastes are different from those of a friend. (S)
2. Going camping in the wilderness. (R)
3. Betting a day's income at the horse races. (F)
4. Investing 10% of your annual income in a moderate growth mutual fund. (F)
5. Drinking heavily at a social function. (H/S)
6. Taking some questionable deductions on your income tax return. (E)
7. Disagreeing with an authority figure on a major issue. (S)
8. Betting a day's income at a high-stake poker game. (F)
9. Having an affair with a married man/woman. (E)
10. Passing off somebody else's work as your own. (E)
11. Going down a ski run that is beyond your ability. (R)
12. Investing 5% of your annual income in a very speculative stock. (F)
13. Going whitewater rafting at high water in the spring. (R)
14. Betting a day's income on the outcome of a sporting event (F)
15. Engaging in unprotected sex. (H/S)
16. Revealing a friend's secret to someone else. (E)
17. Driving a car without wearing a seat belt. (H/S)
18. Investing 10% of your annual income in a new business venture. (F)
19. Taking a skydiving class. (R)
20. Riding a motorcycle without a helmet. (H/S)
21. Choosing a career that you truly enjoy over a more prestigious one. (S)
22. Speaking your mind about an unpopular issue in a meeting at work. (S)
23. Sunbathing without sunscreen. (H/S)
24. Bungee jumping off a tall bridge. (R)
25. Piloting a small plane. (R)
26. Walking home alone at night in an unsafe area of town. (H/S)
27. Moving to a city far away from your extended family. (S)
28. Starting a new career in your mid-thirties. (S)
29. Leaving your young children alone at home while running an errand. (E)
30. Not returning a wallet you found that contains \$200. (E)

Note. E = Ethical, F = Financial, H/S = Health/Safety, R = Recreational, and S = Social.

APPENDIX D. RISKY, IMPULSIVE, AND SELF-DESTRUCTIVE BEHAVIOR QUESTIONNAIRE

For each behavior, fill-in how many times you did it in your lifetime (A) & the total number of times you did it the past month (B). **Enter one number for each time period, even if it is your best guess. Please do not put a range, but enter a single number** (e.g., behaviors engaged in everyday for multiple years can be written in as 1000+, behaviors engaged in daily for a single year can be written in as 365, any other frequency should be estimated using your best guess). If you have ever done the behavior, write how old you were the first time (C) and check the box if the behavior ever caused you **any** problems, regardless of the specific problem (D). For the last two columns (E & F), use the scale in the box to rate how much you agree with each statement from 0 = Strongly Disagree to 4 = Strongly Agree. **Please provide ratings for both statements (E & F), and treat them as separate questions.** The first two rows are examples of how to complete each item.

0	1	2	3	4
Strongly Disagree	Somewhat Disagree	Equally Disagree/Agree	Somewhat Agree	Strongly Agree

		A	B	C	D	E	F
		How many times total have you done this in your life?	How many times have you done this in the past month?	How old were you the first time?	Did it ever cause you any problems, such as • going to the hospital • legal trouble • problems at work, with family or friends	I do this behavior to stop feeling upset, distressed, or overwhelmed	I do this behavior to feel excitement, to get a thrill, or to feel pleasure
	Behavior	# TOTAL	# past MONTH	Age	Y=YES	Rate 0-4	Rate 0-4
Ex.	Driven a car while intoxicated	10	2	18	Y	4	3
Ex.	Jumped out of a plane	0					
1	Shoplifted things						
2	Drove 30mph or faster over the speed limit						
3	Bet on sports, horses, or other animals						
4	Used cocaine or crack						
5	Bought drugs						
6	Impulsively bought stuff you did not need & won't use						
7	Had unprotected sex with someone you just met or didn't know well						

SUBID: _____

0	1	2	3	4
Strongly Disagree	Somewhat Disagree	Equally Disagree/Agree	Somewhat Agree	Strongly Agree

		A	B	C	D	E	F
		<u>How many times</u> total have you done this <u>in your life</u> ?	<u>How many times</u> have you done this <u>in the past month</u> ?	<u>How old</u> were you the <u>first time</u> ?	Did it ever <u>cause you any problems</u> , such as <ul style="list-style-type: none"> • going to the hospital • legal trouble • problems at work, with family or friends 	I do this behavior to <u>stop feeling upset, distressed, or overwhelmed</u>	I do this behavior to <u>feel excitement, to get a thrill, or to feel pleasure</u>
	Behavior	# TOTAL	# past MONTH	Age	Check box if YES	Rate 0-4	Rate 0-4
8	Gotten in a physical fight						
9	Thought about killing yourself						
10	Had sex for money or drugs						
11	Drank alcohol until you blacked or passed out						
12	Used hallucinogens, LSD, mushrooms						
13	Gone to work intoxicated or high						
14	Attacked someone with a weapon, such as a knife or gun						
15	Punched or hit someone with a fist or object						
16	Cut, burned, or hurt yourself on purpose without trying to die						
17	Lost more money than you could afford gambling						
18	Threatened to physically hurt someone						
19	Threatened someone with a weapon, such as a knife or gun						

SUBID: _____

0	1	2	3	4
Strongly Disagree	Somewhat Disagree	Equally Disagree/Agree	Somewhat Agree	Strongly Agree

		A	B	C	D	E	F
		<u>How many times</u> total have you done this <u>in your life</u> ?	<u>How many times</u> have you done this <u>in the past month</u> ?	<u>How old</u> were you the <u>first time</u> ?	Did it ever <u>cause you any problems</u> , such as • going to the hospital • legal trouble • problems at work, with family or friends	I do this behavior to <u>stop feeling upset, distressed, or overwhelmed</u>	I do this behavior to <u>feel excitement, to get a thrill, or to feel pleasure</u>
	Behavior	# TOTAL	# past MONTH	Age	Check box if YES	Rate 0-4	Rate 0-4
20	Used heroin						
21	Destroyed or vandalized property						
22	Drank 5 or more alcoholic drinks in 3 hours or less						
23	Paid for sex						
24	Sold drugs						
25	Robbed someone						
26	Tried to kill yourself						
27	Used marijuana						
28	Had difficulty stopping eating						
29	Been in 2 or more sexual relationships at the same time						
30	Bought expensive items you could not afford on the spur of the moment						
31	Abused multiple drugs at once						
32	Played lotteries, card games for money, or went to the casino						
33	Gambled illegally (not part of a legal business, using a bookie)						
34	Abused prescription medication						
35	Ate a lot of food when not hungry						
36	Had a plan to kill yourself						
37	Ran red lights or ignored stop signs						
38	Stole money						

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VITA

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Following her undergraduate career, Ms. Upton worked at innovation, Research, & Training, Inc. (iRT) in Durham, North Carolina for three years. There, she worked on the development of three mindfulness education programs and an online mindfulness program designed for adolescents diagnosed with fetal alcohol spectrum disorder.

Ms. Upton's interest in education and mindfulness led her to Louisiana State University where she is receiving her Doctor of Philosophy in school psychology under the supervision of Dr. Anna Long and Dr. Tyler Renshaw. In 2017, she completed her Master of Arts in psychology. Her thesis was a lab-based experiment that looked at how the mindful body scan meditation impacted performance on a computer-based risk-taking measure. Ms. Upton's research interests center on mindfulness and psychological flexibility and how these processes underlie and impact risk behaviors. She is currently completing her APA-accredited pre-doctoral internship at the University Center for the Child and Family at University of Michigan's Mary A. Rackham Institute located in Ann Arbor, MI. Following the completion of her doctoral degree, she will begin a post-doctoral fellowship at Utah State University.