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INTENTIONAL PERSONALITY CHANGE:
TOWARD THE PREVENTION OF PROBLEM DRINKING

DISSERTATION

A dissertation submitted in partial fulfillment of
the requirements for the degree of Doctor of
Philosophy in the College of Arts and Sciences
at the University of Kentucky

By
Elizabeth Nicole Riley

Lexington, KY

Director: Dr. Gregory T. Smith, Professor of Psychology

Lexington, KY

2020

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ABSTRACT OF DISSERTATION

INTENTIONAL PERSONALITY CHANGE: TOWARD THE PREVENTION OF PROBLEM DRINKING

Personality stability across the lifespan has been well documented, but within that overall stability there is also evidence of meaningful change. There is both theoretical and empirical evidence to suggest that personality change can occur at the volition of the individual, through behavioral processes. The current study tested whether an emotion modulation intervention that promoted behavior change could be applied to reduce a related, high-risk personality trait (negative urgency) and a high-risk behavior (heavy alcohol consumption) using a three-week long, mixed laboratory design. Participants (n=23) were a sample of heavy drinking but otherwise healthy volunteers who were randomly assigned to receive either an experimental (emotion modulation) or control intervention. Participants completed three study visits: the first visit included a screening, self-report questionnaires and an ad libitum drinking task following a negative affect induction, the second visit included self-report questionnaires and an hour-long intervention following a negative affect induction, and the third visit again included self-report questionnaires and an ad libitum drinking task following a negative affect induction. We hypothesized that participants receiving the emotion modulation intervention would report reductions in negative urgency as well as reductions in drinking behavior following a negative affect induction in the laboratory. Neither of these hypotheses was supported. Implications for these null findings are discussed.

KEYWORDS: personality change, binge drinking, negative affect, negative urgency

Elizabeth Nicole Riley

January 20, 2020

INTENTIONAL PERSONALITY CHANGE:
TOWARD THE PREVENTION OF PROBLEM DRINKING

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CHAPTER ONE: INTRODUCTION

Background

Personality is understood to operate as a distal and transdiagnostic contributor to psychological and physical health: numerous studies document that personality predicts life trajectories as reflected in outcomes both positive and negative, in many domains of functioning (Roberts, Kuncel, Shiner, Caspi, & Goldberg, 2007). Among the many outcomes predicted by personality are physical health, mortality, marital outcomes, interpersonal functioning, educational and occupational attainment, life happiness, engagement in substance abuse, and psychopathology (Costa & McCrae, 1996; Roberts et al., 2007). Increasingly, the importance of personality has become apparent for the prediction of both adult (Caspi, Harrington, Milne, Amell, Theodore, & Moffitt, 2003; Shiner & Masten, 2002) and adolescent (Riley & Smith, 2017; Smith, Guller, & Zapolski, 2013) adjustment and behaviors.

Over the past several decades, the conceptualization of personality as dynamic and changing rather than immutably fixed has received more attention in the research literature. The impressive stability of personality across the lifespan has certainly been well documented, but within that overall stability there is also evidence of meaningful change. The recent work on personality development emphasizes both change and continuity across the lifespan and underscores the importance of examining factors that promote each of these processes. Multiple empirical and meta-analytic works have demonstrated that personality factors do, indeed, change throughout the lifespan, from childhood through adolescence, young and middle adulthood, and through old age (Bleidorn, 2012; Hill, Turiano, Mroczek, & Roberts, 2012; Mroczek & Spiro, 2003;

Riley, Rukavina, & Smith, 2016; Roberts, Walton, & Viechtbauer, 2006; Robins, Fraley, Roberts, & Trzesniewski, 2001).

In our theoretical work on personality change, we have identified three categories of such change: 1) incremental personality change that occurs that occurs in tandem with human development and aging, 2) acute personality change in response to the experience of significant life events, such as trauma, and 3) intentional or volitional personality change (Riley, Peterson, & Smith, 2017). We understand all three categories of personality change to operate primarily through behavioral processes, such that if an individual engages in behaviors consistent with a related personality trait, and if these behaviors are reinforced by the environment, both the behaviors and the associated personality trait are likely to become stronger over time (Riley et al., 2017; Roberts & Jackson, 2008). Because some personality traits are associated with engagement in risky or maladaptive behavior, the possibility of intentional personality change is very important for clinical psychological science. As described below, this dissertation describes one test of intentional efforts to alter a high-risk personality trait by employing a behavioral approach, utilizing a trait-specific intervention to encourage change in behaviors that underlie the personality trait of interest.

There is both theoretical and empirical evidence to suggest that intentional personality change can occur. Hudson and Fraley (2015) report success in personality change, noting that the use of specific, measurable goals consisting of trait-related behaviors facilitates faster and more significant personality change. Roberts et al. (2017) conducted a meta-analysis that demonstrated personality change over the course of psychotherapy. The degree of change that occurred was striking. For example, most

people experience decreases in neuroticism equaling approximately one standard deviation during their life from young adulthood through middle age (Roberts et al., 2006). Roberts and colleagues found that therapy produced decreases in neuroticism amounting to approximately half a standard deviation in roughly four to eight weeks (Roberts et al., 2017). These substantial changes also persist over time: the “new” personality levels achieved at the end of the therapeutic intervention remained at the altered level for more than a full year post-intervention (Roberts et al., 2017). It is notable that, for most of the studies analyzed for this review, the goal of the study was to produce reductions in symptom severity or psychological impairment. However, many researchers also use personality data as another way to track change in response to intervention; there was evidence for change in these traits, though personality change was not necessarily the goal of the interventions. It thus appears that intentional alteration of behaviors can result in alterations in the personality traits associated with the behaviors.

If altering target behaviors can result in personality change that is consistent with that trait, what conditions are necessary for such change to occur? Hennecke, Bleidorn, Denissen, and Wood (2014) hypothesize that personality change is most likely to occur if the following three conditions are met: 1) the individual must see behavior change as a goal in and of itself or as a means to an end of achieving a specific goal (such as personality change), 2) the person must both perceive the necessary trait-related behavior change as possible and actually be capable of the necessary trait-related behavior change, and 3) the person must consistently and frequently engage in the trait-related behavior change to the point that the new behaviors become habitual, leading eventually to trait change without intentional intervention (Hennecke et al., 2014).

The current dissertation sought to advance understanding of intentional personality change using clinically relevant traits and behaviors. I used an analog design to create a circumstance in which individuals would see value in the sought-after behavior change, provided training so individuals have the skills to change the target behavior, and provided circumstances in which they could practice new (sought-after) behaviors as alternatives to past behaviors. Using this design, I sought to better understand the relationship between behavior change and personality change. I introduce the specifics of this test next.

Alcohol consumption and negative urgency: A needed area for intervention

Emerging adulthood is a time of heavy alcohol use (Chen, Dufour, & Hsaio-ye, 2004; Hasin, Stinson, Ogburn, & Grant, 2007), which increases risks for social/interpersonal problems, poor health behaviors, and academic impairment, as well as risks for unintended injuries, assault, and death (Brown et al., 2009; Hingson, Heeren, Winter, Wechsler, 2005; Nelson, Xuan, Lee, Weitzman & Wechsler, 2009; Substance Abuse and Mental Health Services Administration [SAMHSA], 2015; U.S. Department of Health and Human Services, 2015; Wechsler et al., 2002; White & Hingson, 2013). For some young adults, patterns of risky drinking that are established in these years continue into adulthood (Borsari, Murphy, & Barnett, 2007), increasing the likelihood of experiencing further negative consequences related to alcohol consumption and substance use disorders.

Negative urgency is a personality trait that reflects the disposition to act in rash, ill-advised ways when distressed (Cyders & Smith, 2008). It has been shown to predict the onset of problem drinking as well as subsequent increases in drinking in longitudinal

studies (Peterson, Davis, & Smith, 2018; Riley, Rukavina, & Smith, 2016; Settles, Cyders, & Smith, 2010). This trait also confers transdiagnostic risk, predicting subsequent engagement in smoking (Doran et al., 2013), bulimic behaviors (Davis & Smith, 2018; Fischer, Peterson, & McCarthy, 2013), drug use (Zapolski, Cyders, & Smith, 2009), non-suicidal self-injury (Riley, Combs, Jordan, & Smith, 2015), and depression (Smith, Guller, & Zapolski, 2013). Thus, intentional reductions in negative urgency are likely to be important clinically.

One prior study reported positive results from a negative urgency reduction intervention. Weiss, Tull, Davis, Searcy, Williams, and Gratz (2015) used a one-hour emotion modulation training designed to decrease the tendency to act rashly when distressed. These researchers investigated changes in impulsive behavior and changes in negative urgency one week post-manipulation in a small sample of African American women; they predicted that the intervention would produce decreases in the trait and decreases in impulsive behavior over the course of the one-week study. Weiss and colleagues compared their negative urgency intervention to the effects of an impulsivity reduction intervention, an intervention that emphasized non-affective components of impulsivity such as promoting planning and perseverance. The emotion modulation intervention produced changes (reductions) in negative urgency and in past-week risky behavior engagement (Weiss et al., 2015). Impulsivity reduction training, which emphasized non-affective components of impulsivity such as promoting planning and perseverance, did not predict decreases in negative urgency post manipulation. This emotion modulation intervention is an example of a trait-relevant intervention that could be used to target changes in a specific trait.

The current study

I tested the hypothesis that an emotion modulation intervention could be applied to reduce negative urgency and heavy alcohol consumption in a sample of heavy drinking but otherwise healthy volunteers. Half the sample, the experimental group, received the emotion modulation intervention (Gratz & Gunderson, 2006; Gratz & Tull, 2011), and the other half of the sample, the control condition, received a “healthy living” intervention. We tested the effects of the emotion modulation intervention on levels of negative urgency pre- and post-manipulation, as well as on alcohol consumption as measured by an emotion-driven drinking paradigm.

I hypothesized the following: 1) alcohol consumption in response to a negative affect manipulation would be more greatly reduced among the participants in the emotion modulation training than those in the healthy living (control) training, 2) there would be greater reductions in negative urgency measured one week post-intervention among the participants in the emotion modulation training than those in the healthy living training, and 3) among the participants in the emotion modulation training, changes in the trait of negative urgency would mediate the effects of the training on drinking behavior during a laboratory ad lib drinking task.

CHAPTER TWO: METHODS

Participants

Participants were individuals (N = 23) recruited from two sources: the University of Kentucky psychology subject pool and the surrounding community of Lexington, Kentucky. Participants were recruited using study advertisement flyers posted around the main University of Kentucky campus, the University of Kentucky medical campus, and on announcement boards throughout the community. In addition, this study was advertised on University of Kentucky research social media as well as the University of Kentucky Center for Clinical and Translational Science. Telephone screens, online survey screeners, and in-person laboratory screening procedures were conducted to verify eligibility. Telephone screen interviews included information regarding medical history as well as current and past drug and alcohol use. Any volunteers who self-reported significant head trauma, psychiatric disorder, or substance abuse disorders were excluded from participation. Any volunteers who self-reported taking any psychotropic medication or medication that could adversely interact with alcohol were excluded from the study.

Volunteers were asked a series of specific questions in order to determine their typical drinking habits. Those who reported a potential risk for alcohol dependence were excluded from participation. I used the Structured Clinical Interview for DSM-5 (SCID-5; First et al., 2015) to screen out for current and past physical dependence on alcohol. Any other high-risk indicators of dependence, including prior treatment for an alcohol use disorder and a driving under the influence conviction, precluded participation in the study. These screening measures allowed for recruitment of age appropriate heavy-

drinking participants, while excluding those who were dependent on alcohol. Additionally, because the study involved an ad lib beer consumption session, all volunteers were asked if they enjoy drinking beer; anyone who did not like to drink beer was ineligible for participation. Female volunteers who were pregnant or breast-feeding, as determined by self-report and urine human chorionic gonadotrophin levels, were also excluded from this study. Recent use of amphetamine, barbiturates, benzodiazepines, cocaine, opiates, and tetrahydrocannabinol was assessed by means of self-report and urine analysis done before each drinking session. Any volunteer who tested positive for the presence of any of these drugs was excluded from the study.

Participants were otherwise healthy volunteers who met the following criteria: 1) were between the ages of 21-30, 2) engaged in binge drinking at least twice in the last month (defined as having 5 or more drinks in two hours for men, and 4 or more drinks in two hours for women), 3) reported high levels of negative urgency assessed using the UPPS-P (“high levels” defined as above the mean for young adults, based on extensive existing data on the UPPS-P from other studies conducted by researchers in the area), and 4) had self-reported motivation to reduce emotion-driven impulsivity. Participants were then assigned to receive either the experimental (emotion modulation, $n = 12$) or control (healthy living, $n = 11$) intervention using a matching procedure, such that the groups were matched on key study variables, including self-reported gender identity, Time 1 negative urgency scores, number of past-month drinks, and weight. The two groups did not significantly differ on any of the following variables: self-reported gender identity, age, race, education level, marital status, income, weight, Time 1 negative urgency scores, or number of past-month drinks (all $ps > .05$).

Measures

Interview. An interview to determine compliance with instructions (fasting, substance abstinence, homework, as described below).

Negative Affect Induction. All participants completed an 8-minute writing task about a time when they were very upset. Autobiographical recall is effective in inducing negative affect (Jallais & Gilet, 2010).

Manipulation Check. To ensure that the negative affect manipulation was successful, participants completed the Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988). The wording of this measure was changed to reflect assessment of current positive and negative affect, such that participants were asked to report how they were feeling “*right now.*”

Urges to Drink. Participants completed ratings for urge to drink alcohol before, during and after the 60-minute ad-lib drinking task or intervention period on Visual Analogue Scale (VAS), from “Not at all/No” to “Extreme/Extremely.”

Subjective Units of Distress Scale (SUDS). SUDS is a means of rating the severity of current distress using a scale ranging from 0 to 100, where 0 is feeling perfectly relaxed and 100 is the worst distress imaginable. Participants completed SUDS ratings before, during and after the 60-minute ad-lib drinking task or intervention period on a Visual Analogue Scale (VAS).

Ad lib drinking behavior: milliliters consumed and BAC (blood alcohol content) post-dosing. Alcohol provided during the ad lib drinking session was measured in milliliters before and after the 60-minute drinking session. Total intake was calculated in milliliters consumed by taking the difference of the two values. Participants also gave a

measure of BAC immediately following the 60-minute drinking session. Immediately after the session, participants were instructed to rinse their mouth out with water by swishing and spitting the water into a sink, then taking two deep breaths, then providing the breath sample.

UPPS-P Impulsive Behavior Scale. A 59-item measure that assesses five impulsivity-related traits (lack of perseverance, lack of planning, positive urgency, negative urgency, sensation seeking; Zapolski, Stairs, Settles, Combs, & Smith, 2010).

Procedures

This study received institutional review board approval from the university's human subjects committee. Participants provided written informed consent prior to participation. The study took place at the Behavioral Neuroscience and Psychopharmacology Research Laboratory at the University of Kentucky. A telephone intake screening interview and online screener questionnaires were conducted in order to determine eligibility for participation in the study as detailed above. Eligible volunteers made appointments to come in to the laboratory for three sessions: Session 1 (5 hours, ad lib drinking protocol administered), Session 2 (1.5 hours, intervention administered), and Session 3 (5 hours, ad lib drinking protocol administered). All participants were tested individually. Participants were instructed to fast for 4 hours prior to each alcohol session, as well as to refrain from consuming alcohol or any psychoactive drugs or medications for 24 hours before all sessions. Participants were provided a written consent form as well as a verbal description of the study, study tasks, potential risks, and rights of a research subject. Prior to each drinking session (Sessions 1 and 3), participants provided:

1) urine samples to be tested for the presence of drug metabolites, 2) in women, HCG, in order to verify that they are not pregnant, and 3) breath samples to verify a zero BAC.

In Session 1, after obtaining informed consent, all participants were administered the SCID-5 for Alcohol Use Disorder, asked to provide a urine sample to be used by researchers to conduct pregnancy and drug screens, and asked to provide a breath sample to verify zero BAC. Participants then completed several measures assessing baseline personality traits and urges to engage in impulsive actions. Participants then underwent the negative affect induction. The experimenter instructed the participants on the use of the Subjective Units of Distress scale (SUDS). The SUDS scale is a scale that goes from 0-100 and measures level of distress. For the purposes of this study, distress was subjectively defined and could be any negative or unpleasant emotion (anger, sadness, shame, fear, etc.) The experimenter asked the participant to think of a time when (s)he was very upset, meaning that the participant was experiencing a SUDS of at least 70 at the time of the event. The experimenter provided the participant with a blank sheet of paper, instructing him/her to write down that memory in as much detail as possible. Participants were instructed to keep thinking about the memory if (s)he finished writing before the experimenter returned. After 8 minutes, the experimenter asked the participant to read the narrative aloud and complete the Positive and Negative Affect Schedule (PANAS) for how they were feeling *right now* as a negative affect manipulation check. Participants were asked to provide their Subjective Units of Distress (SUDS) level and a rating of their current urge to drink alcohol.

Participants were then provided an ad-lib drinking task: participants completed a beer taste-rating task (Marlatt et al., 1973), which previous research has shown provides a

reliable measure of ad-lib alcohol consumption (Collins et al., 1996). Participants were given 237 ml (approximately 8 ounces) of each of five different beers (1,185 ml, approximately 40 ounces, total) and were instructed to sample and rate them all, purportedly in order to aid in future research. Beers were representative of those commonly consumed by young adults and similar in per volume alcohol content (Heinekin, Sam Adams, Corona, Shock Top, and Rolling Rock; average abv = 4.86%; SD = 0.37). Participants were told that this was a 5-hour study session regardless of how much beer they drank, and that the tasting portion would last for 60 minutes. They were told that they may drink as much of or as little of each beer as they liked, but to be sure to sample each beer. Every five minutes, participants were prompted by a timer to record their SUDS ratings and urges to drink alcohol. Once the 60 minutes had passed, participants' BACs were measured and the glasses were removed. The remaining beer was measured in milliliters and subtracted from the total amount of beer presented to determine amount of beer consumed. Participants remained in the laboratory until safely able leave ($BAC < .02$), or 5 total hours had passed, whichever came second. Participants were offered the opportunity to undergo a guided imagery relaxation exercise conducted by the experimenter before leaving the laboratory.

One week later, in Session 2, all participants completed measures assessing baseline personality traits and urges to engage in impulsive actions. All participants again underwent the negative mood induction described above, using a different unpleasant memory, and completed the PANAS as a manipulation check. For the participants in the emotion modulation (experimental) group, the PI conducted the hour-long emotion modulation training while the participant was distressed, in order to promote emotion-

dependent learning. Skills presented during the emotion modulation experimental manipulations were adapted from empirically supported acceptance-based emotion-regulation group therapy (ERGT; Gratz & Gunderson, 2006; Gratz & Tull, 2011) and dialectical behavior therapy (DBT; Linehan, 1993) for self-harm and other self-destructive behaviors. The emotion modulation training is comprised of strategies to modulate the intensity and/or duration of emotional arousal in a flexible, situationally appropriate manner, including distraction (i.e., noticing intense and/or aversive emotions and then temporarily directing attention toward something other than the distressing emotion) and emotional approach (e.g., getting in touch with emotions, allowing oneself to experience emotions, and paying attention to the information being provided by emotions; Weiss et al., 2015). For the participants in the healthy living (control) group, the PI conducted an hour-long healthy living training while the participant was distressed. Skills presented during the control condition include information on sleep, healthy eating, exercise, and behavioral change strategies.

Every five minutes, participants in both conditions were prompted by a timer to record their SUDS ratings and urges to drink alcohol. Following the manipulation, participants were provided with instructions for using the skills outside of the laboratory: daily monitoring of the strategies they used and the antecedents/consequences of skillful behaviors for the emotion modulation experimental group and daily monitoring of health promotion behaviors used for the control group. Participants were informed that they would be compensated for completing the assigned homework: \$1 for each day they responded to communications asking whether they had completed homework. Participants were informed that they did not need to use any particular skills to receive

compensation, they needed only to respond to communication. Participants were offered the opportunity to undergo a guided imagery relaxation exercise conducted by the experimenter before leaving the laboratory.

One week later, in Session 3, participants again provided a urine screen and breath sample to ensure safety of alcohol administration, completed several measures assessing personality traits and urges to engage in impulsive actions, and were asked about homework compliance (i.e., whether they engaged in practicing either emotion modulation skills or healthy living skills between Sessions 2 and 3). Participants again underwent the negative mood induction, using a third different memory, and completed the PANAS. Participants were then provided the same ad-lib drinking task described in Session 1, and those that were in the emotion modulation experimental group were encouraged to use skills from the emotion modulation training to manage distress. During the 60-minute drinking task, all participants were assessed at 5-minute intervals for their level of negative affect using SUDS and urge to drink alcohol. Participants remained in the laboratory until safely able leave ($BAC < .02$), or 5 total hours had passed, whichever came second. Amount of alcohol consumed was measured following completion of the session. Participants were offered the opportunity to undergo a guided imagery relaxation exercise conducted by the experimenter and informed of the study's aims before leaving the laboratory. Participants were compensated between \$140-\$150 for completing all three sessions of the study.

Data analytic method

Descriptive statistics were used to characterize the experimental and control groups on demographic and study-related variables. Independent samples t-tests were

used to compare groups on self-reported gender, age, race, education level, marital status, income, weight, Time 1 negative urgency scores, and number of past-month drinks. As the groups did not vary significantly on any variables, descriptive statistics and mean frequencies of these variables were calculated for the entire sample.

Model variables were first assessed for missing data (ensuring randomness of missing data), normality of distributions, absence of outliers, multicollinearity and singularity, and independence of errors. Based on results reported in the Weiss et al. (2015) emotion modulation study, we anticipated medium effect sizes. Power analyses indicated that, using a repeated measures analysis of variance (ANOVA), our sample size was adequate to detect a medium effect size for the interaction effect ($f = .25$) with an alpha level set at .05 and power equal to or greater than .63 for urgency change and drinking change.

Hypothesis 1. I used a repeated measures ANOVA to test the hypothesis that there would be a reduction in drinking behavior during the ad lib drinking task from Time 1 and Time 3, and that the reduction would be greater in the emotion modulation group than the healthy living (control) group.

Hypothesis 2: Negative urgency was assessed at four time points: Time 1 (beginning of first session), Time 2a (beginning of second session, before intervention training), Time 2b (end of second session, after intervention training), and Time 3 (beginning of third session). I used repeated measures ANOVA to test whether there were greater reductions in negative urgency in the experimental than in the control group: (1) whether negative urgency was lower at Time 2b than at Time 2a, reflecting the training; (2) whether negative urgency was lower at Time 3 than at Time 2a, a comparison that

reflects both the training and the homework; (3) using planned contrast analyses, whether negative urgency at Time 2b + Time 3 was lower than at Time 1 + Time 2a. In each case, I hypothesized that the reduction would be greater in the emotion modulation experimental group than in the control group.

Hypothesis 3. Using a multilevel modeling approach, in the event of significant reductions in drinking, I planned to test whether changes in negative urgency mediated the effects of the emotion modulation training on drinking behavior in the experimental group; observations would be nested within person. To allow for possible asymmetry in confidence intervals for mediation analyses, I planned to use the bootstrapping procedure recommended by Preacher (2015).

CHAPTER THREE: RESULTS

Descriptive data

Two participants were removed from analyses following a manipulation check: the negative affect induction was not successful with these participants. Both participants were male, and there was one from each of the experimental and control groups. Experimental and control groups did not differ on any key study variables measured at baseline (all $ps > .05$). Table 1 presents descriptive data (self-reported gender identity, sexual orientation, race, education, age, weight) for the full sample, as assessed at baseline. Table 2 presents descriptive statistics for each of the key study outcome variables and covariates: number of past-month drinks at Time 1 (measured using a timeline follow-back questionnaire); SUDS scores at Time 1, Time 2, and Time 3; negative urgency scores at Time 1, Time 2a, Time 2b, and Time 3; amount of alcohol consumed (measured in milliliters) at Time 1 and Time 3; BAC post-dosing at Time 1 and Time 3. Table 2 presents these data for the full sample, the experimental group, and the control group. Tables 3-5 present the correlation matrix between all key study outcome variables and covariates. Data are presented for the full sample (Table 3), the experimental group (Table 4), and the control group (Table 5).

Ad lib drinking behavior

Alcohol consumption (in milliliters). To assess the effects of intervention, a comparison was made between experimental and control groups across time on milliliters of ad lib alcohol consumption, comparing consumption at Times 1 and 3. I tested the main effect of time in addition to the effect of group membership on ad lib alcohol consumption using repeated measures ANOVA. The main effect of time was not

significant, indicating that across groups, ad lib alcohol consumption remained largely the same across the study period. In addition, no significant interaction effects were detected, indicating that there were no differential effects of group membership on ad lib consumption during this timeframe. Results remained non-significant when important covariates such as Time 1 past month drinks and weight were included in the model.

Blood alcohol content (BAC). To assess the effects of intervention, a comparison was made between experimental and control groups across time on BAC immediately post-dosing: BAC post-dosing at Time 1 and BAC post-dosing at Time 3. I tested the main effect of time in addition to the effect of group membership on BAC post-dosing using repeated measures ANOVA. The main effect of time was not significant, indicating that across groups, BAC post-dosing remained largely the same across the study period. In addition, no significant interaction effects were detected, indicating that there were no differential effects of group membership on BAC post-dosing during this timeframe. Results remained non-significant when important covariates such as Time 1 past month drinks and weight were included in the model.

Negative urgency change

To assess the effects of intervention, three comparisons were made between experimental and control groups across time on negative urgency scores: negative urgency scores at Time 2a and Time 2b (immediately pre- and post-intervention, reflecting the intervention), negative urgency scores at Time 2a and Time 3 (reflecting both the training and the homework), and negative urgency scores at Time 1 + Time 2a and Time 2b + Time 3 (reflecting the full study time). I tested the main effect of time in

addition to the effect of group membership on negative urgency scores for each comparison using repeated measures ANOVA.

Comparisons of negative urgency scores at Time 2a and Time 2b. The main effect of time was not significant, indicating that across groups, negative urgency scores remained largely the same immediately pre- and post- intervention. In addition, no significant interaction effects were detected, indicating that there were no differential effects of group membership on negative urgency change scores during this timeframe.

Comparisons of negative urgency scores at Time 2a and Time 3. The main effect of time was not significant, indicating that across groups, negative urgency scores remained largely the same across the time interval that reflects both the training and the homework. In addition, no significant interaction effects were detected, indicating that there were no differential effects of group membership on negative urgency change scores during this timeframe.

Comparisons of negative urgency scores at Time 1 + Time 2a and Time 2b + Time 3. The main effect of time was not significant, indicating that across groups, negative urgency scores remained largely the same across the full study period. In addition, no significant interaction effects were detected, indicating that there were no differential effects of group membership on negative urgency change scores during this timeframe.

Mediation tests

Given that there were no significant effects detected for changes in either drinking behavior or negative urgency scores across any timeframe in this study, mediation tests were not conducted.

Exploratory analyses

Group membership (experimental or control) appeared to have no effect on our primary measures of drinking behavior or on negative urgency. We thus conducted several exploratory analyses to examine whether there were effects of the intervention on the following: scales of the Difficulties in Emotion Regulation Scale (DERS), other impulsivity-related traits as measured by the UPPS-P, drinking motives, and response to the intervention (measured using the SUDS scale and PANAS for negative emotionality). My reasoning was that if there were effects on other variables, the current findings might serve as pilot data for a future hypothesis test. If there were no such effects, in the future I would be able to combine the two experimental groups into a single, larger sample. Doing so would facilitate other analyses at a later date, such as methodological test-retest comparisons of the ad lib drinking task, comparison tests by gender on variables of interest, or other analyses that would necessitate using a larger sample.

Effects of group membership on the DERS. To assess the effects of intervention on facets of emotion regulation, seven comparisons were made between experimental and control groups across time on DERS scores at Time 1 and Time 3 (the six scales: nonacceptance of emotional responses, difficulty engaging in goal-directed behavior, impulse control difficulties, lack of emotional awareness, limited access to emotion regulation strategies, lack of emotional clarity; and the total score). I tested the main effect of time in addition to the effect of group membership on scores for the DERS using repeated measures ANOVA. There was a main effect of time on the DERS impulse scale, such that both groups' impulse scores increased from Time 1 to Time 3 ($F=9.544$, $p<.01$). However, there was no significant interaction for the DERS impulse comparison,

indicating that there were no differential effects of group membership on the DERS impulse scores during this timeframe. There were no other significant main effects of time and no other significant interaction effects for any of the other scales of the DERS or the DERS total score.

Effects of group membership on the other UPPS-P scales. To assess the effects of intervention on other impulsivity-related traits, four comparisons were made between experimental and control groups across time on UPPS-P scores at Time 1 and Time 3 (the four scales besides negative urgency: lack of premeditation, lack of perseverance, sensation seeking, and positive urgency). There were no significant main effects of time and no significant interaction effects for any of the scales of the UPPS-P.

Effects of group membership on drinking motives scales. To assess the effects of intervention on drinking motives, three comparisons were made between experimental and control groups across time on drinking motives scores at Time 1 and Time 3 (the three scales: drinking for social facilitation, drinking to cope, and drinking to enhance positive emotions). There were no significant main effects of time and no significant interaction effects for any of the scales assessing drinking motives.

Effects of group membership on responsiveness to the negative affect induction. To assess the effects of intervention on responsiveness to the negative affect induction, two comparisons were made between experimental and control groups across time on SUDS scores at Time 1 and Time 3 and PANAS scores for negative emotionality at Time 1 and Time 3. Responsiveness to the negative affect induction was calculated by subtracting the SUDS score at the end of the 60-minute drinking session (“post-baseline”) from the SUDS score reported by participants immediately following the negative affect

induction. The same procedure was followed for calculating responsiveness to the negative affect induction using PANAS scores for negative emotionality. There were no significant main effects of time and no significant interaction effects for either measure of responsiveness to the negative affect induction.

Table 1. Descriptive data for participants at baseline.

	Sample (n = 21)
Frequencies	
N (percentage of full sample)	
Gender Identity	
Male	12 (57.1%)
Female	8 (38.1%)
Non-binary	1 (4.8%)
Race/Ethnicity	
Caucasian/White (non-Hispanic)	15 (71.4%)
Hispanic	2 (9.5%)
African American	3 (14.3%)
Asian	1 (4.8%)
Education Level	
Some college	13 (61.9%)
2-year degree	2 (9.5%)
4-year degree	3 (14.3%)
Some post-baccalaureate education	2 (9.5%)
Advanced degree	1 (4.8%)
Sexual Orientation	
Heterosexual	16 (76.2%)
Gay	1 (4.8%)
Lesbian	2 (9.5%)
Bi-sexual	1 (4.8%)
Other not described	1 (4.8%)
Employment Status	
Unemployed (looking for work)	3 (14.3%)
Unemployed (not looking for work)	1 (4.8%)
Employed (part time)	8 (38.1%)
Employed (full time)	4 (19.0%)
Student only	5 (23.8%)

Table 1. Descriptive data for participants at baseline (continued.)

Descriptive Data

Mean (standard deviation)

Weight, in pounds 185.40 (37.85)

Age, in years 23.24 (2.76)

Table 2. Descriptive statistics for each key study outcome variable and covariates

	Full Sample (n = 21)	Experimental Group (n = 11)	Control Group (n = 10)
Time 1 last-month drinks	41.74 (31.19)	42.91 (37.50)	40.45 (24.40)
Time 1 Baseline SUDS	43.95 (19.75)	40.91 (16.40)	47.30 (23.32)
Time 2 Baseline SUDS	46.14 (22.00)	47.63 (22.59)	44.50 (22.41)
Time 3 Baseline SUDS	47.38 (22.61)	53.18 (22.72)	41.00 (21.83)
Time 1 negative urgency	2.22 (0.53)	2.21 (0.39)	2.23 (0.68)
Time 2a negative urgency	2.33 (0.57)	2.39 (0.50)	2.28 (0.67)
Time 2b negative urgency	2.34 (0.53)	2.40 (0.38)	2.28 (0.67)
Time 3 negative urgency	2.43 (0.58)	2.42 (0.54)	2.44 (0.64)
Time 1 alcohol consumed (ml)	854.86 (324.56)	808.09 (268.98)	906.30 (365.90)
Time 3 alcohol consumed (ml)	760.00 (357.21)	772.09 (333.54)	746.70 (399.45)
Time 1 BAC	0.05 (0.03)	0.05 (0.03)	0.05 (0.02)
Time 3 BAC	0.05 (0.04)	0.05 (0.03)	0.05 (0.05)

Note. “last-month drinks” = drinks consumed in the last month (from self-report timeline follow-back); SUDS = subjective units of distress; negative urgency = mean negative urgency score; “alcohol consumed (ml)” = milliliters of beer consumed; BAC = blood alcohol content.

Table 3. Correlation matrix: all key study outcome variables and covariates (full sample, n = 21)

	T1 past drinks	T1 SUDS	T2 SUDS	T3 SUDS	T1 NU	T2a NU	T2b NU	T3 NU	T1 alcohol	T3 alcohol	T1 BAC
T1 past drinks											
T1 SUDS	-.38										
T2 SUDS	-.44*	.57**									
T3 SUDS	-.35	.47**	.65**								
T1 NU	-.30	.14	.14	-.09							
T2a NU	-.11	.25	.29	-.09	.68**						
T2b NU	-.12	.18	.25	-.09	.70**	.96**					
T3 NU	.05	.24	.23	-.20	.56**	.92**	.89**				
T1 alcohol	.39	.11	.10	-.09	.08	.34	.38	.38			
T3 alcohol	.02	.15	.12	.01	.39	.11	.22	.26	.09		
T1 BAC	.18	-.16	-.18	-.21	.17	.44*	.42	.39	.53*	-.15	
T3 BAC	.01	.26	-.13	-.08	.43	.26	.38	.35	.25	.57**	.12

Note. T1 = Time 1, T2 = Time 2, T3 = Time 3; “past drinks” = drinks consumed in the last month (from self-report timeline follow-back); SUDS = subjective units of distress; NU = mean negative urgency score; “alcohol” = milliliters of beer consumed; BAC = blood alcohol content. ** = $p < .01$; * = $p < .05$.

Table 4. Correlation matrix: all key study outcome variables and covariates (experimental group, n = 11)

	T1 past drinks	T1 SUDS	T2 SUDS	T3 SUDS	T1 NU	T2a NU	T2b NU	T3 NU	T1 alcohol	T3 alcohol	T1 BAC
T1 past drinks											
T1 SUDS	-.55										
T2 SUDS	-.43	.61*									
T3 SUDS	-.34	.29	.78**								
T1 NU	-.63*	.35	.55	.35							
T2a NU	-.19	.61*	.43	.16	.28						
T2b NU	-.30	.54	.45	.12	.45	.96**					
T3 NU	.12	.39	.15	-.13	.15	.91**	.87**				
T1 alcohol	.58	-.01	.27	.09	-.32	.23	.08	.21			
T3 alcohol	.12	-.15	-.13	-.45	.32	-.25	-.12	.00	-.12		
T1 BAC	.35	-.09	-.12	-.15	-.12	.47	.41	.53	.50	-.30	
T3 BAC	.15	-.34	-.35	-.69*	.10	-.17	-.03	.06	-.01	.73*	.18

Note. T1 = Time 1, T2 = Time 2, T3 = Time 3; “past drinks” = drinks consumed in the last month (from self-report timeline follow-back); SUDS = subjective units of distress; NU = mean negative urgency score; “alcohol” = milliliters of beer consumed; BAC = blood alcohol content. ** = $p < .01$; * = $p < .05$.

Table 5. Correlation matrix: all key study outcome variables and covariates (control group, n = 10)

	T1 past drinks	T1 SUDS	T2 SUDS	T3 SUDS	T1 NU	T2a NU	T2b NU	T3 NU	T1 alcohol	T3 alcohol	T1 BAC
T1 past drinks											
T1 SUDS	-.23										
T2 SUDS	-.48	.59									
T3 SUDS	-.43	.77**	.52								
T1 NU	-.07	.05	-.10	-.38							
T2a NU	-.05	.08	.16	-.36	.89**						
T2b NU	.00	.05	.13	-.31	.79**	.97**					
T3 NU	-.03	.14	.30	-.26	.80**	.94**	.94**				
T1 alcohol	.23	.14	-.01	-.17	.27	.45	.57	.50			
T3 alcohol	-.13	.37	.36	.43	.28	.36	.41	.47	.25		
T1 BAC	-.16	-.21	-.27	-.37	.39	.42	.45	.27	.61	.00	
T3 BAC	-.12	.52	.02	.35	.55	.48	.55	.52	.36	.50	.11

Note. T1 = Time 1, T2 = Time 2, T3 = Time 3; “past drinks” = drinks consumed in the last month (from self-report timeline follow-back); SUDS = subjective units of distress; NU = mean negative urgency score; “alcohol” = milliliters of beer consumed; BAC = blood alcohol content. ** = p < .01; * = p < .05.

CHAPTER FOUR: DISCUSSION

The purpose of this study was to test the hypothesis of intentional personality change using a three-week long, mixed laboratory design with healthy volunteer participants who drink heavily, were high in negative urgency, and who were motivated to reduce their emotion-driven impulsivity. Half the sample, the experimental group, received the emotion modulation intervention (Gratz & Gunderson, 2006; Gratz & Tull, 2011), and the other half of the sample, the control condition, received a “healthy living” intervention. To test the hypothesized mechanism of intentional personality change, I examined effects of the emotion modulation intervention on levels of negative urgency pre- and post-manipulation. To further highlight the potential public health impact of such an intervention, I examined the effects of this intervention on alcohol consumption, measured by an emotion-driven drinking paradigm.

While there is both theoretical and empirical evidence to suggest that utilizing a trait-relevant intervention (Roberts et al., 2017; Weiss et al, 2015), along with components of motivational interviewing and self-regulation training (Hennecke et al., 2014), would be likely to produce changes in a personality trait, no such changes were found in this study. There were no significant changes in negative urgency, the personality trait of interest across groups: negative urgency scores remained largely the same across all study timeframes examined. Thus, the hypothesis concerning intentional personality change was not supported.

I further hypothesized that utilizing an emotion modulation intervention, as compared to a control intervention, would promote reductions in emotion-driven drinking behavior in this sample across time. However, there were no significant

changes in ad lib drinking behavior across groups: measures of alcohol consumption, in milliliters consumed and BAC post-administration, remained largely the same across the study timeframe. Thus, the hypothesis concerning drinking behavior change was not supported. Finally, because there were no significant effects detected for changes in negative urgency scores across any timeframe or any measure of drinking behavior in this study, mediation tests were not conducted. Thus, the hypothesis concerning mediation of drinking behavior change by negative urgency was not supported.

The field of psychology is currently wrestling with what many have called a “replicability crisis,” an ongoing predicament in which the results of scientific studies fail to replicate when others attempt to reproduce the results using similar methodologies. The present study may be viewed as an example of this problem: there was empirical evidence demonstrating that utilizing an emotion modulation intervention, the exact one used in the present study, produced reductions in negative urgency and emotion dysregulation, a related trait, over a short timeframe (Weiss et al., 2015).

However, our sample and design differed in important ways from the Weiss and colleagues study. We studied a diverse sample of healthy individuals who drink a great deal. Our methodology differed in some ways, as well: we utilized a three-week design, an emotion modulation training when participants were distressed, and a drinking paradigm to measure risk behavior. For these reasons, this study should not be characterized as a replication of the work done by Weiss and colleagues, but rather as an extension of that work by applying the principles of those results to a different sample and different set of questions. While it may not directly mirror all of the problems characterizing the replicability crisis, some of the issues brought to light by the

replicability crisis, such as the difficulty replicating small-sample, laboratory study results are relevant here. I next briefly consider issues related to replicability and null findings.

An exploration of null findings

Partially in response to the replicability crisis, some have suggested that authors should more frequently report on null findings in order to enrich the scientific knowledge base on a given theory, intervention, or topic area. In addition, reporting on null findings could serve to prevent other researchers interested in the same questions from wasting resources, such as time, effort, and money, on conducting a similar study.

However, as important as such considerations are, reporting on null findings is not just difficult: it can ultimately prove uninformative because there are so many reasons *why* a hypothesis was not supported, even if it was theory-driven and based on past empirical work. The present study was a robust example of null findings: though it was theory-driven and based on past empirical work, none of the hypotheses were supported. They were not supported by significance tests, nor did examination of the data indicate any results that were trending towards significant, had I had a larger sample size. The only conclusion I could draw was that the interventions used had no impact on any measured aspect of the participants' personality or ad-lib drinking behavior across the study timeframe.

In the case of the current study, there is a very large number of possible reasons why this study found no effects. The first and simplest is that the Weiss et al. (2015) findings were false positives, and that time-limited emotion modulation interventions do not reliably produce negative urgency change. Drawing this conclusion is a reasonable

response to the current null findings. Nonetheless, as one considers the possibilities, one cannot rule out the possibility that the current study involved, in a sense, Type II error, failing to find an effect that does operate in real life. When considering this possibility, it is important to evaluate aspects of the intervention itself, aspects of the sample, and aspects of the methodology. A detailed exploration of all the possible explanations for negative findings in this study is beyond the scope of this discussion, but it may be useful to review some of the elements of this study that one could hypothesize to have inhibited our ability to detect or promote significant personality change in this sample.

Aspects of the intervention. In the Weiss et al. (2015) study, the emotion modulation intervention was associated with reductions in negative urgency, but the same was not true in the present study. In the context of the larger literature on intentional personality change, there are several elements of the emotion modulation intervention that stand out as potential reasons for why this intervention was unsuccessful in promoting personality change. For example, this intervention did not involve trait-specific language or coaching, in that we did not specifically tell participants we were aiming to reduce levels of negative urgency over the one-week timeframe between Session 2 and Session 3. While this style of the intervention was consistent with the Weiss et al. study, it was inconsistent with some of the self-regulation work on goal-based, trait-specific personality change done by other authors (Heinicke et al., 2014; Hudson & Fraley, 2015). These authors suggest that successful personality change necessitates the presence of a specific goal with respect to personality change, identifiable behaviors to change in order to meet the goal of

personality change, and consistent and explicit behavior monitoring with respect to that goal.

Although we certainly conceptualized personality change as the primary aim of this intervention, it is true that this goal was not explicitly stated to the participants.

While we assessed the participants' motivation to change their level of negative urgency, and only selected those participants who were motivated to change this personality trait, this discussion took place just at the participant screening and recruitment phase of the study. Promoting strategies of emotion regulation and reducing emotion-driven rash action were the focus of the intervention, but we did not discuss personality change as the primary aim of this intervention. Furthermore, for homework, participants were encouraged to practice emotion modulation skills but this at-home practice was not explicitly tied to any type of monitoring to promote personality change.

The choice not to mention of personality change during the intervention was deliberate, and done for two reasons. First, there exists empirical evidence that the exact emotion modulation intervention we used was associated with reductions in negative urgency without making personality change the explicit, stated goal of the intervention. Second, we had concerns that by explicitly stating the purpose of the study, we would confound the validity of the intervention. Particularly because this was a small-sample, in-person study, we were concerned that participants might (intentionally or unintentionally) provide us with responses that they thought we desired.

The fact that we did not state negative urgency reduction as the primary goal of the intervention is certainly a viable and interesting hypothesis as to why the intervention did not work to promote personality change in this sample. It is possible

that, had we held all the other aspects of the study design and participant selection constant, an intervention that was based more closely on the elements of self-regulation theory (identifying a specific trait to change, identifying behavior change consistent with this personality change, and consistent/direct behavior change monitoring) would have promoted reductions in negative urgency, and possibly reductions in drinking behavior, over this timeframe. A direct test of this nature could be a fruitful area of future research with respect to clinically-relevant personality change.

Aspects of the sample. I identify two separate aspects of the sample that may be relevant. First, we were fortunate in this study to have had a relatively diverse sample of participants: 29% our participants were self-identified members of minority racial/ethnic groups, nearly a quarter of our participants were self-identified members of the LGBTQ+ community, and we had a mix of students and non-students, with varying degrees of employment and educational attainment, from the larger community. This is in contrast to the Weiss et al. (2015) study: their sample was comprised of 20 African American women, all of whom were full-time students at a historically Black university. In the participant sample used in the Weiss et al. (2015) study, the emotion modulation intervention promoted reductions in negative urgency at one-week post manipulation. While the diversity of the current sample is certainly a strength of this study, it does potentially highlight a problem long-cited in psychological research: research measurement, methodologies, and interventions may operate differently for individuals of different identities and intersectionalities. It is possible that the emotion modulation intervention worked well for participants of some identities, such as African American female students, but not for other participants in this study. It is possible, then, that we

were not able to detect effects of the emotion modulation intervention due to differences in how the study procedures, measurement, and intervention operated for different participants. Unfortunately, we did not have the sample sizes necessary to conduct analyses at this level of detail.

Another important characteristic of this study population is that it was a non-clinical sample. By definition, participants in this study were normal, healthy volunteers who did not presently engage in problem drinking or experience significant psychological distress. Thus, although only participants who reported motivation to reduce their levels of negative urgency were selected for this study, it is also true that they were healthy volunteers who may not have been motivated *enough* to change their emotion regulation strategies or decrease their reliance on alcohol consumption as an emotion regulation strategy. It is possible that, had we recruited a sample with self-identified problems with emotion regulation or drinking, and not excluded treatment-seeking participants, those on psychotropic medication, or those with self-reported mental health diagnoses, we may have had a sample of participants who were more highly motivated to change their emotion regulation strategies and drinking behavior.

We chose to study a non-clinical sample for several reasons. First, due to the fact that this was an alcohol administration study, there were significant ethical considerations around conducting a negative affect induction procedure followed by an ad lib drinking task with potentially vulnerable participants who were on psychotropic medications or who may have had high mental health burdens, including alcohol abuse potential. It was beyond the scope of this study to arrange for robust and consistent aftercare to ensure the safety of our participants and minimize potential harm. Second,

because this was a small sample study, we wanted to minimize variability in our sample: it is unclear how different aspects of mental health difficulties or treatment effects, either through psychotherapy or medication, might impact potential personality change efforts. Of course there is a great deal of psychological variability even within a non-clinical sample, but we did attempt to minimize variability where possible.

Although we had good reasons for restricting recruitment to end up with a sample without problematic levels of emotion-driven impulsivity or emotion-driven drinking behavior, it is possible that, in doing so, we ruled out those participants who were most amenable to personality change. We did assess motivation to change negative urgency as part of the recruitment for this sample, but we did not assess motivation beyond a single-point measurement before the start of the study. Perhaps high motivation for personality change is essential for achieving this change, particularly for a highly specific and clinically relevant trait. Research aimed at understanding what contributes to an individual's capacity for personality change may be a fruitful endeavor. There are likely many factors beyond motivation that influence an individual's capacity for personality change, which may vary in importance depending on the trait in question. Operationalizing a person's capacity for personality change and creating a valid and reliable assessment measure to capture this capacity for change may be essential for work in the area of intentional personality change to progress.

Aspects of the methodology. Finally, it is possible that aspects of the methodology for the study did not allow us to be able to detect change in negative urgency or drinking behavior. All instruments we use to measure personality traits, or any other construct of interest in psychological research, are simply reflections of the

“true” trait as it exists in nature and in people. We create assessment measures that are inherently imperfect, even if they do demonstrate high levels of construct validity and reliability. Although the UPPS-P consistently demonstrates excellent psychometric properties, it is, like all other self-report questionnaires, a tool to measure what we think of as “negative urgency,” or emotion-driven rash action. It is possible that UPPS-P is not the most appropriate tool to measure *change* in negative urgency, particularly over short timeframes. This instrument has been shown to have an impressively high test-retest reliability, which was also demonstrated in the present study. It is possible that there were changes in the construct of negative urgency as a result of the emotion modulation intervention used in this study but that we were not able to capture these changes using the UPPS-P.

Similarly, it is possible that there were changes in participants’ drinking behavior between Session 1 and Session 3 that we did not capture using our measurement of drinking. Indeed, we utilized relatively gross measures of drinking behavior (amount of beer consumed and participants’ ending BAC), perhaps better named “alcohol consumption” as opposed to drinking behavior. It is possible that, had we conducted more nuanced measures of alcohol consumption, perhaps by videotaping the drinking session and coding for behaviors such as rate of consumption or by offering participants less pleasurable alcohol to determine whether they drank in order to get the effects of alcohol even when drinking was aversive, we may have seen differences or changes in participants’ drinking behavior across conditions.

In addition to the possibility of different forms of behavior change we did not measure, it is also true that the current method allowed only for relatively rapid behavior

change and then personality change. In many contexts, significant and sustainable behavior change takes time and incremental progress: rarely do people succeed in quitting behaviors entirely and all at once. Instead, progress is measured by less engagement in the behavior, or going longer timeframes without engaging in the behavior. While we attempted to measure incremental change in a behavior in this study, in examining amount of consumption in milliliters, perhaps measuring a different type of behavior change would have yielded better results.

Conclusion and future directions

There is a clear difficulty in deciding what conclusions to draw from the current negative findings. Was Weiss et al. (2015) a false positive result? If so, researchers should reconsider interventions of this kind. Was the current study a false negative result? If so, we are left guessing as to whether the intervention, the sample, or the methodology led to an inaccurate result. Our only choice is to go back to the literature to try to make educated hypotheses about which direction seems to be the most fruitful, but the null results of this study do not do much to inform that choice. Thus, there is reason to question the value of reporting null findings.

Despite the negative findings of this particular study, it is important to note that intervention-driven personality change does exist and has been documented in the literature. This study was one of the first attempts to induce both change in a clinically-relevant personality trait and change in an associated behavior over a short timeframe. For some reason, or for many reasons, it did not work. Perhaps instead of thinking about why this intervention failed to produce the hypothesized results, we would be better served to think more incrementally. What is it that we do not yet fully understand about

the factors necessary to promote intervention-driven personality change? What elements of interventions, of people, and of measurement do we need to better understand to be able to detect personality change before trying to induce it in a research study?

Some of these questions may be better suited to large-scale longitudinal research and some may be better suited to limited-sample laboratory work. There is always a trade-off of precision versus stability when deciding whether to answer questions using large-scale or small-scale samples. In small-sample laboratory studies, one can theoretically answer more precise questions, often at the expense of stability in results. The reverse is true for large-scale longitudinal work: results tend to be more stable and replicable but lack in yielding precise understandings about the mechanisms at work. This study prioritized precision: we utilized a small, specifically-recruited sample, with a highly controlled laboratory-based study design, to try to promote change in a narrowly-defined personality trait and an easily-operationalized behavior associated with that trait. Perhaps we would have been better served to engage in large-scale longitudinal work aimed at understanding the mechanisms of change, but this would have been an attempt to answer very different questions.

At this nascent stage of intervention-based personality change research, there is likely utility in using multiple methods to understand fundamental questions about volitional or intentional personality change, each with different risk and reward potential. The research literature indicates that intervention-driven personality change does exist, but we are left with questions about how it works, why it works, and whether we can actually induce it reliably in a laboratory setting. The negative findings of this study do little to answer these questions. The purpose of research, though, is not simply

to answer questions: another important aspect is for science to be generative, to identify questions worth asking and worth answering. I think that questions about how to promote intentional change in high-risk personality traits, ones that have been identified as transdiagnostic precipitants of maladaptive behaviors and downstream negative health consequences, are worth asking. We hope that this research will be generative of future work aimed at increasing understandings of the principles, mechanisms, and processes of personality change.

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EDUCATION

- 2015 **Master of Science in Clinical Psychology**
University of Kentucky; Lexington, KY
- 2012 **Bachelor of Arts in Anthropology and Psychology with Honors,**
Minor in Public Health
Washington University in St. Louis; St. Louis, Missouri

HONORS AND AWARDS

University of Kentucky

National Research Service Award, National Institute on Alcohol Abuse and Alcoholism 2017-2019
Presidential Graduate Fellowship, 2017
Harris Psychological Services Center Excellent Clinical Performance Recognition, 2017
Research Society on Alcoholism: Enoch Gordis Research Recognition Award Finalist, 2016
Research Society on Alcoholism: Enoch Gordis Research Recognition Award Finalist, 2015
Pre-doctoral Traineeship Award, National Institute on Drug Abuse, 2015-2016
Lipman Endowment Fund for Research on Alcohol Abuse 2015-2016
Department of Psychology Graduate Student Travel Awards, 2013-2019
Graduate School Travel Award, 2013-2015
Daniel R. Reedy Quality Achievement Award, 2013

Washington University in St. Louis

Magna Cum Laude Honors in the Major Program in Psychology and Anthropology, 2012
Psi Chi Honor Society (Psychology), 2012
Lambda Alpha Honor Society (Anthropology), 2012
Sigma Xi Honor Society (Scientific Research), 2012
Eathan A. Shepley Award for leadership, scholarship and service, 2012
Danforth Scholars Program full tuition scholarship, 2008-2010

PROFESSIONAL POSITIONS

Adolescent Risk Behavior Research Laboratory Research Assistant

University of Kentucky, August 2013 – present

Program Development and Research Assistant: University of Kentucky Psychiatry Supportive Medication Assisted Recovery and Treatment (SMART) Program

University of Kentucky Department of Psychiatry, October 2018 - present

University of Kentucky Internship Consortium

University of Kentucky, July 2018 - present

Concurrent Treatment of PTSD and Substance Use Using Prolonged Exposure (COPE): Protocol Treatment Outcome Pilot Study Primary Therapist for Study Protocol

University of Kentucky, August 2017 – October 2018

Student Individual Therapist, Jesse G. Harris Psychological Services Center
University of Kentucky, August 2014 – June 2018

Student Group Therapist, Jesse G. Harris Psychological Services Center
University of Kentucky, August 2014 – June 2018

Outreach and Waitlist Management Coordinator, Jesse G. Harris Psychological Services Center
University of Kentucky, July 2016 – June 2017

Outpatient Mental Health Assessment and Student Therapist on PTSD Residential Recovery Program (MHRRT) Unit
Lexington Veterans Affairs Medical Center, July 2015 – June 2016

Center for Drug Abuse Research Translation Laboratory Research Assistant
University of Kentucky, May 2015 – August, 2016

Assessment Intern in Private Practice
Lexington, Kentucky, May 2015 – May 2016

Student Therapist at the University Counseling Center
University of Kentucky; August 2014 – May 2015

Castlewood Treatment Center, Direct Care Counselor
St. Louis, MO; August 2012 – July 2013

Anxiety and Psychotherapy Laboratory Research Assistant
Washington University, Fall 2010 – Spring 2012

PROFESSIONAL PUBLICATIONS

1. Smith, G. T., Atkinson, E. A., Davis, H. A., **Riley, E. N.**, Milich, R., Oltmanns, J. R., (in press). The General Factor of Psychopathology. *Annual Review of Clinical Psychology*.
2. **Riley, E. N.**, Davis, H. A., Milich, R., Smith, G. T., (2018). Heavy, problematic college drinking predicts increases in impulsivity. *Journal of Studies on Alcohol and Drugs*, 79(5), 790-798.
3. Dir, A., **Riley, E. N.**, Smith, G. T., & Cyders, M.A. (2018). Problematic Alcohol Use and Sexting as Temporal Risk Factors for Sexual Assault Among College Women. *The Journal of American College Health*, 1-8.
4. Combs, J. L., **Riley, E. N.**, Peterson, S. J., Jordan, C. E., & Smith, G. T. (2018). Pre-assault personality predicts the nature of adverse outcomes among sexual assault victims. *Journal of Studies on Alcohol and Drugs*, 79(2), 258-268.
5. Burris, J., **Riley, E. N.**, Puleo, G. E., & Smith, G. T. (2017). A Longitudinal Study of the Reciprocal Relationship between Ever Smoking and Urgency in Early Adolescence. *Drug and Alcohol Dependence*, 178, 519-526.
6. **Riley, E. N.**, & Smith, G. T. (2017). External validity. Invited chapter in A. E. Wenzel (Ed.), *The SAGE Encyclopedia of Abnormal and Clinical Psychology*.
7. **Riley, E. N.**, Peterson, S.J., & Smith, G. T. (2017). Towards a developmentally integrative model of personality change: A focus on three potential mechanisms. In N. Columbus (Ed.), *Advances in Psychology Research*. Volume 115.
8. Davis, H. A., **Riley, E. N.**, Burris, J., Smith, G. T., Milich, R. (2017). Alcohol Use and

Strenuous Physical Activity in College Students: A Longitudinal Test of Two Explanatory Models of Health Behavior. *Journal of American College Health*, 65(2), 112-121.

9. **Riley, E. N.** & Smith, G. T. (2017). Childhood Drinking and Depressive Symptom Level Predict Harmful Personality Change. *Clinical Psychological Science*, 5(1), 85-97.
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11. Davis, H. A., **Riley, E. N.**, & Smith, G. T. (2016). Transactions between personality and psychosocial learning: Advances in the acquired preparedness model of risk. In P. M. Monti, S. M. Colby, and T. A. O'Leary (Eds.), *Adolescents, Alcohol, and Substance Abuse: Reaching Teens through Brief Interventions* (2nd Edition). New York: Guilford Press.
12. **Riley, E. N.**, Davis, H. A., Combs, J. L., Jordan, C. E., & Smith, G. T. (2016). Nonsuicidal Self-injury as a Risk Factor for Purging Onset: Negatively Reinforced Behaviours that Reduce Emotional Distress. *European Eating Disorders Review*, 24, 78-82.
13. Davis, H.A., Guller, L., **Riley, E.N.**, & Smith, G.T. (2015). A Positive Feedback Loop of Smoking Risk. In N. Columbus (Ed.) *Nicotine Dependence, Smoking Cessation and Smoke: Exposure, Chemical Components and Health Consequences*.
14. **Riley, E. N.**, Davis, H. A. & Smith, G. T. (2015). Personality Change and Problem Behavior: A Positive Feedback Loop of Increasing Risk in Early Adolescence. In N. Columbus (Ed.), *Advances in Psychology Research*. Volume 105.
15. **Riley, E. N.**, Combs, H., Davis, H., A., & Smith, G. T. (2015) Theory as evidence: Criterion validity in neuropsychological testing. In Bowden, S. C. (Ed.), *Evidence-Based Neuropsychological Practice: National Academy of Neuropsychology*. NY: Oxford University press
16. **Riley, E. N.**, Combs, J. L., Jordan, C. E., & Smith, G. T. (2015). Negative Urgency and Lack of Perseverance: Identification of Differential Pathways of Onset and Maintenance Risk in the Longitudinal Prediction of Nonsuicidal Self-Injury. *Behavior Therapy*, 46(4), 439-448.
17. Levinson, C.A., Rodebaugh, T.L., Fewell, L., Kass, A., **Riley, E.N.**, Stark, L., McCallum, K., & Lenze, E.J. (2015). D-Cycloserine facilitation of exposure therapy improves weight regain in patients with anorexia nervosa: A pilot randomized controlled trial. *The Journal of Clinical Psychiatry*, 76(6), e787-e783.
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19. Levinson, C. A., Rapp, J., & **Riley, E.N.** (2014). Addressing the fear of fat: Extending imaginal exposure therapy for anxiety disorders to anorexia nervosa. *Eating and Weight Disorders – Studies on Anorexia, Bulimia and Obesity*, 19(4), 521-524.

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21. Derefinko, K. J., Bailey, U. L., Milich, R., Lorch, E. P., & **Riley, E.N.** (2009). The effects of stimulant medication on the online story narrations of children with ADHD. *School Mental Health*, 1, 171-182.