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Measuring Readiness to Change Substance Use, Alcohol Use, and Cannabis Use: An Experimental Manipulation of Cognitive Effort

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Abstract

The Transtheoretical Model supports that readiness to change should predict actual substance-related behavior change. This relationship is surprisingly modest. Across several behavioral domains, individuals tend to have unrealistic expectations regarding the amount of effort and time required to successfully change one's behaviors, dubbed the False Hope Syndrome. Based on False Hope Syndrome, we expect the standard method of measuring self-reported readiness to change is overestimated. To test this hypothesis, we experimentally manipulated level of cognitive effort prior to completing readiness to change measures. College students from a large southwestern university who reported using substances in the past 30 days (n=345) were recruited from a psychology department participant pool and randomized to one of three conditions: 1) standard low effort condition, 2) medium effort condition (selected likes/dislikes of substance use, and negative consequences of changing one's use), and 3) high effort condition (also provided written responses to how they would handle difficult situations related to changing their substance use). We conducted one-way ANOVAs with Tukey post-hoc comparisons to examine differences on three measures of readiness to change: the University of Rhode Island Change Assessment (URICA) scale as well as readiness and motivation rulers. Contrary to our hypothesis, all significant statistical tests supported higher cognitive effort conditions reporting higher readiness to change. Although effect sizes were modest, higher cognitive effort appeared to increase self-reported readiness to change substance use. Additional work is needed to test how self-reported readiness to change relates to actual behavior change when assessed under the different effort conditions.

Keywords

readiness to change; substance use; alcohol use; cannabis use

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1. Introduction

Substance use disorder is considered a chronic relapsing condition (McLellan et al., 2000). Relapse occurs for many reasons and is often hard to manage due to the highly reinforcing nature of substance use behaviors. Due to the difficulty in changing reinforced behaviors, relapse can become a major barrier to recovery for some with more than two-thirds of individuals expected to relapse after initiating treatment (Sinha, 2011). Potential reasons for relapse are varied. Stress has been shown to increase addictive behaviors especially when substances are used as coping mechanisms (Sinha, 2011). Triggers such as objects, situations, or people relevant to addiction can also lead to relapse (Ram et al., 2016). Negative emotions are another potential precipitant to relapse and can be particularly salient when the individual uses substances to cope (Pickard, 2017).

One of the most well-known theories that attempts to explain the change process is the Transtheoretical Model (often referred to as the stages of change; Krebs et al., 2018; Prochaska & DiClemente, 1983). Prochaska and colleagues posit that intentional behavior change occurs in a series of five discrete stages: precontemplation (e.g., no intent to change), contemplation (e.g., thinking about change), preparation (e.g., committed and preparing for change), action (e.g., modifying behavior to create change), and maintenance (e.g., sustaining the change) (sometimes "relapse" is considered a sixth stage, but it is less commonly included as part of the Transtheoretical Model). Individuals are thought to move between stages, often in a non-linear fashion with lapses/relapses, until the client can maintain the behavioral change. Readiness to change, or the degree to which an individual is motivated to change problematic behavior patterns, has been regularly used in research and clinical practice as both a predictor (e.g., Bertholet et al., 2012) and moderator (Barnett et al., 2010) of substance use treatment outcomes. It has also been used to try and match people to treatment (Carbonari & DiClemente, 2000). Readiness to change is considered a component of the Transtheoretical Model and is often measured using the University of Rhode Island Change Assessment scale (DiClemente & Hughes, 1990) or the Readiness Ruler (Rollnick et al., 1999).

Research support for readiness to change as a predictor of drinking outcomes is mixed. Although some brief intervention studies have found readiness to change to be a predictor of improved drinking outcomes (Collins et al., 2010; Walton et al., 2008), others have failed to find a significant relationship (Bertholet et al., 2012; Williams et al., 2007). Project MATCH found only limited support for readiness to change as a treatment matching variable, although it outperformed several other predictors (Allen et al., 1998). Despite these discrepancies, the Transtheoretical Model has helped transform the way individuals and treatment providers think about change by presenting the model as more than a simple, one-step process (West, 2005). Additionally, the Transtheoretical Model has been praised for presenting a less pejorative view of people who are not ready for change and those who relapse (Davidson, 1992; Sutton, 1996). However, the Transtheoretical Model has been subject to criticism. Common criticisms include oversimplifying the complexities of behavioral change by imposing artificial categories on dynamic processes (Littell & Girvin, 2002) and concerns over the arbitrary delineation between stages (West, 2005). For example, a person who is mandated to treatment for an alcohol use disorder might be in the

precontemplation stage and action stage. That is, they can take steps to stop using alcohol such as taking alcohol out of their house (action stage) while also not feeling they need or want to change (precontemplation stage) due to potential consequences for continued drinking (incarceration). One suggestion to improve the Transtheoretical Model has been to consider motivation to change as a continuous or multidimensional variable (Carey et al., 1999).

Relatedly, individuals who are attempting to change may be prone to false-hope syndrome or unrealistic expectations about change regarding amount of effort, time, speed, ease of change, and effects on other aspects of their lives (Polivy & Herman, 2002). Thus, it is possible the mixed relationship between readiness to change and outcomes is due to individuals having limited time to make a thoughtful, informed decision about their readiness and that scores are artificially inflated due to false-hope syndrome. Although most research on the false-hope syndrome is related to dieting and weight loss, false hopes have been tied to failure and distress when attempting to change eating behavior due to unrealistic expectations (Olson et al., 2012; Wamsteker et al., 2009). Further, a meta-analysis of stages of change and psychotherapy outcomes highlights the importance of setting realistic goals, typically moving one stage at a time, in order to facilitate treatment success (Krebs et al., 2018).

The context in which researchers and treatment providers operate is often distinct. In treatment, a client might have considerable time to consider the costs and benefits of changing a behavior to make a thoughtful, informed decision about change. In a research context, individuals are often isolated in a room responding to survey questions with limited context. If they happen to be in an intervention study, they likely would spend some time considering the costs and benefits of changing, but less than in a typical therapeutic context given most studies investigating readiness to change are brief motivational interventions (e.g., single session; Alley et al., 2018). It is possible the mixed findings for readiness scores as a predictor of treatment outcomes and as a matching variable for treatment is influenced by how readiness is being assessed. The present study examines whether encouraging additional cognitive effort about changing substance use behavior increases assessment accuracy. We expected that readiness to change scores are inflated (i.e., overestimated) under standard self-report conditions of readiness to change and that increased cognitive effort will predict lower readiness scores. Thus, we hypothesized that conditions requiring additional cognitive effort would be related to lower readiness to change scores (Hypothesis 1).

2. Method

2.1 Participants

College students from a large university in the Southwest were recruited to complete an online survey for partial course credit from the psychology department participant pool. Of the 515 who participated in the present study, analyses are focused on the 345 individuals who reported lifetime substance use (67.0%). Participants were primarily female (72.2%), White (77.1%), and, on average, 21.61 ($SD = 6.06$, *median* = 20) years of age. In terms of substance use, 98.0% and 76.2% of participants reported having used alcohol and cannabis, respectively. In terms of past 30-day use, 85.2% and 42.0% reported having used alcohol

and cannabis, respectively (see Table 1 for complete list of demographics). All participants provided electronic consent to participate in the study after reading the online consent form and all study procedures were approved by the Institutional Review Board.

2.2. Experimental Manipulation

Using display logic in the online survey software, participants were randomly assigned to one of three conditions designed to require differential effort in responding to prompts about substance use-related behavior change. Participants in the low effort ("control") condition received no additional prompts. Participants in the medium effort condition responded to three multiple choice items about benefits and consequences of substance use and consequences of stopping or limiting use (e.g., "What are some things you like about alcohol; all substances participants reported using in the past 30 days would be displayed in the underlined portion). Participants in the high effort condition responded to seven open-ended prompts related to stopping or limiting substance use (e.g., "You have decided to remove all of your remaining drugs from your house. What might get in the way of being able to follow through with this?") in addition to responding to the same multiple choice items as participants in the medium effort condition. For a complete list of multiple choice and open-ended prompts, see Appendix A.

2.3. Measures

2.3.1. Readiness to Change—We used three measures to assess readiness to change substance use. We used the 24-item version of the University of Rhode Island Change Assessment scale (URICA; DiClemente & Hughes, 1990). Participants report their level of agreement (1 = *strongly disagree*, 5 = *strongly agree*) with each item that are categorized as belonging to one of four subscales measuring precontemplation (e.g., "Trying to change is pretty much a waste of time for me because the problem doesn't have to do with me"), contemplation (e.g., "I've been thinking that I might want to change something about myself"), action (e.g., "I am really working hard to change"), and maintenance (e.g., "I may need a boost right now to help me maintain the changes I've already made"). We calculated a total score by summing contemplation, action, and maintenance item scores and subtracting precontemplation score as recommended by DiClemente and colleagues (2004).

We used two versions of the Readiness Ruler (Rollnick et al., 1999) to assess readiness to change (item stem: "how ready you are to make a change") and motivation for change (item stem: "how motivated you are to make a change") for overall substance use as well as each specific substance that participants used in the past 30 days (Borsari et al., 2009; DiClemente, 1999). Each ruler was administered on a slider scale (0=*not at all*, 100=*trying to change*). We focus on readiness/motivation to change overall substance use (n=336/341), alcohol use (n=286/287), and cannabis use (n=140/142) given low rates of using other substance (*n*s < 11/11). The Readiness Ruler is a clinical tool that can function as a brief method of assessing motivation to change drinking behavior (Heather et al., 2008; LaBrie et al., 2005).

2.4 Procedure

The study survey was completed online using Qualtrics survey software. Participants first completed the randomly assigned experimental manipulation. Next, they completed continuous measures of readiness to change (readiness ruler, motivation ruler) followed by the URICA.

2.5. Analysis Plan

To compare readiness to change outcomes across our three conditions, we conducted one-way analyses of variance (ANOVAs). We used Tukey planned comparisons tests to explore differences between conditions and calculated Cohen's *d* as a measure of effect size of differences between conditions, regardless of statistical differences. All analyses were conducted in IBM SPSS version 28.

3. Results

3.1. Descriptive Statistics

Across outcomes, average readiness to change and motivation for change scores were below the response option scale midpoint (< 50). That is, on average, participants did not report a high degree of readiness to change overall substance use, alcohol use, and cannabis use. Overall substance use average scores were highest ($M_{Readiness}(SD) = 43.42$ (38.57); $M_{Motivation}(SD) = 43.16$ (39.42)), followed by alcohol use ($M_{Readiness}(SD) = 39.56$ (34.38); $M_{Motivation}(SD) = 37.52$ (33.96)) and cannabis use ($M_{Readiness}(SD) = 38.35$ (36.05); $M_{Motivation}(SD) = 36.99$ (36.57)). The distributions tended to be positively skewed or bimodal (peaks at 0 and 100).

3.2. URICA

There were no significant differences between conditions on the URICA total score ($F(2,334) = 1.628$, $p = 0.198$, $\eta_p^2 = .010$). Effect sizes of differences between conditions were small ($|.02| < ds < |.22|$, Table 2).

3.3. Readiness Ruler

There was a significant difference in readiness to change overall substance use between the low, medium, and high effort conditions ($F(2,332) = 3.327$, $p = 0.037$, $\eta_p^2 = .020$). No significant differences were found in the Tukey HSD test ($|.02| < ds < |.32|$, Table 2). There also was a significant difference in readiness to change alcohol use between conditions ($F(2, 283) = 3.505$, $p = 0.031$, $\eta_p^2 = .024$), such that readiness to change alcohol use was lower in the low effort condition ($M = 32.47$, $SD = 31.11$) compared to the high effort condition ($M = 45.19$, $SD = 36.12$) ($d = 0.38$). The medium effort condition ($M = 41.13$, $SD = 34.86$) did not significantly differ from the low ($d=0.26$) or high effort conditions ($d=.11$). There were no significant differences between conditions on readiness to change cannabis use ($F(2, 136) = 0.46$, $p = 0.955$, $\eta_p^2 = .001$). Effect sizes of differences between conditions were very small ($|.03| < ds < |.06$, Table 2).

3.4. Motivation Ruler

There was no significant difference in motivation to change overall substance use between the low, medium, and high effort conditions in the omnibus ANOVA ($F(2,337) = 2.833$, p = 0.060, $\eta_p^2 = .017$), yet motivation to change overall substance use was significantly lower in the low effort condition ($M = 36.94$, $SD = 36.64$) compared to the high effort condition ($M = 47.03$, $SD = 40.71$) ($d = 0.32$) based on the Tukey HSD test. However, the medium effort condition ($M = 43.54$, $SD = 40.31$) did not differ from the low ($d=0.17$) or high effort conditions ($d=.14$). There was a significant difference in readiness to change alcohol use between the low, medium, and high effort conditions ($F(2, 284) = 3.113$, p = 0.046, $\eta_p^2 = .021$), such that motivation to change was lower in the low effort condition ($M = 30.65$, $SD = 29.47$) compared to the high effort condition ($M = 42.11$, $SD = 34.67$) ($d = 0.36$). The medium effort condition ($M = 39.77$, $SD = 36.66$) did not differ from the low ($d=0.27$) or high effort conditions ($d=.07$). There were no significant differences between conditions on motivation to change cannabis use ($F(2, 138) = 0.361$, p = 0.698, $\eta_p^2 = .005$). Effect sizes of differences between conditions were small ($|.08|<ds<|.18|$, Table 2).

4. Discussion

The present study tested the hypothesis that measures of readiness to change administered under standard assessment conditions produce inaccurate estimates of actual readiness due to the minimal cognitive effort required to answer these questions. Based on the False Hope Syndrome (Corrigan, 2014; Polivy & Herman, 2002; Snyder & Rand, 2003), we hypothesized that conditions requiring higher cognitive effort would improve the accuracy of readiness to change scores and thus result in lower scores. Across three conditions designed to manipulate level of cognitive effort prior to assessment of readiness to change (low, medium, high), our results did not support our hypothesis. In fact, all statistically significant differences across cognitive effort conditions fit the pattern that readiness to change scores were highest in the high cognitive effort condition and lowest in the low cognitive effort condition. Thus, we did not find support for the False Hope Syndrome, which has received previous criticism (e.g., assumes that people with false hope syndrome fail to revise expectations after unsuccessful change attempt; Snyder & Rand, 2003). The False Hope Syndrome may simply reflect the difficulty of behavior change, especially for difficult to change behaviors (e.g., substance use), rather than being a result of people underestimating the difficulty of changing. That is, people may be aware behavior change will be difficult and continue to not succeed because it *is* a difficult change to achieve rather than underestimating the challenge.

There are several potential explanations for our pattern of findings. Our manipulation of cognitive effort may have unintentionally operated as a decisional balance exercise (Collins et al., 2009). Decisional balance exercises involve listing the costs and benefits of making (or not making) a change with the intention of resolving one's ambivalence about changing (i.e., less ambivalent about not changing or less ambivalent about changing). We did not collect longitudinal data; therefore, we are unable to observe whether people in the high cognitive effort condition are more likely to change their substance use. This is an important direction for future work. It is also possible that characteristics of our

sample influenced results. For example, if people already engaged in controlled drinking with limited consequences, readiness scores might have increased due to viewing decreased use as an easy goal. For people who are already experiencing negative consequences, the experiment might have increase awareness of the need to change thus increasing readiness scores. Further, the manipulation of effort only appears to have impacted readiness to change alcohol use and in one measure, readiness to change overall substance use. It did not appear to significantly impact readiness to change cannabis use. This may be a result of the content of the cognitive effort questions tapping into potential consequences of alcohol use and not cannabis use. However, further research is needed to better understand these results.

Although we assumed that standard assessments of readiness/motivation to change scores are overestimated when higher cognitive effort is not required, it is possible our manipulation still improved the accuracy of scores, but standard readiness/motivation to change scores are typically underestimated. To fully test this supposition, longitudinal data are needed to observe how readiness/motivation to change scores predict actual behavior change over time. Such results might still account for the mixed findings in prior studies of readiness to change as a predictor of treatment matching and treatment outcomes. Although we found effects in the opposite direction than we predicted, it is important to note that the changes observed were relatively modest, with the difference between the low and high effort conditions ranging from $d = .06$ to $d = .38$ (median $d = .29$), reflective of small-to-medium differences across these conditions. Given the continued modest research support for the Transtheoretical Model, further research is needed to better understand if the Model has substantial validity beyond face validity.

Limitations

It is important to consider key limitations of the present study. Given that we recruited a convenience sample of college students and that no measure of substance use disorder severity was included (e.g., Alcohol Use Disorder Identification Test [AUDIT]), our findings may not generalize to the college student population as a whole or to other community and clinical samples. Importantly, it is unknown how the cognitive effort manipulation would operate in distinct samples that differ substantially in base rates of motivation/readiness to change. Although the present study used an experimental design to enhance our ability to make causal inferences, we did not collect data prospectively so we were unable to observe whether those in the high cognitive effort conditions (or with higher readiness/motivation to change scores) were more likely to change their actual substance use. Determining how these manipulations affect actual change over time has important implications for interventions. Further, we were unable to check if the different conditions required differential effort by any quantifiable metric (e.g., time spent responding). Additional work is needed to determine whether our findings replicate in an independent sample given that the cognitive effort manipulation produced results in the opposite direction of our hypotheses. Given the importance or readiness/motivation to change to a wide range of distinct behaviors, future studies should examine the effects of cognitive effort manipulations on readiness/motivation to change scores across a wider range of outcomes (e.g., diet, sleep, exercise, studying).

Conclusion

Based on the False Hope Syndrome, we expected that manipulations requiring higher cognitive effort to complete readiness/motivation to change measures would improve the accuracy of these measures and lower overall readiness/motivation to change substance use in our sample of college students. However, our findings were contrary to this hypothesis, which fail to support the False Hope Syndrome, and suggest that higher cognitive effort might induce higher readiness/motivation to change. Future work is needed to directly and/or conceptually replicate the observed findings, examine how readiness/motivation to change measures relate to actual behavior change, and explore these effects in wider range of behavioral outcomes.

Funding information:

Appendix A.

Cognitive effort manipulation items. Participants in the medium effort condition responded to items 1–3. Participants in the high effort condition responded to items 1–10.

Instructions: Select all that apply

1. What are some things you like about [DISPLAYED SUBSTANCE(S) PARTICIPANTS REPORTED USING IN THE PAST 30 DAYS]?

    a. helps me relax

    b. helps me forget about things

    c. helps me sleep

    d. helps me fit in

    e. to celebrate special occasions

    f. to be social

    g. makes me feel good

    h. makes everything better

    i. makes me more sociable/liked

    j. it is fun

2. What are some things you dislike about [DISPLAYED SUBSTANCE(S) PARTICIPANTS REPORTED USING IN THE PAST 30 DAYS]?

    a. makes me feel bad/sick (e.g., hungover, sick, withdrawing)

    b. makes me feel bad about myself

    c.   makes me miss time at work or school

    d.   causes problems with loved ones/important people in my life

    e.   causes me legal problems

    f.   causes me health problems

    g.   brings my mood down

    h.   makes me fight or be mean to other people

    i.   causes me to spend more money than I would like

    j.   places me in risky sexual situations

3. What are some potential negative consequences of decreasing or limiting your use of [DISPLAYED SUBSTANCE(S) PARTICIPANTS REPORTED USING IN THE PAST 30 DAYS]? I might…

    a.   have to find new ways to relax

    b.   have to work hard to find new solutions for my difficulties

    c.   have difficulty sleeping

    d.   lose some or all of my friends

    e.   have to find new ways to celebrate

    f.   have to find new ways to be more social

    g.   feel my mood(s) more strongly (e.g., feel more anxious)

    h.   no longer be able to go to the places where I used

    i.   have to find new ways to celebrate

    j.   have to find new ways to have fun

Instructions for free response items: For the following scenarios, imagine you wanted to decrease how you use of some or all of [DISPLAYED SUBSTANCE(S) PARTICIPANTS REPORTED USING IN THE PAST 30 DAYS]. Please answer how you might handle the situations if your goal was to decrease or stop using some or all of [DISPLAYED SUBSTANCE(S) PARTICIPANTS REPORTED USING IN THE PAST 30 DAYS].

4. You have told your friends you are no longer using and they are not inviting you to be around them anymore. How would that impact your life?

5. You have decided you can no longer go to the places where you used to use. How would that impact your life?

6. You have decided to remove all of your remaining drugs from your house. What might get in the way of being able to follow through with this?

7. All of your friends still go to places where you used to use and you have decided not to go. How would you deal with that?

8. You told your friends you are no longer using but they still invite you to the places and events where you used to use with them. How would you handle this?

9. You want to go to a party with your friends but are concerned they will be using. What would you decide to do and why?

10. You are planning on going to a concert but are worried about going and being sober. How would you deal with that concern?

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Table 1.

Demographics of College Student Sample

	Overall sample (*N* = 345)	Low effort (*n* = 114)	Medium effort (*n* = 115)	High effort (*n* = 116)
Age (M(SD))	21.61 (6.06)	22.44 (7.35)	21.24 (5.42)	21.15 (5.16)
Age (M(SD))	21.47 (5.73)			
Male	94 (27.2%)	30 (26.3%)	30 (26.1%)	34 (29.3%)
Age (M(SD))	21.89 (6.85)			
Other	2 (0.6%)	0 (0.0%)	1 (0.9%)	1 (0.9%)
Greek-life ("yes")	30 (8.7%)	11 (9.6%)	9 (7.8%)	10 (8.6%)
American Indian or Alaska Native	21 (6.1%)	8 (7.0%)	7 (6.1%)	6 (5.2%)
Asian	17 (4.9%)	6 (5.3%)	5 (4.3%)	6 (5.2%)
Black or African American	15 (4.3%)	7 (6.1%)	6 (5.2%)	2 (1.7%)
Native Hawaiian or Pacific Islander	8 (2.3%)	3 (2.6%)	4 (3.5%)	1 (0.9%)
White	266 (77.1%)	95 (83.3%)	87 (75.7%)	84 (72.4%)
Other	48 (13.9%)	10 (8.8%)	15 (13.0%)	23 (19.8%)
Hispanic	192 (55.7%)	61 (53.5%)	58 (50.4%)	73 (62.9%)
Mexican or Mexican American	153 (74.5%)	45 (73.4%)	38 (65.5%)	60 (82.2%)
Cuban	2 (1.0%)	1 (1.6%)	1 (1.7%)	0 (0.0%)
Puerto Rican	3 (1.6%)	1 (1.6%)	1 (1.7%)	1 (1.4%)
Other	52 (27.1%)	15 (24.6%)	21 (36.2%)	16 (21.9%)
Lifetime substance use (past month substance use)				
Alcohol	98.0% (85.2%)	99.1%	98.3%	96.6%
Cannabis	76.2% (42.0%)	77.2%	82.6%	69.0%
Cocaine	15.7% (3.5%)	14.0%	15.7%	17.2%
Amphetamine type stimulants	22.6% (2.6%)	17.5%	26.1%	24.1%
Inhalants	6.7% (1.2%)	7.0%	4.3%	8.6%
Opioids	11.6% (1.7%)	6.1%	11.3%	17.2%
Sedatives or sleeping pills	15.9% (3.2%)	13.2%	13.9%	20.7%
Hallucinogens	27.2% (3.2%)	25.4%	27.8%	28.4%
Other	3.8% (2.0%)	3.5%	2.6%	5.2%

Note: Participants were able to select one or more categories for race/ethnicity, therefore, percentages may not add up to 100%.

Table 2.

Mean Comparisons on Readiness to Change Measures Across Low (LE), Medium (ME), and High Effort (HE) Conditions

	Low Effort (LE)		Medium Effort (ME)		High Effort (HE)		Cohen's d Comparisons		
	M (SD)	n	M (SD)	n	M (SD)	n	LE v. ME	LE v. HE	ME v. HE
URICA – Overall Substance Use	30.89_a (16.90)	112	31.22_a (16.96)	113	34.65_a (17.95)	112	.02	.22	.20
Readiness Ruler – Overall Substance Use[*]	35.94 (36.12)	112	47.70 (37.91)	111	47.03 (40.71)	112	.32	.29	-.02
Readiness Ruler – Alcohol[*]	32.47_a (31.11)	97	41.13_{ab} (34.86)	93	45.19_a (36.12)	96	.26	.38	.11
Readiness Ruler – Cannabis	37.55_a (36.71)	51	38.70_a (35.68)	47	39.85_a (36.46)	41	.03	.06	.03
Motivation Ruler – Overall Substance Use	36.94_a (36.64)	113	43.54_{ab} (40.31)	114	49.35_b (40.53)	113	.17	.32	.14
Motivation Ruler – Alcohol[*]	30.65_a (29.47)	96	39.77_{ab} (36.66)	93	42.11_b (34.67)	98	.27	.36	.07
Motivation Ruler – Cannabis	37.51_a (37.26)	51	34.02_a (35.82)	48	40.60_a (37.13)	42	-.10	.08	.18

Note. URICA = University of Rhode Island Change Assessment scale.

[*] $p < .05$. Means sharing a subscript within a row are not statistically significantly different based on Tukey's HSD.