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Can Obsessive Thoughts Predict Problematic Alcohol Use Through Thought Suppression?

Laura Pettigrew
Old Dominion University, lepettigrew0@gmail.com

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**CAN OBSESSIVE THOUGHTS PREDICT PROBLEMATIC ALCOHOL USE
THROUGH THOUGHT SUPPRESSION?**

by

Laura Pettigrew
B.A. May 2017, Virginia Wesleyan College

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Approved by:

James M. Henson (Director)

Abby L. Braitman (Member)

Bryan E. Porter (Member)

ABSTRACT

CAN OBSESSIVE THOUGHTS PREDICT PROBLEMATIC ALCOHOL USE THROUGH THOUGHT SUPPRESSION?

Laura Pettigrew
Old Dominion University, 2022
Director: Dr. James M. Henson

Alcohol misuse, which is a prevalent issue among college students, often coincides with psychiatric disorders or symptoms. Treatment of one facilitates treatment of the other. Some anecdotal evidence suggests that obsessive-compulsive disorder (OCD), or just obsessive-compulsive symptoms, is connected to alcohol misuse.

This study adapts part of the cognitive control model of OCD, which states that intrusive thoughts will only lead to distress if the individual interprets them in a dysfunctional manner and tries to control them. When the thought control attempt fails, if the individual interprets the failure in a dysfunctional way as well, they will become distressed. If they are distressed, they will then use alcohol in an attempt to relieve their negative emotions. This research examines if there is a moderating relationship between intrusive thoughts, maladaptive responses to thoughts, and alcohol misuse. Furthermore, this research examines if obsessive beliefs moderate the moderation between intrusive thoughts, maladaptive responses, and alcohol misuse.

Participants ($N = 186$) identified mainly as women (73.7% women, 24.7% men, 1.1% gender queer/non-conforming, 1.1% nonbinary) and had a mean age of 23.92 ($SD = 6.78$, $Mdn = 21.00$). Participants completed measures assessing alcohol misuse, intrusive thoughts, obsessive thoughts, and thought control strategies.

Using a simple moderation model and a moderated moderation model in the SPSS macro PROCESS V4.1, support was not found for any of the hypotheses. Maladaptive thought control strategies did not have a moderating effect on the relationship between intrusive thoughts and alcohol misuse. Obsessive thoughts did not moderate the relationship between maladaptive thought control strategies, intrusive thoughts, and alcohol misuse. However, worry thought control strategies were shown to have a strong effect on alcohol misuse when intrusive thoughts and different types of obsessive beliefs were held average. In addition, the belief in the importance of thoughts and the need to control them had a significant effect on alcohol misuse when punishment thought control strategies and intrusive thoughts were held at the average. The results suggest that intrusive thoughts are not related to alcohol misuse. However, worry thought control strategies and the importance of/need to control thoughts are related to alcohol misuse.

This thesis is dedicated to my parents and sister. I couldn't have done any of this without you.

ACKNOWLEDGMENTS

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CHAPTER 1

INTRODUCTION

The misuse of alcohol or other substances frequently occurs alongside other psychiatric disorders, such as mood disorders, personality disorders, and anxiety disorders (American Psychiatric Association [APA], 2013; Hasin et al., 2007; Kranzler & Rosenthal, 2003; Marmorstein, 2012). Alcohol use is also often elevated in populations with subthreshold levels of psychiatric disorders compared to non-clinical populations (Bosman et al., 2019; Bystritsky et al., 2010; Jaisoorya et al., 2017; Kim et al., 2020). Problematic alcohol use is also associated with negative or distressing emotions and traits. For example, shame, (Treeby & Bruno, 2012), anxiety sensitivity (DeMartini & Carey, 2011), intolerance of uncertainty (Kraemer et al., 2015), rumination (Ciesla et al., 2011), life dissatisfaction (Newcomb et al., 1986), and alexithymia (Thorberg et al., 2009) are all related to alcohol misuse or higher alcohol consumption rates. Emotional distress is also related to alcohol misuse (Bolton et al., 2006; Lipschitz-Elhawi & Itzhaky, 2014).

Intrusive thoughts, a core feature of obsessive-compulsive symptoms, are experienced by almost everyone (Berry & Laskey, 2012; Bouvard et al., 2017). In non-clinical samples, frequency, intensity, and dysfunctional appraisals of intrusive thoughts are related to stronger obsessive-compulsive symptoms and more distress caused by intrusive thoughts (Berry et al., 2010; Corcoran & Woody, 2008; Wetterneck et al., 2011). When faced with an intrusive thought, people sometimes attempt to control it, especially if they have appraised it in a dysfunctional way (Clark et al., 2000; Freeston et al., 1995). Clark (2004) argues that intrusive thoughts become distressing if a person interprets them as having meaning. They attempt to control the

thought, which usually fails. If they interpret their failure in a dysfunctional way, they become more distressed and continue to try to control the thought, which continues to fail.

Maladaptive control strategies, such as worry and punishment, are associated with higher distress and stronger obsessive-compulsive disorder (OCD) symptoms (Amir et al., 2001; Eremsoy & Inozu, 2016; Ragan et al., 2016). Results from research on maladaptive control strategies and substance use have been mixed. Some studies have found no connection between control strategies and substance use (Nosen & Woody, 2014; Simpson et al., 2006), but others found that attempts to suppress thoughts related to substance use are counterproductive (Moss et al., 2015). Obsessive beliefs that are theorized to be central to OCD and OCD symptoms are related to more maladaptive thought control strategies (Eremsoy & Inozu, 2016; Moore & Abramowitz, 2007). Obsessive beliefs are also correlated with OCD symptoms in both clinical and non-clinical populations (Faull et al., 2004).

This study focuses on how intrusive thoughts affect dysfunctional alcohol use through thought control and obsessive beliefs. Based on the cognitive control model put forth by Clark (2004), the reaction to intrusive thoughts will depend on how they are appraised and how thought control failure is appraised. Maladaptive appraisals of intrusive thoughts, made more likely by the endorsement of obsessive beliefs, will lead to attempts at thought control, which usually fail. Maladaptive reactions to thought control failure will cause distress, which will lead to increased alcohol misuse.

ALCOHOL USE

Alcohol misuse is a prevalent and serious phenomenon, especially among college students (Ham & Hope, 2003). Alcohol use disorder (AUD), a type of substance use disorder

(SUD) defined by an individual's dependence on alcohol, has an estimated 8.5% 12-month prevalence rate in Americans 18 or older (APA, 2013). AUD is also commonly comorbid with other psychiatric disorders, including bipolar disorder, schizophrenia, antisocial personality disorder, and severe anxiety disorders or depression (APA, 2013).

Alcohol and substance misuse have serious consequences for individuals. The diagnosis of a SUD is associated with not finishing high school (Kessler et al., 1995), health problems, and legal problems (Skidmore et al., 2016). College students tend to drink more alcohol and experience more negative alcohol-related consequences than their non-college peers (Slutske, 2005). Binge drinking is common as well, with 43.1% of currently-drinking college students consuming more than double the threshold of binge drinking (White et al., 2016). While including non-drinkers, 19.9% of male college freshmen and 8.2% of female college freshmen drink at least twice the amount of alcohol required for binge drinking (White et al., 2006). In addition, Hagman and colleagues (2014) found that 19.6% of their sample of college students met one criterion for AUD, whereas 27.7% met two or more criteria.

Alcohol to Cope

Using alcohol or other substances to cope with distressing emotions and situations is associated with more negative outcomes than using substances for other reasons (Bravo et al., 2018; Holahan et al., 2001; Park & Levenson, 2002; Veilleux et al., 2014). Coping motives are also associated with intolerance of uncertainty (Kraemer et al., 2015; Oglesby et al., 2015), suicidal ideation (Gonzalez et al., 2009), anxiety sensitivity (DeMartini & Carey, 2011), and shame-proneness (Treeby & Bruno, 2012).

Drinking to cope is frequently associated with psychopathology (Kelly et al., 2017; Schuckit et al., 2006; Stewart et al., 2006). For example, a significant percentage of individuals with anxiety disorders self-medicate with alcohol or drugs (Bolton et al., 2006; Kranzler & Rosenthal, 2003; Robinson et al., 2009). Some anecdotal evidence also suggests that some individuals with OCD use alcohol or other substances to cope with the distress caused by intense intrusive thoughts (Jain et al., 2018).

INTRUSIVE THOUGHTS

Intrusive thoughts are invasive and distressing thoughts, images, or impulses that are difficult to control and are repetitive (Clark & Rhyno, 2005; Rachman, 1981). Intrusive thoughts are a factor in multiple psychological disorders and difficulties, including post-traumatic stress disorder (Bomyea & Lang, 2016; Reynolds & Brewin, 1998), auditory hallucinations (Morrison & Baker, 2000), generalized anxiety disorder (Gross & Eifert, 1990; Romero-Sanchiz et al., 2017), insomnia (Harvey et al., 2005; Wicklow & Espie, 2000), and depression (Reynolds & Brewin, 1998). Intrusive thoughts are also a main component of OCD and are usually referred to as obsessive thoughts in the context of OCD (APA, 2017).

Although obsessive thoughts are a primary symptom of OCD, they are cross-cultural and almost everyone experiences them at some point (Bouvard et al., 2017; Purdon & Clark, 1993; Radomsky et al., 2014). Berry and Laskey (2012) argue that the only difference between obsessive thoughts had by the general population and those had by individuals with OCD is the severity of the thoughts. Their findings indicated that pathological obsessive thoughts were considered more bizarre, violent, and spontaneous than non-clinical obsessive thoughts. García-Soriano and Belloch (2013) found that people with OCD experienced more distress due to their

obsessive thoughts than non-clinical populations and appraised their thoughts in a more dysfunctional way.

Most cognitive theories of OCD include appraisals of intrusive thoughts (Clark, 2004; Rachman, 1993; Salkovskis, 1985; Obsessive Compulsive Cognitions Working Group [OCCWG], 1997). In the context of these theories, cognitive appraisals are the meaning that an individual attaches to an event, such as an intrusive thought (OCCWG, 1997). According to Clark (2004), the major cognitive-behavioral theories of OCD all agree that a maladaptive appraisal of an intrusive thought is necessary for the formation of obsessions and compulsions, but that alone is not sufficient.

Intrusive Thoughts Related to Substance Use

Intrusive thoughts occur frequently with addictions, especially when individuals are trying to abstain from using a substance (Modell et al., 1992; Salkovskis & Reynolds, 1994). Most individuals who exhibit problematic drinking behaviors have intrusive thoughts, some that involve sensory imagery and some that are only thoughts, related to alcohol (Hoyer et al., 2007; Kavanagh et al., 2009). Lyvers and colleagues (2014) also determined that intrusive thoughts about alcohol mediated the relationship between alexithymia and alcohol misuse.

Cravings for a substance are correlated with obsessive thoughts about alcohol, leading some researchers to theorize that cravings and obsessions function similarly (Modell et al., 1992). Two common measures of alcohol cravings, the Yale-Brown Obsessive Compulsive Scale for Heavy Drinking along with the Obsessive Compulsive Drinking Scale, address cravings in terms of obsessions and compulsions (Drobes & Thomas, 1999). The belief in the

need to control thoughts is also associated with more alcohol use and increased susceptibility to problematic alcohol use (Spada & Wells, 2005).

THOUGHT CONTROL

When people experience intrusive thoughts, they usually try to control them using multiple different strategies such as distraction, social control, worry, punishment, re-appraisal (Wells & Davies, 1994) and thought suppression (Grisham & Williams, 2009). Some of the common therapies used to treat OCD involve replacing an individual's maladaptive thought control strategies with more effective ones, such as focused distraction, acceptance (Najmi et al., 2009), or mindfulness (Fisher & Wells, 2008).

Thought suppression, a type of thought control (Allen et al., 2016), is defined as purposely eliminating a thought from the mind (Clark, 2004). Increased thought suppression is associated with anxiety disorders, and the tendency for thought suppression lowers after therapeutic intervention (Rassin et al., 2001). Suppression is associated with greater distress (Najmi et al., 2009) and more frequent intrusions of the thought (Wegner et al., 1987).

Thought Control Strategies with Obsessive Thoughts

People with OCD frequently use thought control strategies that people without OCD are less likely to use (Abramowitz et al., 2003; Amir et al., 2001; Belloch et al., 2009; Moore & Abramowitz, 2007). Abramowitz and colleagues (2003) found that participants with OCD were more likely to use maladaptive strategies, such as punishing themselves for having the thought and worrying, compared to non-anxious controls and participants with non-OCD anxiety disorders. In addition, individuals who undergo exposure and response prevention therapy

demonstrate a decrease in the use of maladaptive strategies and an increase in more adaptive strategies (Abramowitz et al., 2003; Allen et al., 2016).

The thought control strategy of worry has been shown to interact with obsessive beliefs to predict intrusive thoughts in non-clinical populations (Fergus & Wu, 2010). Belloch and colleagues (2009) determined that the thought control strategy of punishment distinguished between OCD patients and both non-clinical participants and non-OCD clinical participants. Punishment and worry strategies are also related to levels of distress and the severity of obsessions (Amir et al., 2001; Ragan et al., 2016). However, there is evidence to suggest that the maladaptive strategies of worry and punishment are related to psychopathology in general, instead of exclusively to obsessive-compulsive symptoms (Coles & Heimberg, 2005; Fehm & Hoyer, 2004; Ree, 2010).

Thought Control Strategies in Substance Use

There is a lack of research on the use of different thought control strategies related to substance use and addiction, and most of the existing literature only focuses on thought suppression as a strategy. Most research indicates that suppressing thoughts of alcohol craving is related to stronger and more salient cravings and intrusive thoughts regarding alcohol (Garland et al., 2012; Palfai et al., 1997).

However, Simpson and colleagues (2006) found that for individuals with comorbid post-traumatic stress disorder and SUD thought suppression and the dysfunctional thought control strategies of worry, punishment, and distraction were not significantly related to alcohol use or craving. In addition, they were all significantly negatively related to the number of days the

participants consumed alcohol in the past 28 days. These conflicting results indicate that further research in this subject is needed.

Appraisals of Failed Thought Control

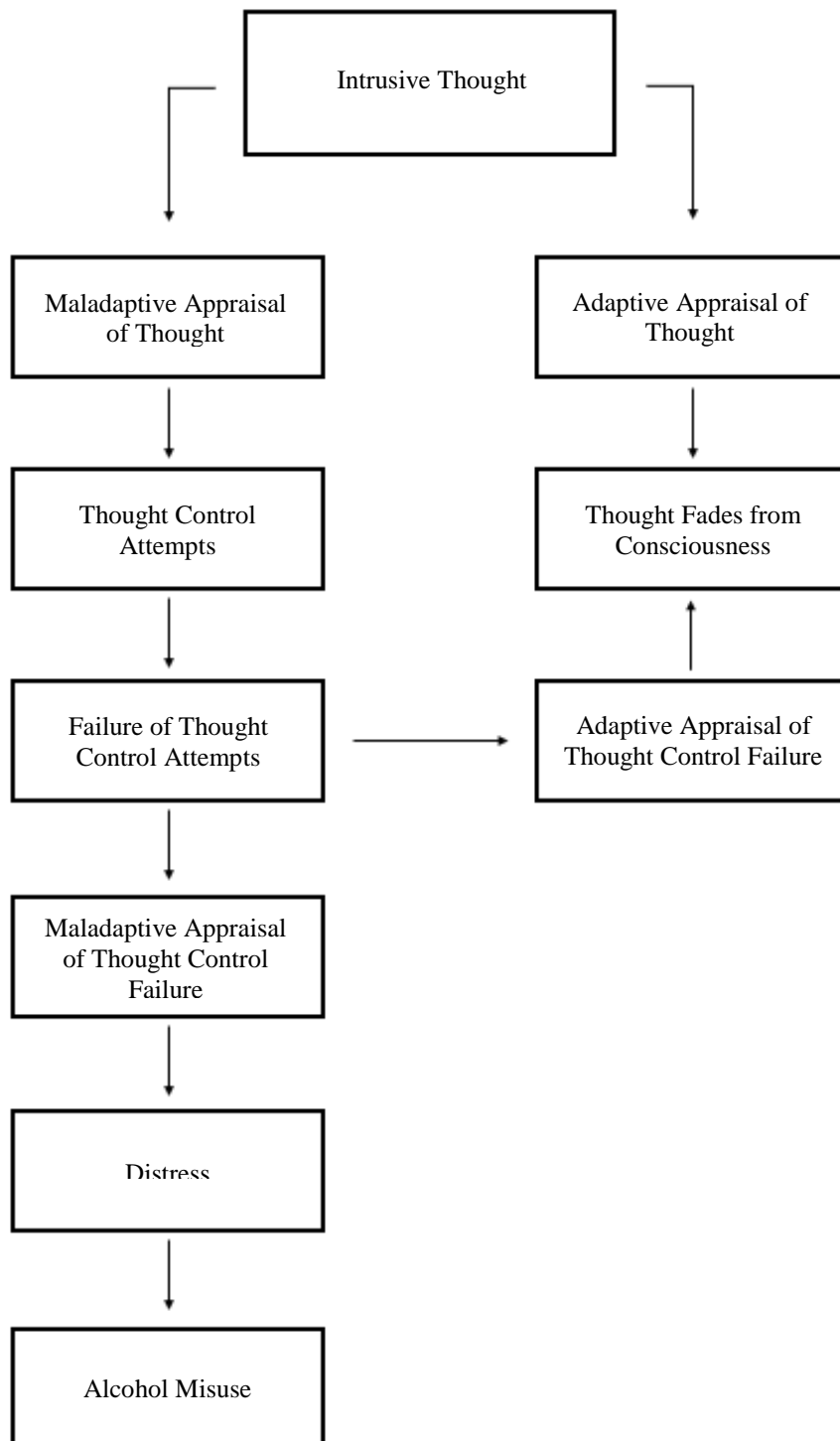
Clark (2004) introduces the cognitive control theory of obsessions to explain how intrusive thoughts turn into obsessions and compulsions. A major part of his theory is how an individual reacts to failed thought control. If they respond with an adaptive appraisal, such as viewing the thought as meaningless and not indicative of their character, then the thought will fade from their mind. However, if they respond to the thought with a maladaptive appraisal, such as assuming the thought will come true (Purdon, 2001), the salience of the thought and distress caused by it will increase, leading to compulsions (Clark, 2004). Regardless of the actual extent of thought suppression failure, individuals with OCD are more likely than individuals without OCD to attribute their failure to control thoughts to internal factors, such as mental weakness, rather than external factors, such as not trying hard (Tolin, Abramowitz, Hamlin, et al., 2002).

THE COGNITIVE CONTROL THEORY OF OBSESSIONS

The current study's model is based on Clark's (2004) cognitive control model, which posits that the main process involved in obsessions and compulsions is how an individual responds to an intrusive thought and to their failed attempt to control it. If the individual does not interpret the thought as dangerous, it fades from their mind. If they do interpret it as dangerous, they attempt to control it. Because controlling thoughts is difficult even in normal situations and attempts at thought suppression often have the opposite effect (Wegner et al., 1987), Clark (2004) argues that individuals who are vulnerable to intrusive thoughts and anxiety are in the worst possible position to successfully control their thoughts. Thus, "the obsession-prone

individual fails to achieve a satisfactory level of control (elimination) of the unwanted thought” (p. 142).

I adapted the cognitive control model to fit the current study, as shown in Figure 1. As described in Clark’s (2004) model, a person’s reaction to intrusive thoughts depends on whether they appraise it in an adaptive or maladaptive fashion. If they appraise it in an adaptive way, they do nothing to control it and the thought vanishes by itself. If they appraise it in a maladaptive way, they attempt to control it. How the individual reacts to the likely thought control failure depends on what happens after that.

Figure 1*Theoretical Study Model*

An individual who interprets the failure to control thoughts in an adaptive fashion will do nothing, causing the thought to eventually disappear. However, if they interpret the thought control failure in a maladaptive way, their distress and anxiety will increase. I hypothesized those individuals would subsequently turn to alcohol to reduce their feelings of anxiety.

Hypothesis 1

Hypothesis 1 states that worry and punishment responses to thought control failure will moderate the relationship between intrusive thoughts and alcohol misuse. Specifically, intrusive thoughts will correlate with high levels of alcohol misuse only if participants frequently respond to intrusive thoughts with worry (see Figure 2) or punishment strategies (see Figure 3).

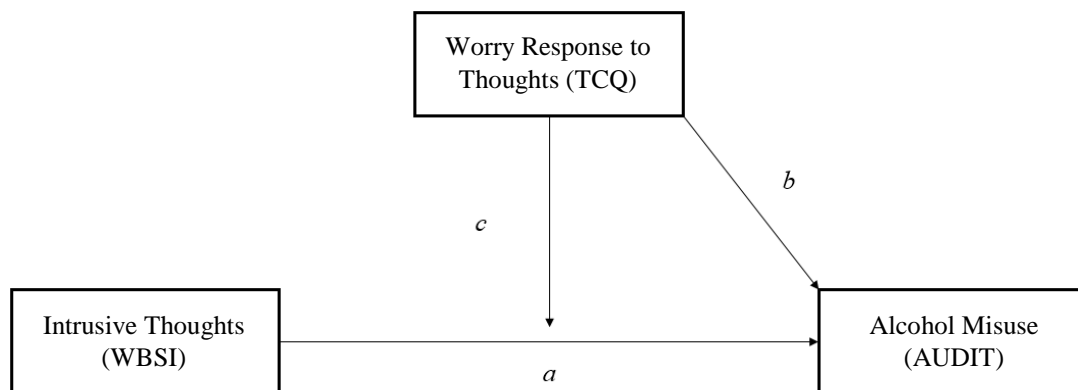
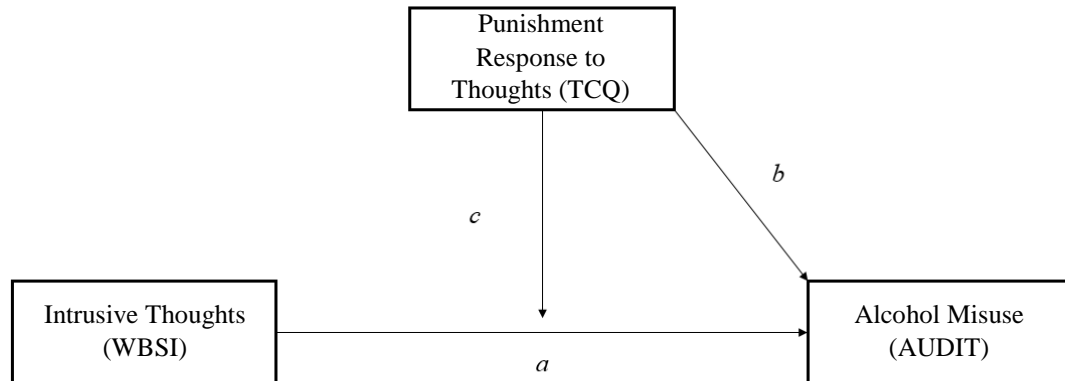
Figure 2*Hypothesis 1 Worry Model*

Figure 3*Hypothesis 1 Punishment Model***OBSESSIVE BELIEFS**

Obsessive beliefs are dysfunctional beliefs held by some individuals with OCD that influence the way they respond to intrusive thoughts (OCCWG, 1997; Taylor et al., 2006), and they are a primary component to many cognitive theories of OCD (OCCWG, 1997; Steketee et al., 1998). Individuals with stronger obsessive beliefs usually have stronger OCD symptoms (Abramowitz et al., 2009; Taylor et al., 2006), but some individuals with OCD exhibit levels of obsessive beliefs similar to individuals without OCD (Calamari et al., 2006). The Obsessive

Compulsive Cognitions Working Group (OCCWG; 2005) developed a measure of obsessive beliefs with three separate subscales that they posit represent the main domains of OCD:

Responsibility and Threat Overestimation, Perfectionism and Intolerance of Uncertainty, and Importance and Control of Thoughts.

Responsibility and Threat Overestimation

Inflated responsibility beliefs feature prominently in most cognitive theories of OCD (Rachman, 1993; Salkovskis, 1985). Rachman (1993) explains that individuals with inflated senses of responsibility will feel responsible for their intrusive thoughts and any harm that may come from them. Subsequently, they will feel that they need to stop the potential harm. In both clinical and non-clinical populations, individuals with inflated responsibility beliefs generally display more checking and cleaning behaviors (Wilson & Chambless, 1999; Yorulmaz et al., 2006). Individuals with OCD are also more likely to try to prevent harm in situations involving intrusive thoughts than individuals without OCD (Wroe et al., 2000)

Although much research has suggested that responsibility is a factor in turning intrusive thoughts into compulsions, Myers and Wells (2005) found that in non-clinical populations, perceived responsibility was not a significant predictor of obsessive-compulsive symptoms. Tolin and colleagues (2006) also found that patients with OCD and patients with another anxiety disorder did not differ significantly from each other in terms of perceived responsibility and threat overestimation.

Threat overestimation is the tendency to overestimate both the risk and severity of a threatening event and is seen in most anxiety disorders as well as OCD (Butler & Mathews, 1983; OCCWG, 1997). Compared to individuals without OCD, individuals with OCD are more

likely to overestimate the possibility of personal harm from a negative event, but not the overall possibility of harm. In addition, they have more negative appraisals of the consequences of the negative events (Moritz & Jelinek, 2009). Moreover, after being asked to estimate how often negative events occur, people with OCD are less relieved than non-clinical populations to be given information about the actual probability of the events (Moritz & Pohl, 2009). According to Reuman and colleagues (2017), individuals seeking treatment for OCD who had comorbid illness anxiety were also more likely to overestimate threats than those without illness anxiety.

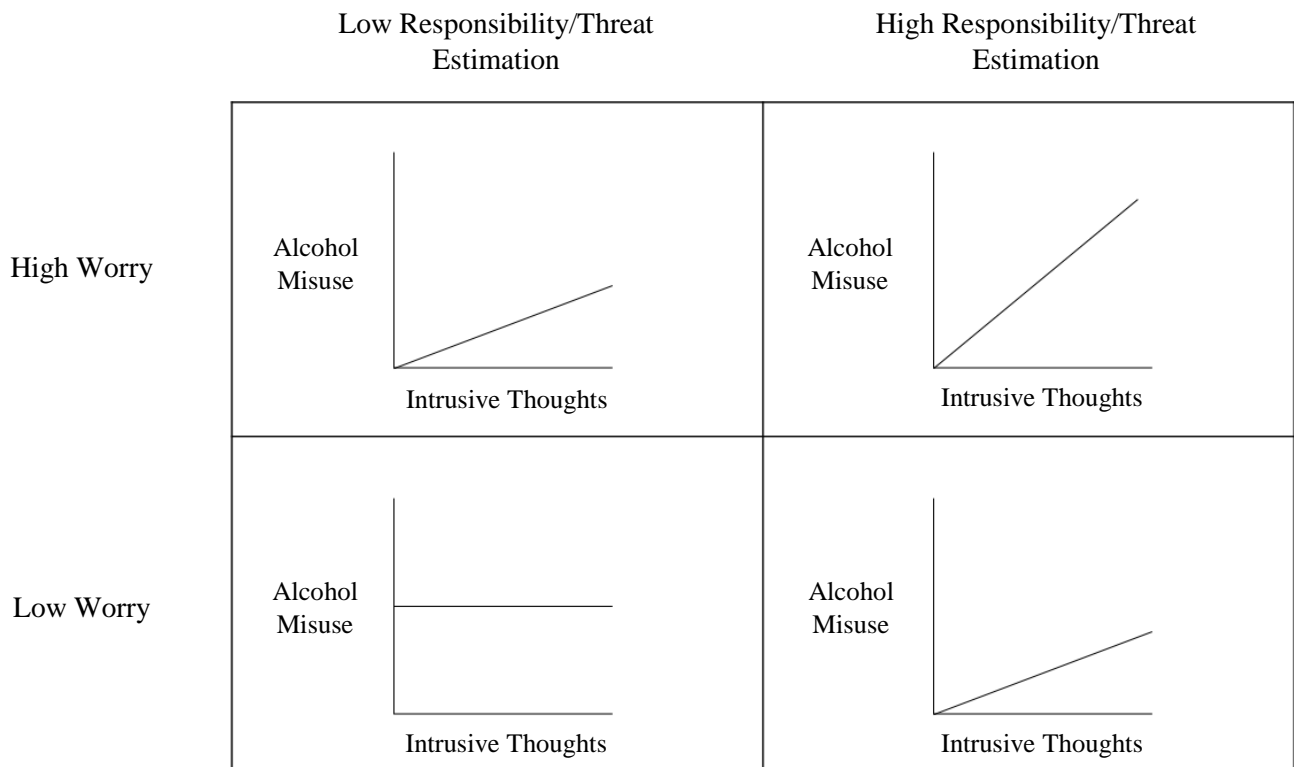
Smári and Hólmsteinsson (2001) hypothesized that responsibility appraisals act as a mediator between intrusive thoughts and thought suppression. They found evidence that supported their hypothesis. For people that tend to overestimate how responsible they personally are for intrusive thoughts or how dangerous the thoughts are, I expect the relationship between intrusive thoughts and worry and punishment responses to increase because participants will worry more about thoughts and punish themselves more for having thoughts, which will increase the thoughts' frequency, if they also overestimate their responsibility or the danger of the thoughts.

Hypothesis 2. Hypothesis 2 involves obsessive beliefs about personal responsibility and the overestimation of threats as a potential moderator of the moderation described in Hypothesis 1. Given the expectation that worry responses to thought control failure will moderate the relationship between intrusive thoughts and alcohol misuse, I expect there will be a synergistic relationship where the moderation will be stronger at higher levels of responsibility and threat estimation and worry response than it will be at low levels of worry but higher levels of responsibility beliefs or higher levels of worry but lower levels of responsibility beliefs. At low

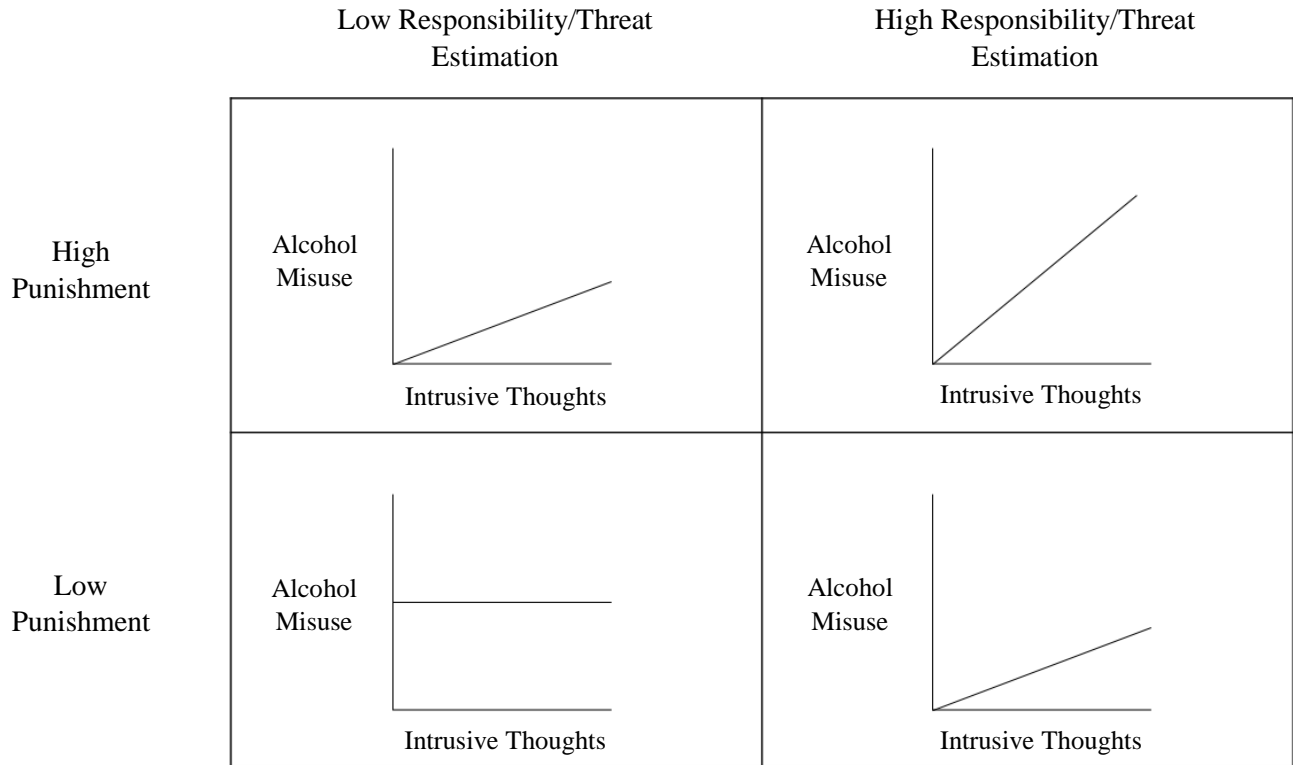
levels of both, there is expected to be no correlation between intrusive thoughts and alcohol misuse (see Figure 4).

Figure 4

Hypothesis 2 Expected Results



Hypothesis 3. Hypothesis 3 states that inflated responsibility beliefs and the overestimation of threats will moderate the moderation between intrusive thoughts, punishment response to thought control failure, and alcohol misuse. Specifically, the positive correlation between intrusive thoughts and alcohol misuse will only exist if inflated responsibility beliefs and the overestimation of threats or the punishment response are strong. If both are strong, the relationship between intrusive thoughts and alcohol misuse will be stronger than if only one is strong (see Figure 5).

Figure 5*Hypothesis 3 Expected Results**Perfectionism and Intolerance of Uncertainty*

Perfectionism is frequently identified as a characteristic of OCD (Antony et al., 1998; OCCWG, 1997) and obsessive-compulsive symptoms in a non-clinical population (Rice & Pence, 2006). Individuals with high levels of perfectionism are more likely to demonstrate checking compulsions (Julien et al., 2006) and individuals with OCD are more likely to have the

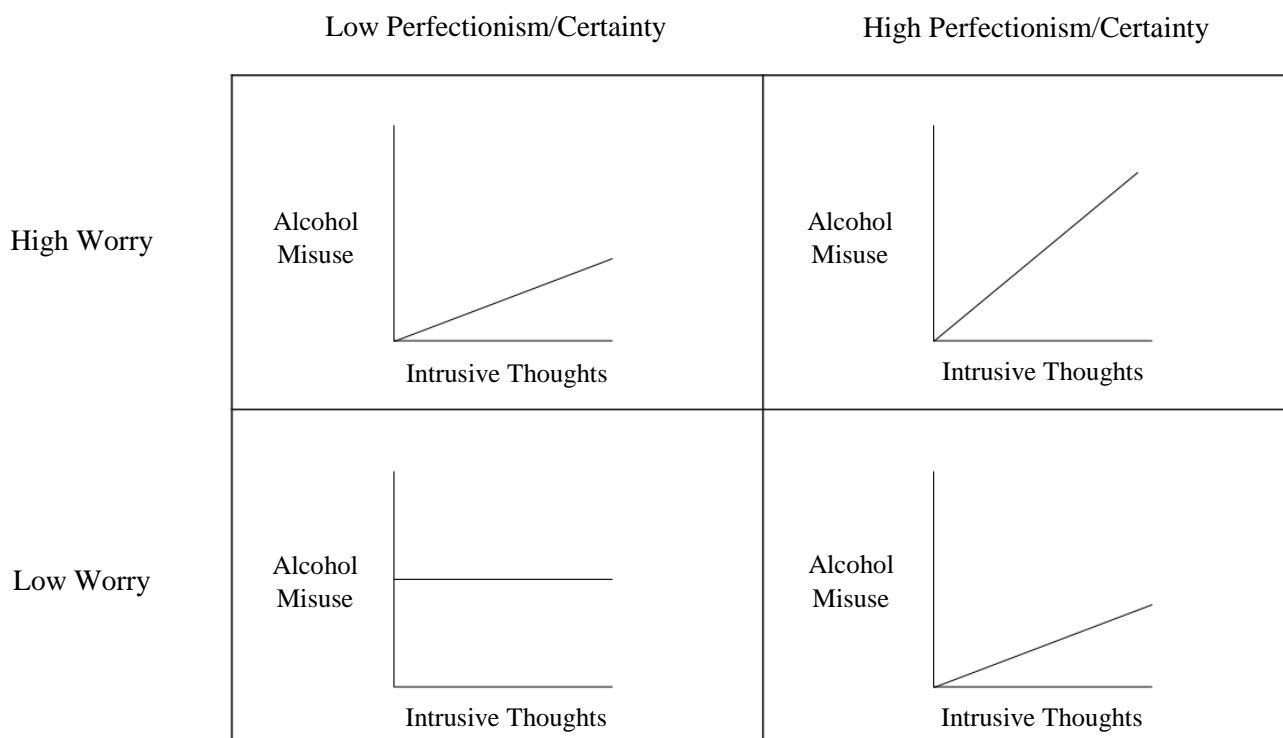
specific component of perfectionism regarding doubts about one's own actions than individuals without OCD are (Antony et al., 1998). Bouchard and colleagues (1999) found that people with high levels of perfectionism considered themselves more responsible for possible negative consequences and harm than people with moderate levels of perfectionism, indicating that perfectionism is related to responsibility beliefs.

Intolerance of uncertainty (IU) is a characteristic that is common across multiple psychiatric disorders, especially anxiety disorders (Holaway et al., 2006). IU refers to a cognitive bias that affects an individual's perception of uncertainty (Norr et al., 2013). Individuals who are intolerant of uncertainty react negatively to ambiguous situations by perceiving the situations as more threatening, taking longer to make decisions about the situations, and being less confident about those decisions (Birrell et al., 2011).

People with OCD, especially those with checking compulsions, commonly demonstrate levels of IU (OCCWG, 1997; Sarawgi et al., 2013; Tolin et al., 2003). Lind and Boschen (2009) also concluded that IU mediated the relationship between an individual's perceived responsibility and their checking behaviors. In an undergraduate sample, IU was found to mediate the relationship between perfectionism and obsessive-compulsive symptoms (Reuther et al., 2013).

I expect that, for people with high levels of intolerance of uncertainty of perfectionism, the relationship between intrusive thoughts and worry or punishment responses will increase because they will be more distressed by intrusive thoughts, which will lead to more worry and punishment responses if they feel the need for certainty or perfection.

Hypothesis 4. Hypothesis 4 involves perfectionism and intolerance of uncertainty obsessive beliefs. In the fourth hypothesis, perfectionism and intolerance of uncertainty are expected to act as a moderator to the moderation between intrusive thoughts, worry response to thought control failure, and alcohol misuse that was established in Hypothesis 1. At low levels of perfectionism and worry, I expect no correlation between intrusive thoughts and alcohol misuse. I expect a strong correlation between intrusive thoughts and alcohol misuse at high levels of perfectionism and intolerance of uncertainty or high levels of worry. With high levels of both worry and perfectionism, I expect a stronger effect (see Figure 6). Because Jacoby and colleagues (2016) found that people who used worry as a thought control strategy were significantly more likely to indicate higher levels of perfectionism and intolerance of uncertainty than people who did not use worry as a thought control strategy, I expect a strong synergistic effect of worry strategies and perfectionism.

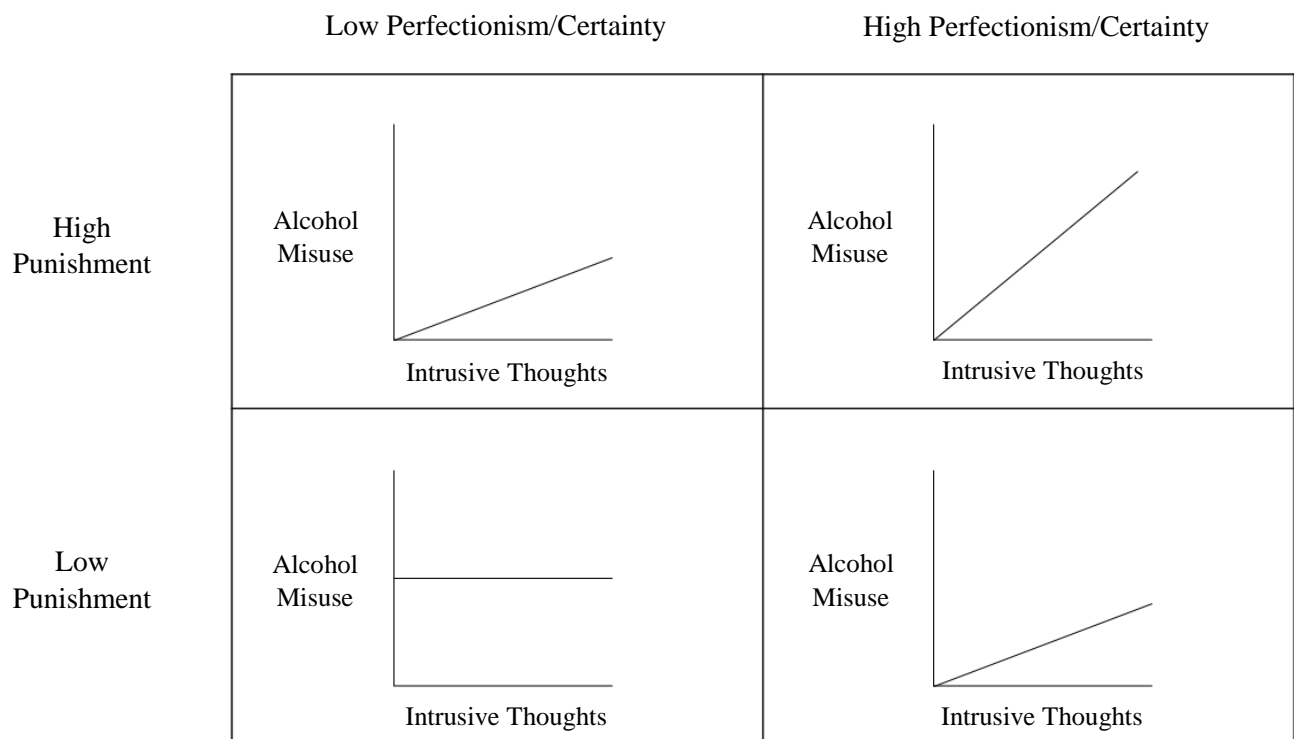
Figure 6*Hypothesis 4 Expected Results*

Hypothesis 5. As established in Hypothesis 1, intrusive thoughts are expected to relate to alcohol misuse only when punishment responses are high. Hypothesis 5 is that perfectionism is expected to moderate this relationship. There is expected to be a weak positive correlation between intrusive thoughts and alcohol misuse when either punishment responses or perfectionism and intolerance of uncertainty is high and the other is low. When both are high, there is expected to be a stronger positive relationship (see Figure 7). However, this moderation

is anticipated to be small because of Jacoby and colleagues' (2016) findings that individuals with high levels of perfectionism and intolerance of uncertainty were only slightly more likely to demonstrate punishment responses to thoughts.

Figure 7

Hypothesis 5 Expected Results



Importance and Control of Thoughts

Metacognitive beliefs, thoughts about thoughts, are frequently studied with regards to OCD (Rees & Anderson, 2013). A type of therapy for OCD based on a metacognitive model has been shown to be effective in some cases (Fisher & Wells, 2008; Rees & van Koesveld, 2008). The metacognitive factor cognitive self-consciousness, defined as the tendency to monitor and focus on thoughts, was able to differentiate between people with OCD, people with another anxiety disorder, and non-clinical groups (Janeck et al., 2003).

A main component of obsessive beliefs is the belief that thoughts have consequences in reality (OCCWG, 1997). Thought action fusion (TAF) is a related cognitive bias that involves an individual placing too much importance on their intrusive thoughts (Shafran & Rachman, 2004). The two types of TAF are likelihood TAF and moral TAF (Shafran et al., 1996). Likelihood TAF is the belief that having a thought about an event makes that event more likely to occur. Moral TAF is the belief that having an immoral thought is as bad as acting on the thought (Shafran et al., 1996).

People with OCD have higher levels of TAF than non-clinical populations (Shafran et al., 1996), and TAF helps distinguish between obsessions and the pathological worry found in anxiety disorders (Coles et al., 2001). However, some research suggests that people with non-OCD anxiety disorders have significant levels of TAF as well, suggesting that it is not exclusive to OCD (Cougale & Lee, 2014; Rassin et al., 2001). Putting all the obsessive beliefs from the cognitive model of OCD together, it stands to reason that a person with an inflated sense of responsibility who believes their thoughts have consequences in reality would feel an obligation to prevent their thoughts from hurting others (Salkovskis, 1985; OCCWG, 1997). Accordingly,

individuals with OCD often feel the need to control their intrusive thoughts (Clark, 2004; OCCWG, 1997).

The presence of OCD symptoms in an individual is associated with a perceived lower ability to control thoughts and an actual deficit in the ability to suppress thoughts (Grisham & Williams, 2009; Tolin, Abramowitz, Przeworski, & Foa, 2002). Tolin and colleagues (2006) found that, after controlling for trait anxiety and depression, individuals with OCD and individuals with other anxiety disorders only differed from each other in terms of control of thoughts, instead of another kind of obsessive belief.

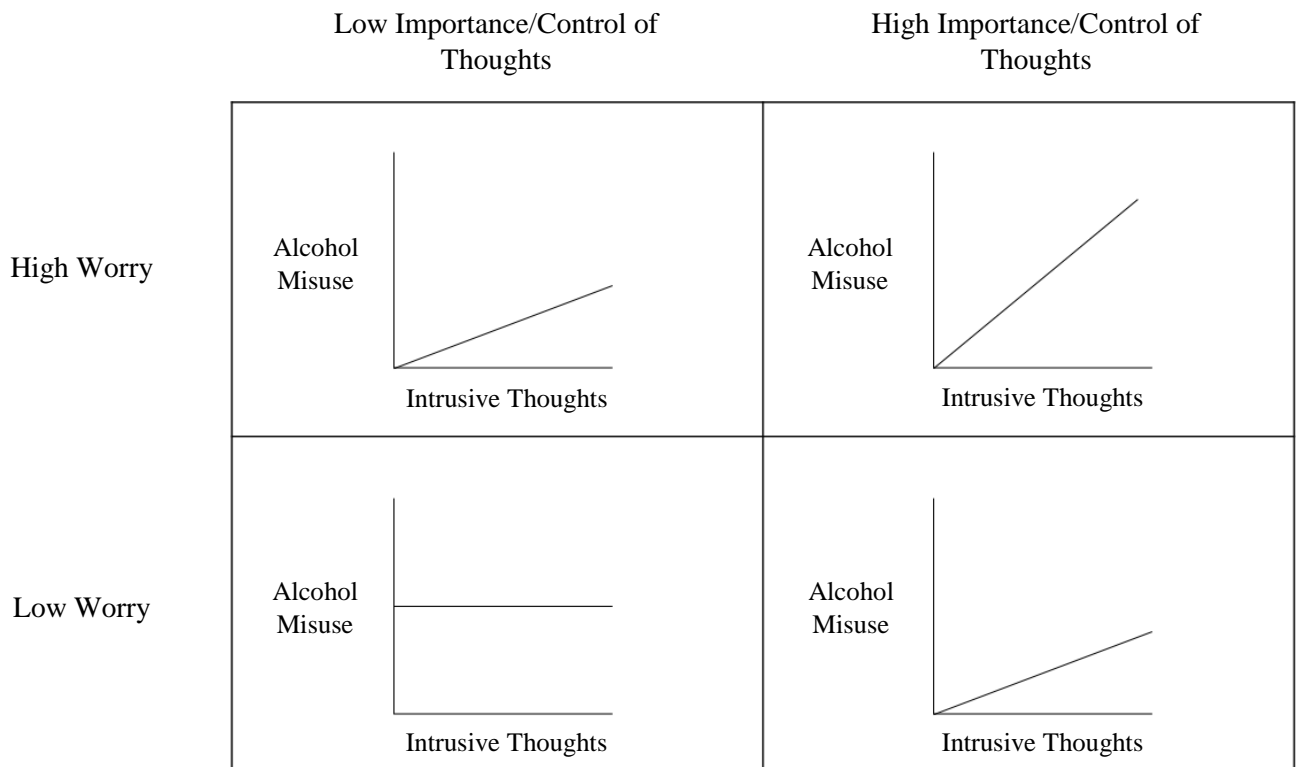
Rassin and colleagues (2000), theorized that it was more likely that TAF leads to thought suppression, which in turn leads to obsessive symptoms, than both TAF and thought suppression contributing to obsessive symptoms independently. For participants who place excessive importance on thoughts and the need to control them, I expect the relationship between intrusive thoughts and worry or punishment responses to them will increase because more frequent intrusive thoughts will lead to more maladaptive responses to thoughts if they also endorse TAF or other maladaptive metacognitive beliefs.

Hypothesis 6. Hypothesis 6 focuses on beliefs about the importance of thoughts and the need to control them. According to Hypothesis 1, worry responses to thoughts will moderate the relationship between intrusive thoughts and alcohol misuse. Hypothesis 6 states that obsessive beliefs regarding the importance of and need to control intrusive thoughts will moderate this relationship. At lower levels of beliefs about the importance of thoughts but higher levels of worry, there is anticipated to be a weak positive correlation between alcohol misuse and intrusive thoughts. The opposite, lower levels of worry but higher levels of importance of thoughts, is also expected to lead to a weak positive correlation between alcohol and intrusive thoughts. Higher

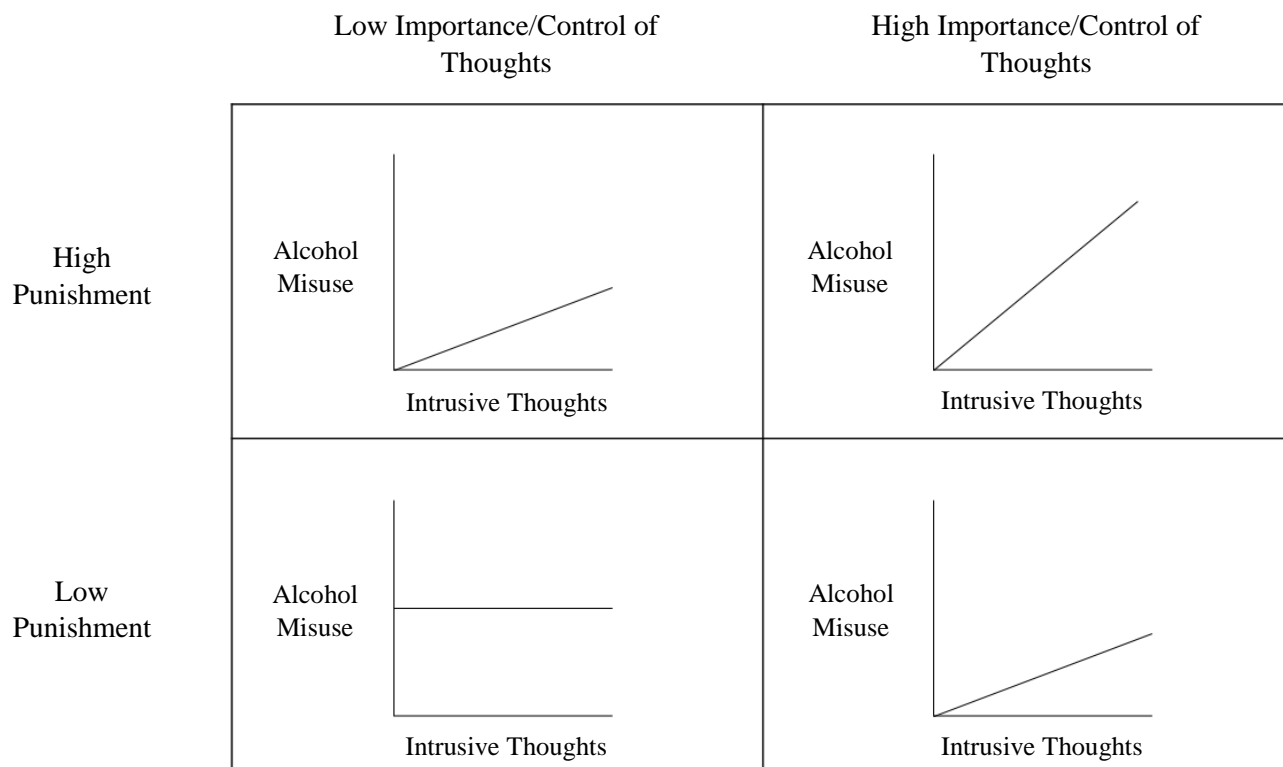
levels of both worry and importance of thoughts are expected to lead to a stronger relationship between alcohol misuse and intrusive thoughts (see Figure 8).

Figure 8

Hypothesis 6 Expected Results



Hypothesis 7. Hypothesis 7 states that the relationship between intrusive thoughts and alcohol misuse through punishment responses that was established in Hypothesis 1 will be moderated by overimportance of thoughts. At low levels of importance of thoughts and need to control them and punishment responses, I expect to see no correlation between alcohol misuse and intrusive thoughts. With participants who are high on importance of thoughts or punishment responses, there is expected to be a weak positive correlation between alcohol and intrusive thoughts. If both control of thoughts and punishment responses are high, I expect to see a strong positive correlation (see Figure 9).

Figure 9*Hypothesis 7 Expected Results*

Hypothesis 7 is expected to have the strongest coefficient out of the coefficients produced by Hypotheses 2 to 7. This is based off the findings of Jacoby and colleagues (2016) that the strongest correlation between subscales of the Obsessive Beliefs Questionnaire-44 (OBQ-44) and Thought Control Questionnaire (TCQ) was between the importance/control of thoughts (ICT) and punishment subscales, and Ólafsson and colleagues' (2014) findings that ICT was the OBQ-44 subscale most strongly associated with discomfort caused by intrusive thoughts.

SUMMARY

The current study focuses on whether alcohol misuse can be predicted from intrusive thoughts through the use of maladaptive thought control strategies. Alcohol misuse is a prevalent problem with serious consequences that is exacerbated when individuals drink alcohol to cope with distressing emotions and situations. Intrusive thoughts, also called obsessive thoughts, are upsetting thoughts, images, or impulses that interrupt normal thoughts. Although almost everyone experiences intrusive thoughts, they are especially problematic with psychological disorders.

For example, individuals with substance use problems also experience intrusive thoughts, frequently in the form of cravings. Individuals with obsessive-compulsive symptoms are also more likely to interpret intrusive thoughts as dangerous and attempt to control them. Thought control is a reaction to unwanted thoughts that is usually ineffective. In both individuals with obsessive-compulsive symptoms and individuals who misuse alcohol, attempting to control thoughts leads to making the thoughts more salient, causing the individual to become distressed.

Some thought control strategies and reactions to failed thought control are more adaptive than others. Using mindfulness, for example, to accept the thoughts and reduce their importance is associated with less distress caused by intrusive thoughts and fewer attempts to avoid them (Bowen et al., 2007; Wahl, et al., 2013). However, the use of worry and punishment strategies is considered maladaptive and does not reduce distress.

Clark (2004) created the cognitive control model, which the current study's model is based on. In Clark's model, attempts at thought suppression always fail. If the individual interprets this failure in an adaptive way, then their distress leaves. If they interpret it in a

maladaptive way, then they become more distressed. This study's model is that if thought control failure is interpreted through the maladaptive strategies of worry or punishment, the individual will stay distressed, which will then lead to alcohol misuse to lessen the distress. However, intrusive thoughts will only lead to attempts at thought control if the individual also endorses common obsessive beliefs.

Obsessive beliefs are considered integral to OCD. Most cognitive theories of OCD posit that obsessive beliefs cause an individual to misinterpret intrusive thoughts, which causes distress. The OCCWG (2005) identified three groups of obsessive beliefs: responsibility/threat overestimation, perfectionism/intolerance of uncertainty, and importance and control of thoughts. These three groups they identified are hypothesized to lead to thought control attempts.

CHAPTER 2

METHODS

PARTICIPANTS

Because the prevalence rate of OCD in the US is 1.1-1.8% (APA, 2013), this sample most likely did not have a high rate of individuals diagnosed with OCD. However, a study by Gibbs (1996) found that nonclinical samples can be used for research about obsessive beliefs because there is an estimated 1.1-19% prevalence rate for subthreshold OCD in the general population. In addition, obsessive beliefs of nonclinical and clinical samples are similar in content, with the main difference being how upsetting the individual finds the beliefs. Thus, a college sample was anticipated to be diverse enough to have internal and external validity. Therefore, participants were an undergraduate student sample recruited through SONA systems and student announcements at Old Dominion University. A college sample was chosen due to higher rates of alcohol misuse than in the general population (Slutske, 2005).

Out of the participants who began the survey ($n = 228$), only participants who were over the age of 18, had consumed alcohol in the past 30 days, and consented to take to study were allowed to participate (26 participants removed, $n = 202$). In addition, participants who took less than 90 seconds to complete the survey, had >10% data missing, or failed both attention checks were discarded (16 participants removed, final $n = 186$).

After using SPSS's multiple imputation function to impute missing data, the average age was 23.92 ($SD = 6.776$, $Mdn = 21.00$). 137 participants (73.7%) described themselves as women, 46 (24.7%) described themselves as men, 2 (1.1%) described themselves as gender queer/non-conforming, and 2 participants (1.1%) identified as nonbinary. Class distribution among

participants was fairly equal. 37 participants (19.9%) were freshmen, 40 (21.5%) were sophomores, 46 (24.7%) were juniors, and 56 participants (30.1%) were seniors; seven participants (3.8%) were graduate students. 158 individuals (84.9%) did not identify as Hispanic, Latino, or of Spanish origin. Of those that did, 10 (5.4%) were Mexican or Mexican American, 2 (1.1%) were Cuban, 6 (3.2%) were Puerto Rican, and 9 (4.8%) were other. 55 participants (29.6%) endorsed African-American or Black, 5 (2.7%) said Asian or Pacific Islander, 113 (60.8%) said White, 4 (2.2%) selected Native American, and 9 participants (4.8%) said Other. Complete demographics are displayed in Table 1.

Statistical Power

To calculate the number of participants needed to find the desired effect, I used the G*Power 3.1 software (Faul et al., 2009). Because I am looking for the effects of a three-way interaction, I have 8 predictors. I expected that the three-way effect would be small, so I indicated that my r^2 would be 0.02. I set the alpha to 0.05 and the power to 0.80. G*Power calculated that the sample size I needed was at least 395. However, I was unable to achieve that sample size.

PROCEDURES

IRB exempt status was obtained prior to conducting the study. Participants were given a link to a notification statement to read and agree to before completing self-report measures. They were informed that they could withdraw from the study at any time with no penalty and were free to skip any questions. They were also be asked if they had consumed alcohol in the past 30 days. If they indicated they had not had alcohol in the past 30 days, they were excluded from the

study. Demographics were collected through a short questionnaire asking participants for their age, gender identity, sex, race, sexual orientation, marital status, and year in school.

After completing all the measures, participants were given an option of either receiving research credit or being entered into a raffle to win one of two \$25 Amazon gift cards. The data are completely anonymous. If they chose to be entered into the raffle, participants were taken to a separate questionnaire that asked them for their email address. After collecting all my data, I used a random number generator to choose two random email addresses to send the gift cards to. The email addresses were not connected to participants' answers.

MEASURES

Intrusive Thoughts

The White Bear Suppression Inventory (WBSI) is a 15-item measure that was used to measure the frequency of intrusive thoughts (Wegner & Zanakos, 1994). Although the WBSI was designed to have one factor, subsequent studies have found mixed results about the number of factors. While some studies confirmed the one-factor structure (Palm & Strong, 2007; Spinhoven & van der Does, 1999), others found that a two-factor structure fit the scale better (Höping & de Jong-Meyer, 2003; Luciano et al., 2006; Schmidt et al., 2009), usually identified as the tendency to suppress intrusive thoughts and the frequency of intrusive thoughts.

As outlined by Höping and de Jong-Meyer (2003), I split the WBSI into two factors. Items 2, 3, 4, 5, 6, 7, 9, 12, and 15 make up the unwanted intrusive thoughts factor and the other 6 items make up the thought suppression factor. For the current study, only the unwanted intrusive thoughts factor was used. An example of the unwanted intrusive thoughts factor is “1

have thoughts that I cannot stop.” All items are scored on a Likert-type scale from 1 to 5 (1 = *strongly disagree*, 5 = *strongly agree*).

The WBSI is associated with obsessive thoughts, depression, and anxiety (Luciano et al., 2006; Wegner & Zanakos, 1994). Wegner and Zanakos (1994) determined that the test had good psychometric properties because multiple administrations of the test yielded Cronbach’s alphas of 0.87 to 0.89. Rassin (2003) and Palm and Strong (2007) both found alpha coefficients of 0.88 for the total test. Höping and de Jong-Meyer (2003) did not report reliability for their identified factors. In addition, although Watkins and Moulds (2009) and Pettit and colleagues (2009) both used the factor structure described by Höping and de Jong-Meyer (2003), neither study reported reliability for both subscales. Pettit and colleagues (2009) reported a Cronbach’s alpha of 0.83 for the thought suppression factor. Muris and colleagues (1996) observed that individuals with high scores on the WBSI demonstrated greater distress caused by intrusive thoughts and greater frequency of intrusive thoughts during a thought suppression exercise, indicating that the WBSI has strong validity. In this sample, reliability was high with $\alpha = .92$.

Types of Obsessive Beliefs

Participants’ obsessive beliefs were measured using the Obsessive Beliefs Questionnaire-44 (OBQ-44), a shortened form of the original Obsessive Beliefs Questionnaire (OCCWG, 2005). The OBQ-44 has 44 items on a Likert scale from 1 to 7 (1 = *Disagree very much*, 7 = *Agree very much*) that evaluate how much the participant agrees with a particular belief. The items are split into 3 subscales: Responsibility/Threat estimation (RT), Perfectionism/Certainty (PC), and Importance/Control of Thoughts (ICT).

Examples of items on the RT subscale include “Even if harm is very unlikely, I should try to prevent it at any cost” and “Harmful events will happen unless I am very careful.”

Examples of the PC subscale are “In order to be a worthwhile person, I must be perfect at everything I do” and “It is essential for everything to be clear cut, even in minor matters.” Items on the ICT subscale include “For me, having bad urges is as bad as actually carrying them out” and “I should not have bizarre or disgusting thoughts.”

Cronbach’s α was high for all three subscales; the RT and PC subscales both had a coefficient of .93, ICT had .89, and OBQ-44 total score was .95 (OCCWG, 2005). The current sample also showed good reliability, with Cronbach’s $\alpha = .94$ for the entire scale. The RT subscale had $\alpha = .86$, the PC subscale had $\alpha = .91$, and the ICT subscale had $\alpha = .88$. Regarding validity, participants with OCD were shown to score significantly higher than participants with non-OCD anxiety on the RT and ICT subscales, but not the PC subscale. Further, participants with non-OCD anxiety and OCD scored significantly higher than student controls and community controls (OCCWG, 2005).

The OBQ-44 has been used in research on non-clinical and college populations (Abramowitz et al., 2009; Wu et al., 2009; Yarbrow et al., 2013). Wu and colleagues (2009) found that undergraduates had an average total OBQ-44 score of 135.28. Abramowitz and colleagues (2009) compared undergraduates with high levels of OC symptoms to undergraduates with low levels of OC symptoms. Their scores on the OBQ-44 differed significantly from each other. The average RT score was 64.48 for high-OC participants and 52.26 for low-OC participants. High-OC people totaled an average of 36.31 on the ICT scale, compared to the low-OCs’ 28.36. Finally, high-OC participants had an average total on the PC scale of 67.05, compared to the low-OC average total of 55.40.

Maladaptive Responses to Thoughts

Participants' maladaptive responses to intrusive thoughts were measured using the Thought Control Questionnaire (TCQ) developed by Wells and Davies (1994). The TCQ is a 25-item Likert-type questionnaire with 5 subscales grouped by type of thought control strategy. Items are rated 1 to 4 (1 = *never*, 4 = *almost always*) based on how often the respondents use a particular thought control strategy. The 5 subscales are distraction (e.g., "I keep myself busy"), social (e.g., "I ask my friends if they have similar thoughts"), worry (e.g., "I worry about more minor things instead"), punishment (e.g., "I get angry at myself for having the thought"), and re-appraisal (e.g., "I try to reinterpret the thought").

The punishment and worry subscales are the most maladaptive and both are correlated with measures of OCD (Eremsoy & Inozu, 2016; Jacoby et al., 2016) and thought control (Luciano et al., 2006). The punishment subscale is more strongly associated with OCD cognitions than the worry subscale (Moore & Abramowitz, 2007). Because this research examines prediction of maladaptive responses, only the worry and punishment subscales will be used in the current study.

The reliability in the original study (Wells & Davies, 1994) was fair. Cronbach's alpha was 0.71 for the worry subscale and 0.64 for the punishment subscale. Test-retest reliability was 0.67 for punishment and 0.72 for worry. Further research has found slightly higher internal consistency, such as Jacoby and colleagues (2016), who found a Cronbach's alpha of 0.84 for the total scale and subscale alphas that ranged from 0.70 to 0.83, and Luciano and colleagues (2006), who found Cronbach's alphas for each subscale that ranged from 0.70 to 0.85. The reliability of the current sample was acceptable, with the worry subscale's $\alpha = .87$, and the punishment subscale's $\alpha = .81$. The total reliability for both subscales was $\alpha = .90$.

Like the OBQ-44, the TCQ has been studied in college samples and non-clinical populations (Morrison et al., 2000; Newman Taylor et al., 2009; Sica et al., 2007). Newman Taylor and colleagues (2009) found that a non-clinical sample had mean scores of 14.6 on the distraction subscale, 12.4 on the social scale, 8.5 for worry, 9.3 on punishment, and 13.7 for the re-appraisal factor. Sica and colleagues (2007) found similar scores in a college undergraduate sample.

Alcohol Misuse

Alcohol misuse was measured using the Alcohol Use Disorders Identification Test (AUDIT), a 10-item questionnaire developed by Saunders and colleagues (1993). According to Devos-Comby and Lange (2008), the AUDIT is the most common measure used to assess alcohol-related problems in a college sample. The AUDIT contains three items regarding alcohol consumption, three items about alcohol dependence, and four items about alcohol-related problems including adverse reactions. The first item, “How often do you have a drink containing alcohol?”, is scored 0 to 4 (0 = *never*, 4 = *4+ times a week*). The second item, “How many drinks containing alcohol do you have on a typical day when you are drinking?”, is scored on a 0 to 4 scale (0 = *1 or 2*, 4 = *10 or more*).

Items three through eight include “How often during the last year have you found that you were not able to stop drinking once you had started?” and “How often during the last year have you had a feeling of guilt or remorse after drinking?”; these items are also scored 0 to 4 (0 = *never*, 4 = *daily or almost daily*). Finally, items nine through ten, “Have you or someone else been injured as a result of your drinking?” and “Has a relative, friend, doctor, or other health worker been concerned about your drinking or suggested that you should cut down?”,

differentiate between time periods of alcohol use on a 0-4 scale (0 = *No*, 2 = *Yes, but not in the last year*, 4 = *Yes, during the last year*).

The original study developing the AUDIT (Saunders et al., 1993) does not list reliability for the entire measure, but it does assess its sensitivity. Two cutoff points in the scores, 8 and 10, were determined to result in a high ability to identify people with problematic alcohol use. When using a cutoff point of 8, the sensitivity for hazardous alcohol consumption was 87% to 96%. Using a cutoff point of 10 resulted in a sensitivity of 80%. A review of literature on the AUDIT by Allen and colleagues (1997) found that, in studies that examined reliability, Cronbach's α ranged from 0.75-0.94. The AUDIT is frequently used in college populations (Devos-Comby & Lange, 2008). Kokotailo and colleagues (2004) found an internal reliability of 0.81 in a student sample. In their student sample, Taylor and colleagues (2013) found a similar alpha for the AUDIT of 0.83. The current sample had an alpha of .85.

Attention Checks

To account for inattentive participants, one directed query from Abbey and Meloy (2017) and one question indicated by Curran and Hauser (2019) to have a low rate of false positives were used. These attention check items were included with the regular items. The item from Abbey and Meloy (2017) is "For this query, mark 'neither agree nor disagree' and move on to the following question." The item by Curran and Hauser (2019) is "Oranges are fruit."

Following the advice of Berinsky and colleagues (2014), data from participants that fail one attention check were not discarded. The presence of the attention checks was not expected to change participants' answers (Berinsky et al., 2014; Gummer et al., 2021) or cause them to react negatively (Huang et al., 2015).

168 participants (90.3%) passed the first attention check, “Oranges are fruit”. 183 (98.4%) passed the second check, “For this query, mark ‘neither agree nor disagree’ and move on to the following question”. In total, after removing participants who missed both attention checks, 21 (11.3%) skipped or got one attention check wrong, and 165 (88.7%) got both attention checks correct. Both attention checks were chosen because of the low rates of false positives found by Curran and Hauser (2019), so it would be unlikely for attentive participants to miss both. By removing those who missed both attention checks, I felt confident that I was discarding data from participants who were not paying close enough attention to their responding.

CHAPTER 3

RESULTS

DESCRIPTIVE STATISTICS AND BIVARIATE CORRELATIONS

Descriptive statistics were computed using SPSS version 28. Means, standard deviations, and ranges of the key study variables can be found in Table 2. Multiple imputation in SPSS was used to impute missing values by generating five datasets with different possible values for each missing data point. Out of the 36 variables that had missing data, none of them were missing more than 2.2%. Age and OBQ-44 Q20 (“For me, things are not right if they are not perfect”) were missing four responses, the highest amount. 48 participants (25.8%) had a total AUDIT score ≥ 8 , indicating that they are high risk drinkers.

Normality was assessed with q-q plots, and boxplots were used to find univariate outliers. Any variables with extreme outliers were winsorized. Scatterplots were created to assess the relationship among total alcohol misuse (AUDIT) scores, intrusive thoughts (WBSI), worry and punishment thought control strategies (TCQ), worry-related thought control strategies (TCQ worry) scores, and punishment-related thought control strategies (TCQ punish) scores.

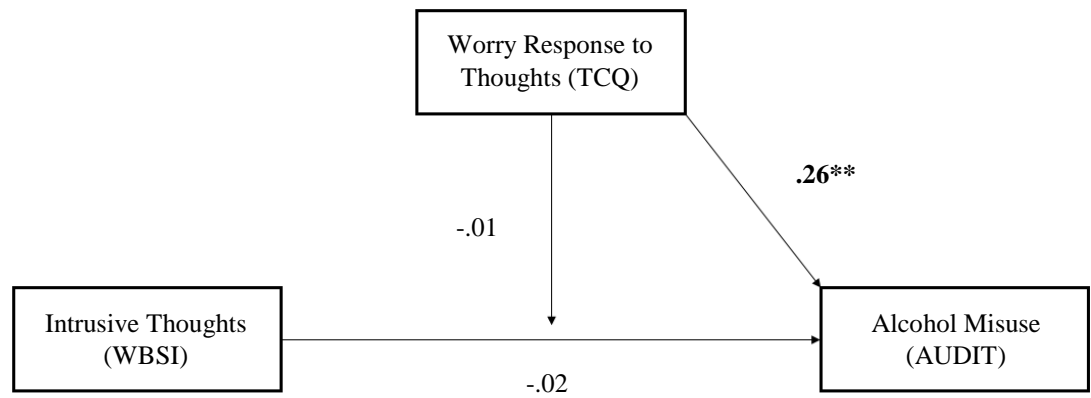
Correlations between the major study variables were assessed and are displayed in Table 3. Excluding alcohol misuse (AUDIT), all scales and subscales were significantly correlated with each other. Except for intrusive thoughts frequency (WBSI) and obsessive beliefs involving the importance and control of thoughts (OBQ-44 ICT) ($r = .193, p = .008$), all correlations that did not involve alcohol misuse and negative consequences (AUDIT) scores were significant at the 0.001 level. Alcohol misuse (AUDIT) was significantly correlated with total level of obsessive beliefs (OBQ-44) ($r = .213, p = .003$), obsessive beliefs involving responsibility and threat

estimation (OBQ-44 RT) ($r = .206, p = .005$), perfectionism and intolerance of uncertainty (OBQ-44 PC) ($r = .148, p = .044$), importance and control of thoughts beliefs (OBQ-44 ICT) ($r = .182, p = .013$), total thought control strategies (TCQ) ($r = .185, p = .011$), and worry thought control strategies (TCQ worry) ($r = .247, p < .001$).

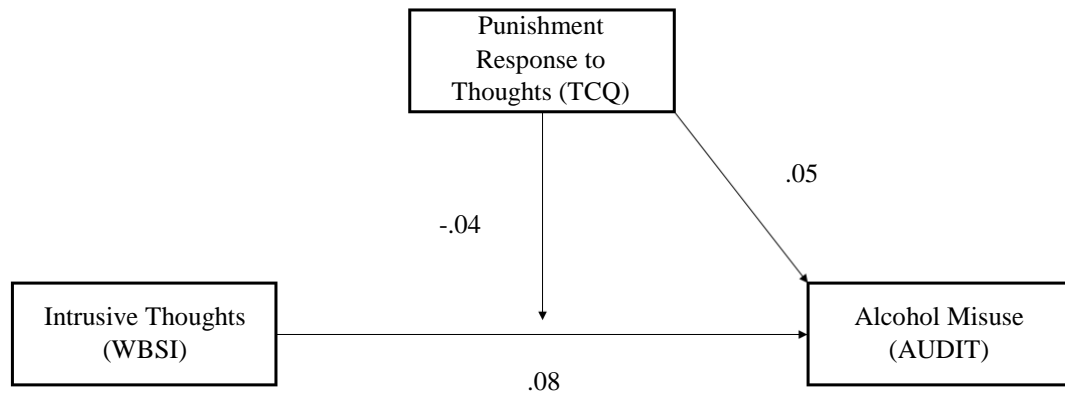
The strongest correlation between TCQ and OBQ-44 subscales was between the TCQ worry subscale and the OBQ-44 perfectionism/certainty (PC) subscale ($r = .478, p < .001$). The weakest correlation was between the TCQ worry subscale and the OBQ-44 ICT subscale ($r = .304, p < .001$). These results are consistent with previous research done regarding those scales (Jacoby et al., 2016; Moore & Abramowitz, 2007; Nagtegaal & Rassin, 2004).

HYPOTHESIS 1

Hypothesis 1 states that worry (TCQ worry) and punishment responses to thought control failure (TCQ punish) will moderate the relationship between intrusive thoughts (WBSI) and alcohol misuse (AUDIT). Specifically, participants with high levels of intrusive thoughts (WBSI) will only respond to those thoughts with high levels of alcohol misuse (AUDIT) if they also have increased worry strategies (TCQ worry) (see Figure 10) or punishment strategies (TCQ punish) (see Figure 11).

Figure 10*Hypothesis 1 Worry Model Results*

Note. Standardized relationships are illustrated. $^{**} p < .01$

Figure 11*Hypothesis 1 Punishment Model Results*

Note. Standardized relationships are illustrated.

Hypothesis 1 was tested through the SPSS macro PROCESS V4.1 developed by Hayes (2018) using model 1, a simple moderation model using 5,000 95% bias-corrected bootstrapped confidence intervals. Worry-related thought control strategies (TCQ worry) and intrusive thoughts levels (WBSI) were mean centered before running the analyses. The model summary was $F(3, 182) = 3.947, p = .009, R^2 = .061$, indicating that 6.1% of the variance in alcohol misuse (AUDIT) scores could be explained by the predictors.

This amount of variance is significant. The relationship between intrusive thoughts (WBSI) and alcohol use (AUDIT) when worry thought control strategies (TCQ worry) was average was not significant, $b = -0.010$, $b^* = -.017$, $t(182) = -0.193$, $p = .847$, 95% CI [-0.108, 0.083]. The relationship between worry strategies (TCQ worry) and alcohol misuse (AUDIT) when levels of intrusive thoughts (WBSI) were average was significant, $b = 0.333$, $b^* = .256$, $t(182) = 3.000$, $p = .003$, 95% CI [0.128, 0.549]. The moderation interaction was $b = -0.001$, $b^* = -0.008$, $t(182) = -0.098$, $p = .922$, 95% CI [-0.020, 0.019] (see Figure 10). As worry strategies (TCQ worry) change by one unit, the effect of the frequency of intrusive thoughts (WBSI) on problematic alcohol use (AUDIT) changes by $b = -0.001$. This is not significant.

The model of the effect of intrusive thoughts (WBSI) on alcohol misuse (AUDIT) using punishment-related strategies (TCQ punish) was not significant: $F(3, 182) = 0.854$, $p = .466$, $R^2 = .014$. The relationship between intrusive thoughts (WBSI) and alcohol abuse (AUDIT) when punishment thought control strategies (TCQ punish) was average was not significant, $b = 0.051$, $b^* = 0.081$, $t(182) = 0.939$, $p = .349$, 95% CI [-0.050, 0.140]. The effect of punishment strategies (TCQ punish) on alcohol abuse (AUDIT) when intrusive thoughts (WBSI) was average was not significant either, $b = 0.085$, $b^* = 0.054$, $t(182) = 0.591$, $p = .555$, 95% CI [-0.179, 0.395]. The interaction was also not significant, $b = -.007$, $b^* = -.040$, $t(182) = -0.493$, $p = .623$, 95% CI [-0.035, 0.017] (see Figure 11).

HYPOTHESIS 2

Hypothesis 2 was to test a potential moderator of the moderation described in Hypothesis 1. Given the expectation that worry responses to thought control failure (TCQ worry) would moderate the relationship between intrusive thoughts (WBSI) and alcohol misuse (AUDIT), Hypothesis 2 was that the positive relationship between intrusive thoughts (WBSI) and alcohol

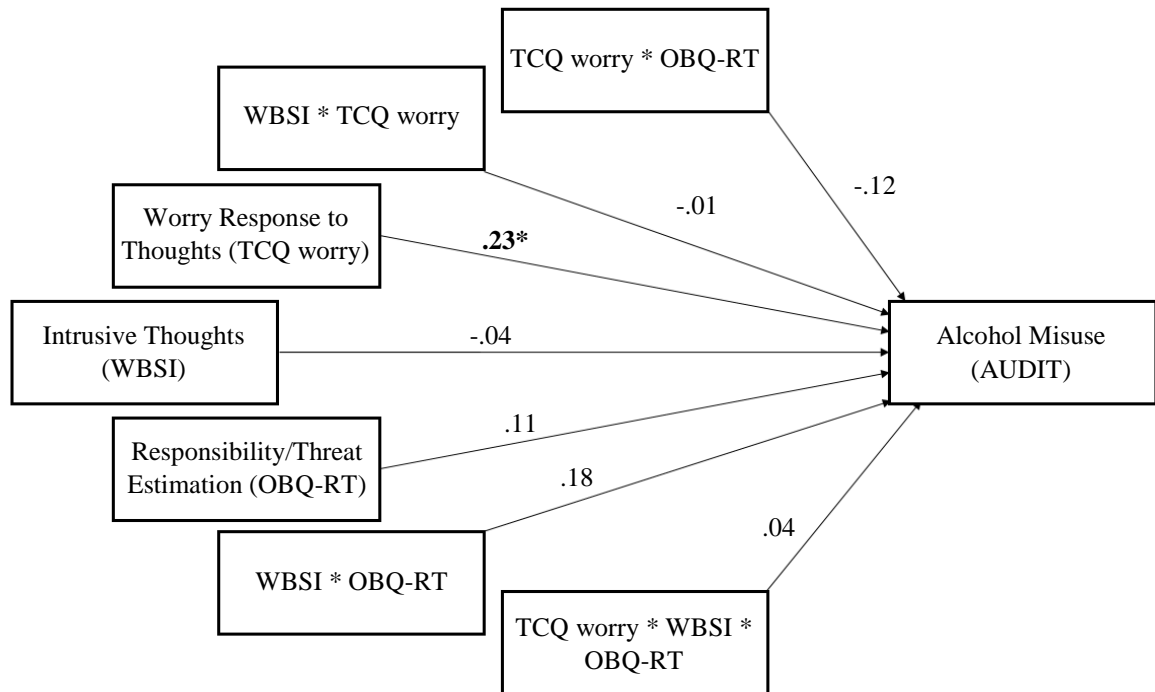
use (AUDIT) will only exist at high levels of responsibility and threat overestimation beliefs (OBQ-44 RT) or worry-related responses to thoughts (TCQ worry). At high levels of both obsessive responsibility beliefs (OBQ-44 RT) and worry responses to intrusive thoughts (TCQ worry), I expect a stronger positive correlation between alcohol misuse (AUDIT) and intrusive thoughts (WBSI) (see Figure 4).

Hypothesis 2 was tested through a moderated moderation model run by using model 3 in the PROCESS SPSS macro V4.1 (Hayes, 2018) using 5,000 95% bias-corrected bootstrapped confidence intervals. Worry strategies (TCQ worry), beliefs about responsibility/threat overestimation (OBQ-44 RT), and intrusive thoughts (WBSI) were mean-centered before analysis. The prediction for Hypothesis 2 was $F(7, 178) = 2.354, p = .025, R^2 = .085$, indicating that 8.5% of alcohol misuse's (AUDIT) variance could be explained by the model, a significant amount. Regarding main effects, when both worry strategies (TCQ worry) and responsibility and threat overestimation (OBQ-44 RT) were average, intrusive thoughts (WBSI) did not have a significant effect on problematic alcohol use (AUDIT), $b = -0.026, b^* = -.042, t(178) = -0.464, p = .644, 95\% \text{ CI } [-0.127, 0.069]$. When intrusive thoughts (WBSI) and responsibility and threat overestimation beliefs (OBQ-44 RT) were average, worry thought control strategies (TCQ worry) had a significant effect on problematic alcohol use (AUDIT), $b = 0.299, b^* = 0.230, t(178) = 2.438, p = .016, 95\% \text{ CI } [0.076, 0.542]$. Finally, when intrusive thoughts (WBSI) and levels of worry strategies (TCQ worry) were average, levels of responsibility and threat estimation (OBQ-44 RT) did not have a significant effect on problematic alcohol use (AUDIT), $b = 0.039, b^* = .112, t(178) = 1.073, p = .285, 95\% \text{ CI } [-0.040, 0.119]$.

The 2-way interaction between intrusive thoughts (WBSI) and worry-related strategies (TCQ worry) when beliefs about responsibility and threat estimation (OBQ-44 RT) was average

was non-significant, $b = -0.001$, $b^* = -0.009$, $t(178) = -0.093$, $p = .926$, 95% CI $[-0.021, 0.022]$.

The 2-way interaction between intrusive thoughts (WBSI) and responsibility and threat overestimation beliefs (OBQ-44 RT) when worry thought control strategies (TCQ worry) was average was also non-significant, $b = 0.007$, $b^* = 0.176$, $t(178) = 1.385$, $p = .168$, 95% CI $[-0.002, 0.016]$. The 2-way interaction between worry strategies (TCQ worry) and responsibility and threat overestimation (OBQ-44 RT) when intrusive thoughts (WBSI) were average was non-significant, $b = -0.010$, $b^* = -0.122$, $t(178) = -1.184$, $p = .238$, 95% CI $[-0.028, 0.007]$. Finally, the three-way interaction was not significant either, $b = 0.0004$, $b^* = 0.039$, $t(178) = 0.495$, $p = .621$, 95% CI $[-0.001, 0.002]$ (see Figure 12). The three-way interaction explains 0.1% of the variance in alcohol misuse (AUDIT) scores, $F(1, 178) = 0.245$, $p = .621$, R^2 change = .001.

Figure 12*Hypothesis 2 Statistical Model Results*

Note. Standardized relationships are illustrated. * $p < .05$

HYPOTHESIS 3

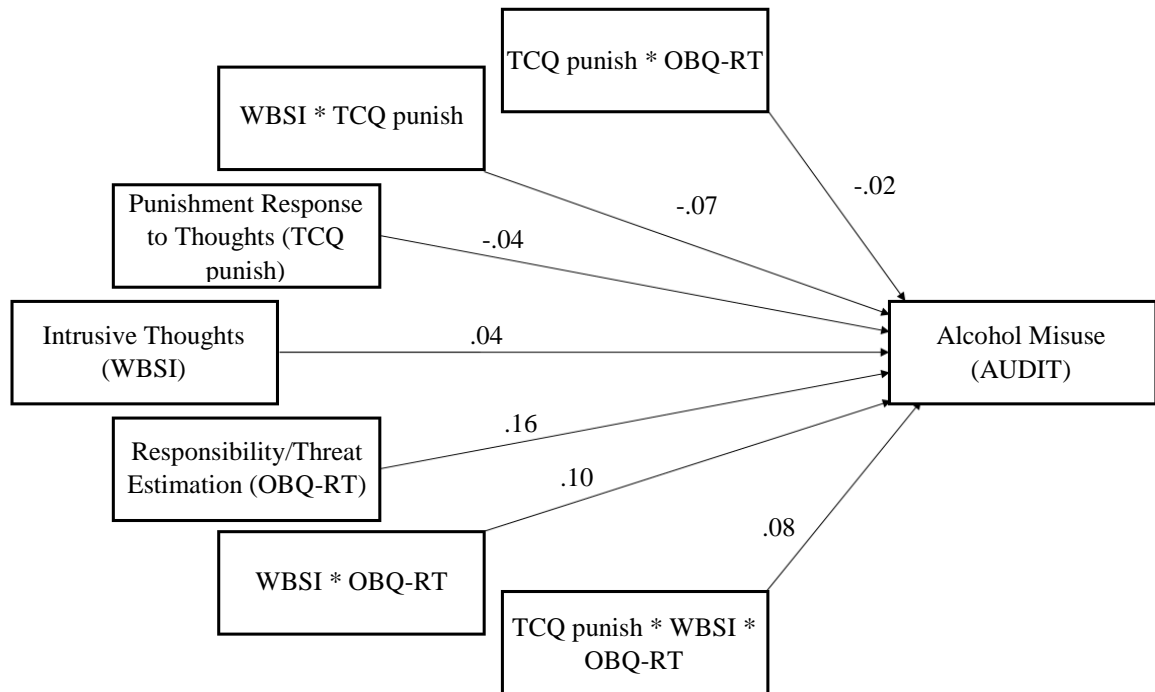
Hypothesis 3 states that inflated responsibility beliefs and the overestimation of threats (OBQ-44 RT) will moderate the moderation between intrusive thoughts (WBSI), punishment responses to thought control failure (TCQ punish), and alcohol misuse (AUDIT). Specifically, the relationship between intrusive thoughts (WBSI) and alcohol misuse (AUDIT) will be the

strongest if people experience high levels of inflated responsibility beliefs and the overestimation of threats (OBQ-44 RT) as well as punishment responses (TCQ punish) (see Figure 5).

Hypothesis 3 was tested through a moderated moderation model run by using model 3 in the PROCESS SPSS macro V4.1 (Hayes, 2018) using 5,000 95% bias-corrected bootstrapped confidence intervals. Frequency of punishment responses to thought control failure (TCQ punish), responsibility and threat overestimation (OBQ-44 RT), and intrusive thoughts (WBSI) were mean centered before analysis. The model generated the main three-way interaction effect as well as the two-way interaction effects. Had the three-way interaction been significant, I would have also probed the interaction to find the effect of intrusive thoughts (WBSI) and responsibility and threat estimation beliefs (OBQ-44 RT) at different levels of punishment thought control strategies (TCQ punish).

The model of Hypothesis 3 was not supported, $F(7, 178) = 1.439, p = .192, R^2 = .054$. The effect of intrusive thoughts (WBSI) on problematic alcohol use (AUDIT) when obsessive beliefs involving responsibility and threat estimation (OBQ-44 RT) and punishment strategies (TCQ punish) were average was non-significant, $b = 0.024, b^* = 0.039, t(178) = 0.417, p = .677$, 95% CI [-0.082, 0.121]. The frequency of punishment thought control strategies (TCQ punish) did not have a significant effect on alcohol misuse (AUDIT) when intrusive thoughts frequency (WBSI) and obsessive beliefs involving responsibility and threat estimation (OBQ-44 RT) were average, $b = -0.062, b^* = -0.039, t(178) = -0.377, p = .707$, 95% CI [-0.336, 0.263]. When intrusive thoughts (WBSI) and punishment strategies (TCQ punish) were average, responsibility and threat overestimation (OBQ-44 RT) did not have a significant effect on alcohol abuse (AUDIT), $b = 0.057, b^* = 0.162, t(178) = 1.599, p = .112$, 95% CI [-0.016, 0.131].

The 2-way interaction between intrusive thoughts (WBSI) and punishment-related strategies (TCQ punish) when responsibility and threat estimation beliefs (OBQ-44 RT) was average was non-significant $b = -0.012$, $b^* = -0.068$, $t(178) = -0.735$, $p = .464$, 95% CI [-0.040, 0.012]. When punishment strategies frequency (TCQ punish) was average, the 2-way interaction between amount of intrusive thoughts (WBSI) and responsibility and threat estimation obsessive beliefs (OBQ-44 RT) was non-significant $b = 0.004$, $b^* = 0.104$, $t(178) = 0.964$, $p = .336$, 95% CI [-0.003, 0.011]. The 2-way interaction between frequency of punishment thought control strategies (TCQ punish) and the intensity of responsibility and threat estimation obsessive beliefs (OBQ-44 RT) was when the frequency of intrusive thoughts (WBSI) was average was non-significant, $b = -0.002$, $b^* = -0.018$, $t(178) = -0.178$, $p = .859$, 95% CI [-0.024, 0.019]. Finally, the three-way interaction was not significant either, $b = 0.001$, $b^* = 0.076$, $t(178) = 0.798$, $p = .426$, 95% CI [-0.001, 0.003] (see Figure 13). The three-way interaction explains 0.3% of the variance in alcohol misuse (AUDIT), $F(1, 178) = 0.637$, $p = .426$, R^2 change = .003.

Figure 13*Hypothesis 3 Statistical Model Results*

Note. Standardized relationships are illustrated.

HYPOTHESIS 4

Hypothesis 4 involves perfectionism and intolerance of uncertainty obsessive beliefs. Perfectionism and intolerance of uncertainty (OBQ-44 PC) were expected to act as a moderator to the moderation between intrusive thoughts (WBSI), worry response to thought control failure (TCQ worry), and alcohol misuse (AUDIT) that was expected to have been established in

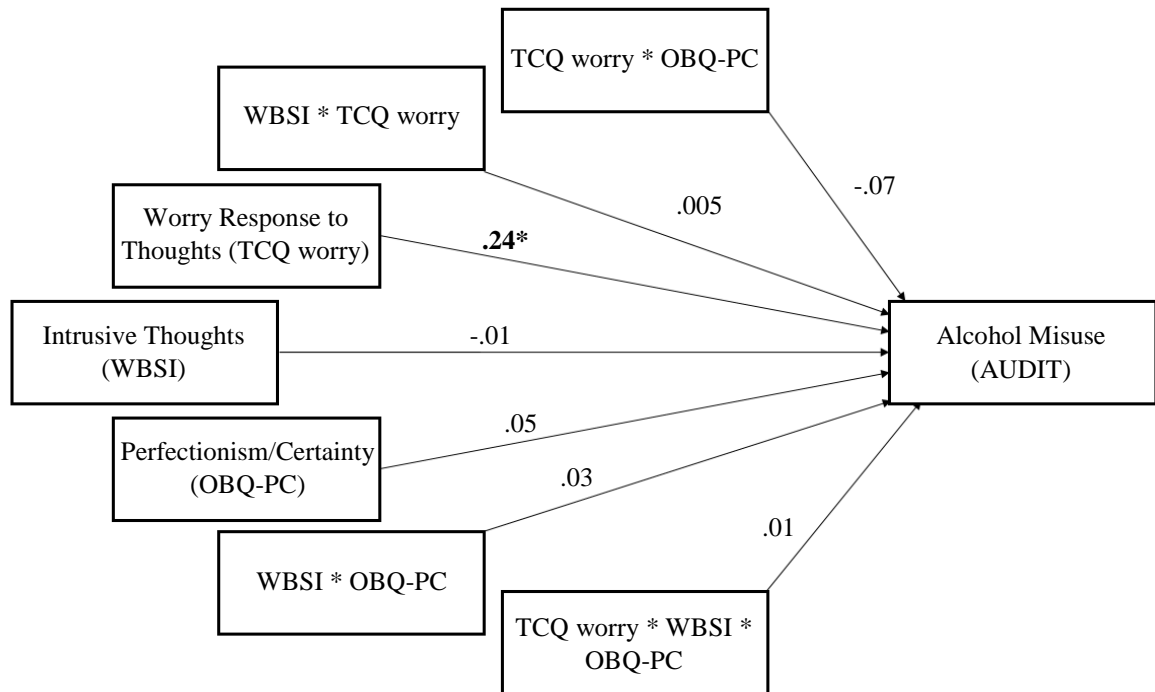
Hypothesis 1. At low levels of both perfectionism (OBQ-44 PC) and worry (TCQ worry), I expect to see a low correlation between intrusive thoughts (WBSI) and alcohol use (AUDIT). At high levels of perfectionism (OBQ-44 PC) or worry (TCQ worry) but low levels of the other factor, I expect to see a high, positive correlation between intrusive thoughts (WBSI) and alcohol use (AUDIT). High levels of both factors are expected to result in a stronger positive relationship between intrusive thoughts (WBSI) and alcohol (AUDIT) (see Figure 6). Because Jacoby and colleagues (2016) found that worry as a thought control strategy (TCQ worry) was strongly associated with perfectionism and intolerance of uncertainty (OBQ-44 PC), this three-way interaction coefficient is expected to be high.

To test this hypothesis, I ran model 3, a moderated moderation model, in the PROCESS SPSS macro V4.1 (Hayes, 2018) using 5,000 95% bias-corrected bootstrapped confidence intervals. Use of worry thought control strategies (TCQ worry), perfectionism and intolerance of uncertainty (OBQ-44 PC), and intrusive thoughts (WBSI) were mean centered before analysis. The model generated the main three-way interaction effect of level of intrusive thoughts (WBSI), perfectionism and intolerance of uncertainty (OBQ-44 PC), and worry strategies (TCQ worry) as well as the two-way interaction effects. If the three-way interaction had been significant, the model would have also probed the interaction to find the effect of intrusive thoughts (WBSI) and perfectionism and intolerance of uncertainty (OBQ-44 PC) at different levels of worry strategies (TCQ worry).

Hypothesis 4's model was non-significant, $F(7, 178) = 1.779, p = .094, R^2 = .065$. Frequency of intrusive thoughts (WBSI) did not significantly affect problematic alcohol use (AUDIT) when levels of perfectionism and intolerance of uncertainty (OBQ-44 PC) and worry strategies usage (TCQ worry) were average, $b = -0.007, b^* = -0.011, t(178) = -0.123, p = .903$,

95% CI [-0.113, 0.095]. Frequency of thought control strategies involving worry (TCQ worry) did significantly affect amount of problematic alcohol use (AUDIT) when intrusive thoughts (WBSI) and perfectionism and intolerance of uncertainty (OBQ-44 PC) were average, $b = 0.315$, $b^* = 0.242$, $t(178) = 2.524$, $p = .013$, 95% CI [0.068, 0.576]. Beliefs about perfectionism and certainty (OBQ-44 PC) did not have a significant effect on alcohol misuse (AUDIT) when worry strategies levels (TCQ worry) and intrusive thoughts (WBSI) were average, $b = 0.014$, $b^* = 0.046$, $t(178) = 0.499$, $p = .619$, 95% CI [-0.047, 0.079].

The 2-way interaction between intrusive thoughts (WBSI) and worry thought control strategies (TCQ worry) was non-significant when perfectionism and intolerance of uncertainty (OBQ-44 PC) was average, $b = 0.001$, $b^* = 0.005$, $t(178) = 0.053$, $p = .958$, 95% CI [-0.021, 0.026]. Levels of intrusive thoughts (WBSI) and perfectionism and intolerance of uncertainty (OBQ-44 PC) did not significantly interact when worry strategies (TCQ worry) were average, $b = 0.001$, $b^* = 0.035$, $t(178) = 0.299$, $p = .766$, 95% CI [-0.008, 0.009]. Worry strategies (TCQ worry) and obsessive beliefs regarding perfectionism and certainty (OBQ-44 PC) did not have a significant 2-way interaction when intrusive thoughts (WBSI) were average, $b = -0.005$, $b^* = -0.069$, $t(178) = -0.730$, $p = .466$, 95% CI [-0.023, 0.012]. Finally, the three-way interaction was not significant, $b = 0.0001$, $b^* = 0.010$, $t(178) = 0.117$, $p = .907$, 95% CI [-0.002, 0.002] (see Figure 14). The interaction explained 0.01% of the variance in alcohol misuse (AUDIT), $F(1, 178) = 0.014$, $p = .907$, R^2 change = .0001.

Figure 14*Hypothesis 4 Statistical Model Results*

Note. Standardized relationships are illustrated. * $p < .05$

HYPOTHESIS 5

As predicted by Hypothesis 1, intrusive thoughts (WBSI) were expected to relate to alcohol misuse (AUDIT) through punishment responses to failure to control thoughts (TCQ punish). Hypothesis 5 is that perfectionism (OBQ-44 PC) is expected to moderate this relationship. I expect a weaker correlation between intrusive thoughts (WBSI) and alcohol

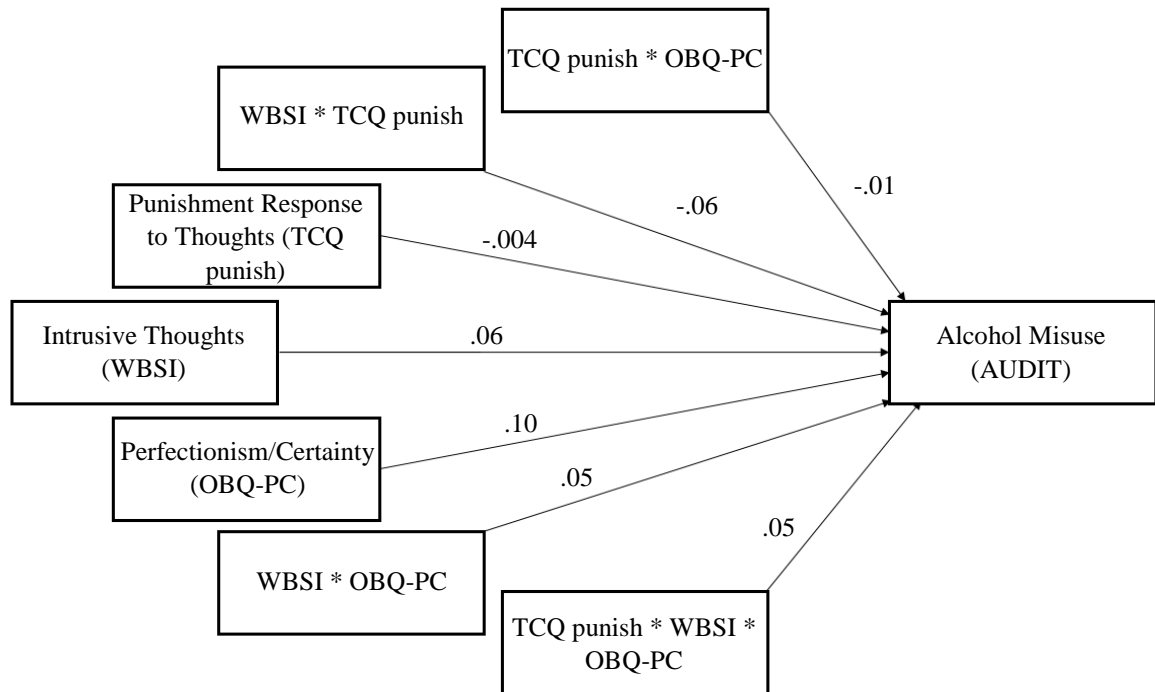
misuse (AUDIT) at low levels of perfectionism (OBQ-44 PC) and high levels of punishment (TCQ punish) or at high levels of perfectionism (OBQ-44 PC) and low levels of punishment (TCQ punish) than at high levels of both (see Figure 7). This moderation is anticipated to be small because of Jacoby and colleagues (2016), who found that the perfectionism and intolerance of uncertainty (OBQ-44 PC) were only weakly correlated with punishment responses to thoughts (TCQ punish).

Hypothesis 5 was tested in the same way as Hypothesis 4, with the only difference being this hypothesis uses punishment strategies (TCQ punish) instead of worry strategies (TCQ worry). I ran a moderated moderation model by using model 3 in the PROCESS SPSS macro V4.1 (Hayes, 2018) using 5,000 95% bias-corrected bootstrapped confidence intervals. Punishment thought control strategies (TCQ punish), perfectionism and intolerance of uncertainty (OBQ-44 PC), and amount of intrusive thoughts (WBSI) were mean centered before the analysis. The model generated the main three-way interaction effect of intrusive thoughts (WBSI), levels of perfectionism and intolerance of uncertainty (OBQ-44 PC), and frequency of punishment thought control strategies (TCQ punish) as well as the two-way interaction effects. If the three-way interaction had been significant, it would have also probed the interaction to find the effect of intrusive thoughts (WBSI) and obsessive beliefs about perfectionism and certainty (OBQ-44 PC) at different levels of punishment strategies (TCQ punish).

Hypothesis 5's model was non-significant, $F(7, 178) = 0.823, p = .570, R^2 = .031$. Intrusive thoughts (WBSI) did not significantly affect problematic alcohol use (AUDIT) when punishment strategies (TCQ punish) and perfectionism and intolerance of uncertainty (OBQ-44 PC) had average scores, $b = 0.040, b^* = 0.064, t(178) = 0.710, p = .479, 95\% \text{ CI } [-0.066, 0.135]$. Amount of punishment thought control strategies (TCQ punish) had no significant effect on

levels of problematic alcohol use (AUDIT) when frequency of intrusive thoughts (WBSI) and perfectionism and intolerance of uncertainty (OBQ-44 PC) were average, $b = -0.007$, $b^* = -0.004$, $t(178) = -0.041$, $p = .967$, 95% CI [-0.268, 0.290]. When intrusive thoughts (WBSI) and punishment responses (TCQ punish) were average, beliefs about perfectionism and uncertainty (OBQ-44 PC) did not have a significant effect on alcohol misuse and negative consequences (AUDIT) scores, $b = 0.032$, $b^* = 0.102$, $t(178) = 1.080$, $p = .282$, 95% CI [-0.029, 0.096].

At an average level of perfectionism and intolerance of uncertainty (OBQ-44 PC), intrusive thoughts (WBSI) and punishment thought control strategies (TCQ punish) did not significantly interact, $b = -0.011$, $b^* = -0.062$, $t(178) = -0.718$, $p = .474$, 95% CI [-0.040, 0.014]. Intrusive thoughts (WBSI) and perfectionism and intolerance of uncertainty (OBQ-44 PC) did not significantly interact when punishment-related strategies (TCQ punish) was average, $b = 0.002$, $b^* = 0.048$, $t(178) = 0.435$, $p = .664$, 95% CI [-0.006, 0.008]. Punishment strategies (TCQ punish) and levels of perfectionism and intolerance of uncertainty (OBQ-44 PC) had a non-significant interaction when levels of intrusive thoughts (WBSI) were average, $b = -0.001$, $b^* = -0.007$, $t(178) = -0.068$, $p = .946$, 95% CI [-0.020, 0.020]. The three-way interaction was also not significant, $b = 0.001$, $b^* = 0.046$, $t(178) = 0.467$, $p = .641$, 95% CI [-0.002, 0.002] (see Figure 15). The three-way interaction explained 0.1% of the variance, $F(1, 178) = 0.218$, $p = .641$, R^2 change = .001.

Figure 15*Hypothesis 5 Statistical Model Results*

Note. Standardized relationships are illustrated.

HYPOTHESIS 6

Hypothesis 6 focuses on beliefs about the importance of thoughts and the need to control them (OBQ-44 ICT). According to Hypothesis 1, worry responses to thoughts (TCQ worry) will moderate the relationship between intrusive thoughts (WBSI) and alcohol misuse (AUDIT).

Hypothesis 6 states that obsessive beliefs regarding the importance of and need to control

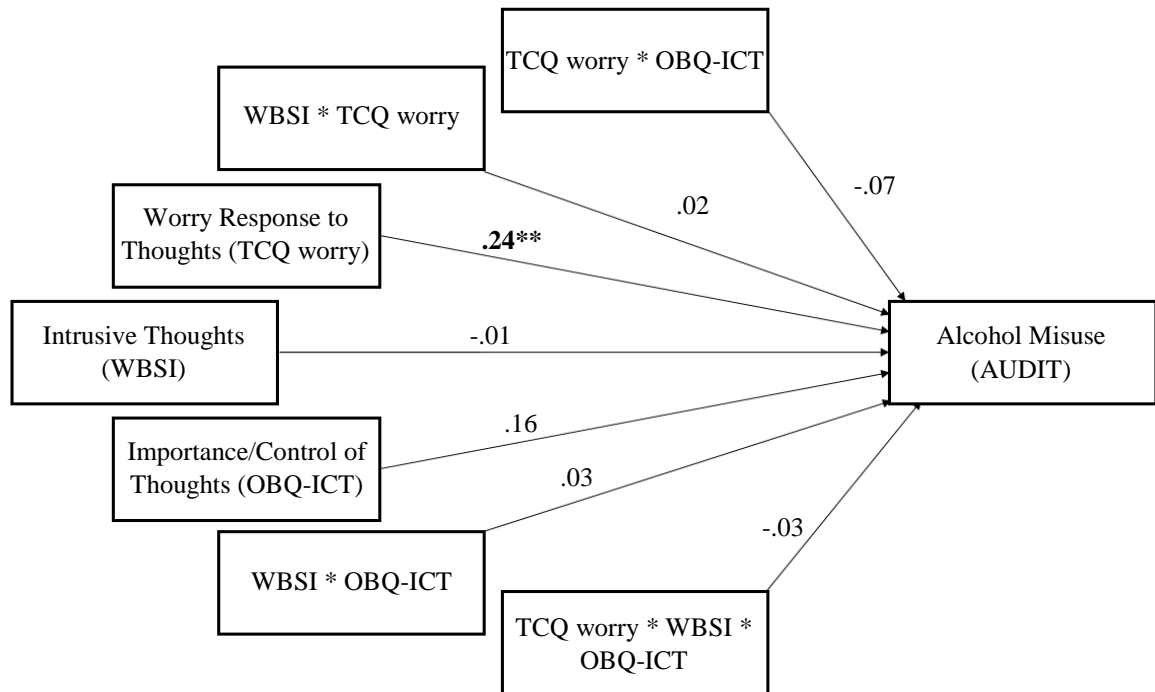
intrusive thoughts (OBQ-44 ICT) will moderate this relationship. At lower levels of beliefs about the importance of thoughts (OBQ-44 ICT) and lower levels of worry (TCQ worry), there is anticipated to be no correlation between alcohol use (AUDIT) and intrusive thoughts (WBSI). There is expected to be a synergistic effect where the correlation between intrusive thoughts (WBSI) and alcohol use (AUDIT) will be strongest when both worry (TCQ worry) and importance of thoughts (OBQ-44 ICT) are high (see Figure 8).

Hypothesis 6 was tested through a moderated moderation model by using model 3 in the PROCESS SPSS macro V4.1 (Hayes, 2018) using 5,000 95% bias-corrected bootstrapped confidence intervals. Amount of worry responses to thoughts (TCQ worry), obsessive beliefs about the importance and control of thoughts (OBQ-44 ICT), and intrusive thoughts frequency (WBSI) were mean centered before the analysis. The model generated the main three-way interaction effect of intrusive thoughts (WBSI), overimportance and control of thoughts (OBQ-44 ICT), and worry strategies (TCQ worry) as well as the two-way interaction effects. If the three-way interaction had been significant, it would have also probed the interaction to find the effect of intrusive thoughts (WBSI) and importance and control of thoughts beliefs (OBQ-44 ICT) at different levels of worry thought control strategies (TCQ worry).

Hypothesis 6's model was significant, $F(7, 178) = 2.267, p = .031, R^2 = .082$. Levels of intrusive thoughts (WBSI) did not significantly affect problematic alcohol use (AUDIT) at average levels of worry thought control strategies (TCQ worry) and beliefs about the importance of and need to control thoughts (OBQ-44 ICT), $b = -0.008, b^* = -0.012, t(178) = -0.136, p = .892, 95\% \text{ CI } [-0.108, 0.094]$. Worry strategies frequency (TCQ worry) had a significant effect on alcohol misuse (AUDIT) when intrusive thoughts (WBSI) and overimportance and control of thoughts (OBQ-44 ICT) were average, $b = 0.313, b^* = 0.241, t(178) = 2.676, p = .008, 95\% \text{ CI }$

[0.100, 0.544]. Overimportance and control of thoughts (OBQ-44 ICT) did not have a significant effect on problematic alcohol use and outcomes (AUDIT) when worry thought control strategies (TCQ worry) and levels of intrusive thoughts (WBSI) were average, $b = 0.072$, $b^* = 0.164$, $t(178) = 1.767$, $p = .069$, 95% CI [-0.031, 0.177].

Intrusive thoughts (WBSI) and worry responses (TCQ worry) had no significant 2-way interaction at average levels of beliefs about the importance and control of thoughts (OBQ-44 ICT), $b = 0.003$, $b^* = 0.020$, $t(178) = 0.227$, $p = .821$, 95% CI [-0.018, 0.026]. When frequency of worry strategies (TCQ worry) was held average, there was not a significant 2-way interaction between intrusive thoughts (WBSI) and overimportance of and need to control thoughts (OBQ-44 ICT), $b = 0.002$, $b^* = 0.032$, $t(178) = 0.325$, $p = .746$, 95% CI [-0.009, 0.012]. At average levels of intrusive thoughts (WBSI), the 2-way interaction between overimportance and control of thoughts (OBQ-44 ICT) and worry thought control strategies (TCQ worry) was not significant, $b = -0.007$, $b^* = -0.070$, $t(178) = -0.799$, $p = .425$, 95% CI [-0.029, 0.012]. Finally, the three-way effect was also not significant, $b = -0.0003$, $b^* = -0.029$, $t(178) = -0.420$, $p = .675$, 95% CI [-0.002, 0.001] (see Figure 16). The three-way interaction also explained 0.1% of variance, a non-significant amount, $F(1, 178) = 0.177$, $p = .675$, R^2 change = .001.

Figure 16*Hypothesis 6 Statistical Model Results*

Note. Standardized relationships are illustrated. $^{**} p < .01$

HYPOTHESIS 7

Hypothesis 7 states that the relationship between intrusive thoughts (WBSI) and alcohol misuse (AUDIT) through punishment responses (TCQ punish) that I predicted to have been established in Hypothesis 1 will be moderated by overimportance of thoughts (OBQ-44 ICT). At low levels of need to control thoughts (OBQ-44 ICT) and punishment strategies for intrusive

thoughts (TCQ punish), I expect to see a low correlation between alcohol misuse (AUDIT) and intrusive thoughts (WBSI). At high levels of importance of thoughts (OBQ-44 ICT) and punishment responses (TCQ punish), I expected to see a strong positive correlation between alcohol misuse (AUDIT) and intrusive thoughts (WBSI) (see Figure 9).

Hypothesis 7's three-way effect is expected to be the strongest out of the effects produced by Hypotheses 2 to 7. This is based off the findings of Jacoby and colleagues (2016) that the strongest correlation between subscales of the Obsessive Beliefs Questionnaire-44 (OBQ-44) and Thought Control Questionnaire (TCQ) was between the Importance/Control of Thoughts (OBQ-44 ICT) and punishment strategies (TCQ punish) subscales, and Ólafsson and colleagues' (2014) findings that ICT was the Obsessive Beliefs Questionnaire-44 (OBQ-44) subscale most strongly associated with discomfort caused by intrusive thoughts.

Hypothesis 7 was tested in the same way as Hypothesis 6, with the only difference being this hypothesis uses punishment response frequency (TCQ punish) instead of worry response frequency (TCQ worry). I ran a moderated moderation model by using model 3 in the PROCESS SPSS macro V4.1 (Hayes, 2018) via 5,000 95% bias-corrected bootstrapped confidence intervals. Punishment thought control strategies (TCQ punish), beliefs involving the overimportance and control of thoughts (OBQ-44 ICT), and intrusive thoughts (WBSI) were mean-centered before analysis. The model generated the main three-way interaction effect of frequency of intrusive thoughts (WBSI), overimportance and control of thoughts (OBQ-44 ICT), and frequency of punishment strategies (TCQ punish) as well as the two-way interaction effects. If the three-way interaction had been significant, it would have also probed the interaction to find the effect of intrusive thoughts (WBSI) and beliefs involving the importance and control of

thoughts (OBQ-44 ICT) at different levels of punishment thought control strategies (TCQ punish).

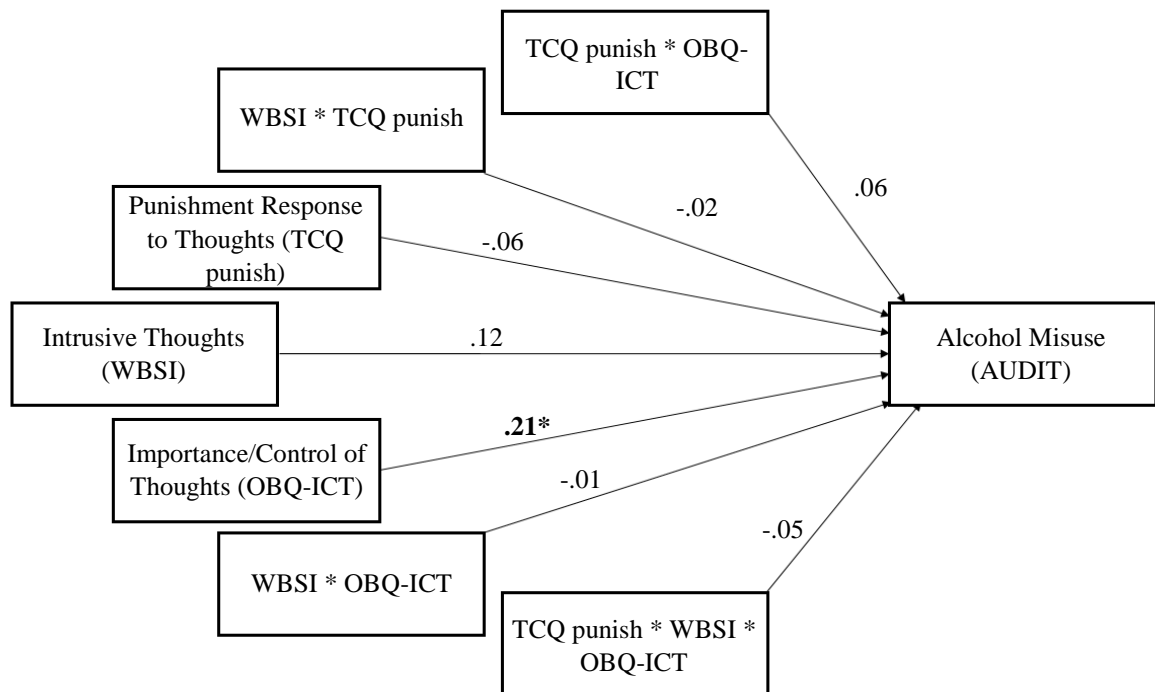
The theory that Hypothesis 7 would have the strongest effect was not supported. The model of Hypothesis 7 did not explain a significant amount of variance, $F(7, 178) = 1.173, p = .321, R^2 = .044$. At average scores on both punishment strategies (TCQ punish) and beliefs about the importance and control of thoughts (OBQ-44 ICT), the frequency of intrusive thoughts (WBSI) had no significant effect on problematic alcohol use (AUDIT), $b = 0.076, b^* = 0.121, t(178) = 1.239, p = .217, 95\% \text{ CI } [-0.032, 0.178]$. The frequency of punishment thought control strategies (TCQ punish) did not have a significant effect on problematic alcohol use (AUDIT) when intrusive thoughts (WBSI) and beliefs involving the overimportance and control of thoughts (OBQ-44 ICT) were average, $b = -0.100, b^* = -0.063, t(178) = -0.589, p = .557, 95\% \text{ CI } [-0.367, 0.201]$. The importance and control of thoughts (OBQ-44 ICT) did have a significant effect on alcohol misuse (AUDIT) when intrusive thoughts (WBSI) and punishment thought control strategies (TCQ punish) were average, $b = 0.091, b^* = 0.207, t(178) = 2.155, p = .033, 95\% \text{ CI } [-0.015, 0.197]$.

When beliefs involving the overimportance of and need to control thoughts (OBQ-44 ICT) was average, the 2-way interaction between intrusive thoughts (WBSI) and punishment strategies (TCQ punish) was non-significant, $b = -0.003, b^* = -0.017, t(178) = -0.162, p = .871, 95\% \text{ CI } [-0.034, 0.026]$. The 2-way interaction between intrusive thoughts (WBSI) and belief in the importance of and need to control thoughts (OBQ-44 ICT) was non-significant at average levels of punishment thought control strategies (TCQ punish), $b = -0.001, b^* = -0.010, t(178) = -0.091, p = .928, 95\% \text{ CI } [-0.012, 0.010]$. There was no significant 2-way interaction between punishment thought control strategies (TCQ punish) and beliefs involving the overimportance

and control of thoughts (OBQ-44 ICT) at average levels of intrusive thoughts (WBSI), $b = 0.007$, $b^* = 0.057$, $t(178) = 0.650$, $p = .517$, 95% CI $[-0.017, 0.035]$. The three-way interaction was non-significant, $b = -0.001$, $b^* = -0.048$, $t(178) = -0.637$, $p = .525$, 95% CI $[-0.003, 0.001]$ (See Figure 17). The interaction also explained 0.2% of variance, $F(1, 178) = 0.406$, $p = .525$, R^2 change = .002.

Figure 17

Hypothesis 7 Statistical Model Results



Note. Standardized relationships are illustrated. * $p < .05$

CHAPTER 4

DISCUSSION

The current study examined aspects of the cognitive control model described by Clark (2004) in the context of alcohol use. I attempted to expand upon the limited research that explores a possible connection between intrusive thoughts and alcohol misuse. My first major hypothesis was that intrusive thoughts (WBSI) would be related to alcohol misuse (AUDIT) only for participants who also endorsed high levels of the maladaptive thought control strategies of worry (TCQ worry) or punishment (TCQ punish).

The rest of the hypotheses were variations of moderations of the interaction in the first hypothesis. I anticipated synergistic relationships where the moderation described in Hypothesis 1 would be stronger at high levels of both obsessive beliefs (OBQ-44) and maladaptive responses to thought (TCQ worry or punishment) than it would be at high levels of one but low levels of the other. At low levels of obsessive beliefs and maladaptive responses to thought, I anticipated no effect of intrusive thoughts (WBSI) on problematic alcohol use (AUDIT). Hypothesis 2 included worry responses and responsibility and threat overestimation as moderators. Hypothesis 3 used punishment responses and obsessive beliefs about responsibility and threats. Hypothesis 4 tested worry responses as a moderator of perfectionism and intolerance of uncertainty. Hypothesis 5 included punishment responses to intrusive thoughts and perfectionism and intolerance of uncertainty. Hypotheses 6 and 7 both focused on the importance and control of thoughts, where Hypothesis 6 used worry strategies and Hypothesis 7 used punishment strategies. The overall goal of this research was to find if intrusive thoughts had a significant effect on problem drinking through maladaptive responses to intrusive thoughts and obsessive belief domains.

None of my hypotheses were supported and the primary moderation model for the study did not hold. Because intrusive thoughts were unrelated to alcohol misuse, the remaining synergistic three-way hypotheses were unlikely to be significant. In sum, there were two significant findings. First, the worry thought control strategies (TCQ worry) had a significant effect on alcohol misuse (AUDIT) scores even when several other variables, such as intrusive thoughts and all types of obsessive beliefs, were held at their average. Specifically, increased worry thoughts were related to increased alcohol misuse, which was a robust finding across several models. Second, the importance and control of thoughts (OBQ-44 ICT) subscale had a small, but significant effect on alcohol misuse when intrusive thoughts (WBSI) and punishment thoughts were average. Specifically, increased importance and control of thoughts was also related to increased alcohol misuse, but not when controlling for worry thoughts.

Alcohol misuse significantly correlated with worry responses to thoughts (TCQ worry), but not punishment responses to thoughts (TCQ punishment). In addition, the moderated moderation models involving worry thought control strategies (TCQ worry) all found that worry was the only study variable other than importance and control of thoughts that had a significant effect on alcohol misuse when other variables were held average.

My sample had slightly higher means on the TCQ worry subscale than the original study (Wells & Davies, 1994). When compared to other nonclinical university populations, my sample also had slightly higher scores on the worry subscale than average (Fehm & Hoyer, 2004; Luciano et al., 2005; Rassin, 2003; Sica et al., 2007; Williams et al., 2010), which could be why the worry connection was so strong. This could be due to self-selection bias. Participants might have seen the title and summary of the research and decided to participate because they had higher rates of worry control strategies than average and therefore found the study relevant.

Previous studies examining the connection between worry and alcohol misuse have shown mixed results. Although many studies have found either no relationship or a negative relationship between worry and substance use (Ciesla et al., 2011; Kelly et al., 2005; Shoal et al., 2005; Wolitzky-Taylor et al., 2021), Kieffer and colleagues (2006) found that exam and study worry specifically were related to drinking for tension relief, and Spada and Wells (2005) found that positive beliefs about worry, such as the belief that worry is useful for coping, were related to alcohol misuse. As I did not include any measures to capture worry directly, I could not see the relation to alcohol use in my sample. Although the punishment and worry TCQ subscales were strongly correlated with each other and have been found to correlate in prior research (Fehm & Hoyer, 2004; Ree et al., 2010; Wells & Davies, 1994), TCQ punishment scores were not significantly related to alcohol misuse. Therefore, despite their similarities, punishment strategies and worry strategies have different effects on alcohol misuse. Because punishment thought control strategies are more closely associated to OCD than worry strategies (Amir et al., 1997; Belloch et al., 2009), these findings might indicate that alcohol misuse is not related to OCD symptoms and intrusive thoughts, but it is related to anxiety symptoms. Fergus and Wu (2010) theorized that one reason why worry thought control strategies increase the frequency of obsessive thoughts is because they make the thoughts more accessible. Because highly accessible intrusive thoughts cause distress and more frequent obsessions in most models of OCD (Salkovskis, 1985; Wegner & Zanakos, 1994), increased worry thought control strategies may lead to alcohol misuse through drinking to cope. Because I did not directly measure drinking motives, I was unable to examine if worry thought control strategies were related to drinking to cope or other motives.

Importance / control of thoughts had a small, but significant effect on alcohol misuse when punishment thoughts and intrusive thoughts were held average, but not when worry thoughts was a predictor. Importance and control of thoughts has demonstrated a connection to punishment thought control strategies in prior research (Jacoby et al., 2016).

One primary reason that none of my hypotheses were supported stems from the fact that intrusive thoughts, as measured by the WBSI, were unrelated to alcohol misuse ($r = .108$) and did not have any significant effect on it in any of the models tested. There are several reasons for why this effect was absent in my sample. Intrusive thoughts (WBSI) were not significantly correlated with alcohol misuse and did not have any significant effect on it in any of the models tested. Because the correlation between intrusive thoughts and alcohol misuse was nonsignificant ($r = .108, p = .144$), my theory might have been wrong. Despite the consistent effect of worry strategies on alcohol misuse, intrusive thoughts and alcohol misuse did not have any relation in my data. The connection between alcohol misuse and obsessive thoughts might only exist at high levels of one or both of the variables. For example, Modell and colleagues (1992) found that craving for alcohol was related to obsessions and compulsions regarding alcohol, but only in a population that abused alcohol. My sample had low rates of alcohol misuse. The restricted range of alcohol misuse might mean that the relationship between intrusive thoughts and alcohol misuse did not exist in my sample.

The lack of significant findings could also be related to not using all of the items on the intrusive thoughts assessment (WBSI). Although I split the WBSI according to Höping and de Jong-Meyer (2003), other researchers have found different factor structures for the measurement. Rassin (2003), Cichoń and colleagues (2020), and Schmidt and colleagues (2009) found evidence for a two-factor structure, but all three found different combinations of items for the

factors. Palm and Strong (2007) and Muris and colleagues (1996) found that the WBSI had a unidimensional structure. Blumberg (2000) found a three-factor solution. Perhaps the measurement of intrusive thoughts was not sensitive enough to detect the effects I was looking for. If I had included all of the items on the WBSI, I might have found different results because the full construct might have measured an aspect of intrusive thoughts that was related to alcohol uses.

LIMITATIONS

A major limitation of my study was my small sample size. One reason that none of my hypotheses were supported could be that my sample size was less than half of what I had determined would be necessary to achieve the power needed to detect the moderating effects. I planned on having a sample size of 395, but the sample size I achieved was 186. Although I assumed that that number would be sufficient, it prevented me from having the power necessary to find any interaction to be significant. However, the effect sizes of my interaction effects were all very small; specifically, none of them increased the R^2 more than 0.3%. Therefore, even with the originally proposed sample size, I likely would have found the same results. Based on a reverse power analysis conducted using G*Power software, I would have needed at least 2611 participants to achieve significance given an effect size of .3%, alpha of .05, and power of .8.

Another limitation was the low rate of problematic alcohol use in my sample. Although all participants had consumed alcohol in the past 30 days before taking the study, total AUDIT scores indicated low rates of alcohol misuse ($M = 6.47$, $SD = 5.55$). In addition, only 25.8% of the current sample scored an 8 or above on the total AUDIT, the cut-off point selected by Saunders and colleagues (1993) to represent serious alcohol misuse. This is a lower percentage than the majority of other college samples (Egan et al., 2017; Hallett et al., 2012; Lyvers et al.,

2014; Whitton et al., 2013; Zamboanga et al., 2010), although Bravo and colleagues (2017) reported a similar percentage of 24.5%.

Although I had chosen the AUDIT due to precedent of being used in college populations (Devos-Comby & Lange, 2008; Kokotalio et al., 2004), the current sample had lower total scores on the AUDIT than most college populations (Kelly et al., 2005; Kokotalio et al., 2004; Murphy & Garavan, 2011; Villarosa-Hurlocker & Madson, 2020), so it might have been better to use a less extreme measure or to use a population that would have higher rates of problematic alcohol use. I also only used the AUDIT to measure alcohol misuse, so I was unable to examine aspects of more moderate alcohol use. Future research should use a different measure to capture alcohol misuse, such as the CAGE, the Michigan Alcoholism Screening Test, or the Rutgers Alcohol Problem Index (Devos-Comby & Lange, 2008).

Scores on the punishment subscale of the TCQ were also low on average, suggesting that my sample had low instances of punishment maladaptive responses to thoughts. Amir and colleagues (1997) and Belloch and colleagues (2009) found that scores on the punishment subscale were uniquely related to OCD. The low scores could mean that my sample had low rates of obsessive compulsive symptoms, which could be another reason why I did not find the expected results. If relationships were only found at high levels of obsessive compulsive symptoms, it would be difficult to find them without enough of participants with those high levels.

FUTURE DIRECTIONS

Future research should confirm these findings in clinical populations. Clinical populations with OCD diagnoses may demonstrate meaningful relationships instead of those

found within a college population. Blom and colleagues (2011) reported that the rate of substance use disorders in OCD populations was higher than the rate of substance use disorders in non-clinical populations. In addition, Mancebo and colleagues (2009) found that 70% of participants with comorbid OCD and substance use disorder diagnoses indicated that their diagnosis of SUD came after their OCD diagnosis, implying that there might be a causal relationship between OCD and substance use.

A final future direction would be to determine the role of worry and worry thought control strategies in terms of alcohol misuse, which has been inconsistent in the research (Devynck et al., 2019). If worry is related to alcohol use, strategies for controlling worry and reducing usage of worry thought control strategies would be helpful as a component in treating AUD.

An ecological momentary assessment (EMA) study could identify how intrusive thoughts and obsessive beliefs affect alcohol misuse or tension relief in the moment in a participant's daily life. EMAs are frequently used in substance use research (Shiffman, 2009; Wray et al., 2014) and could help to identify if a participant was having intrusive thoughts before they started to drink. Participants could also be asked to record their reactions to the intrusive thoughts they were having to measure how they were evaluating the thoughts.

CLINICAL IMPLICATIONS

Because alcohol misuse (AUDIT) was not related to intrusive thoughts (WBSI) or punishment thought control strategies (TCQ punish), there are limited clinical implications of these results. According to my findings, managing an individual's intrusive thoughts and maladaptive thought control strategies would not be helpful in treating alcohol abuse. However,

because worry thought control strategies were significantly related to higher alcohol misuse, these results do suggest that interventions that replaces worry strategies with more adaptive thought control strategies, like distraction or reappraisal (Abramowitz et al., 2003; Ree, 2010), could be used in conjunction with treatment for alcohol misuse. Although punishment strategies are also maladaptive, finding no connection between them and alcohol misuse suggests that replacing punishment strategies would not help with alcohol misuse treatment.

The relationship between importance/control of thoughts and punishment thought control strategies indicates that lowering the belief in the importance/control of thoughts could help in treating alcohol misuse.

CONCLUSIONS

Although prior research has shown support for the cognitive control model (Purdon et al., 2005; Riskind et al., 2007; Tolin, Abramowitz, Hamlin, et al., 2002), my hypotheses based on an adaptation of part of the model regarding alcohol use were not supported. However, results suggest that the level of alcohol misuse indicated by a person with average levels of intrusive thoughts and obsessive beliefs increased a significant amount when their level of worry thought control strategies increased. In addition, importance and control of thoughts had a significant effect on alcohol misuse when intrusive thoughts and punishment thoughts were average. A participant with average levels of intrusive thoughts and frequency of punishment thought control strategies demonstrated a significant increase in alcohol misuse when their beliefs regarding the importance and control of thoughts increased. Because the results did not support my hypotheses, I cannot conclude that obsessive thoughts and thought control are related to alcohol misuse in a non-clinical sample. However, worry strategies are related to alcohol misuse,

which may have clinical implications. Further research on this topic should be done with different measures and/or clinical populations.

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Table 1

Participant demographics

	<i>n</i>	%
Gender Identity		
Woman	137	73.7
Man	46	24.7
Trans Woman	0	0
Trans Man	0	0
Gender Queer/Non-conforming	2	1.1
Nonbinary	2	1.1
Other	0	0
Sex		
Female	138	74.2
Male	47	25.3
I Don't Know	0	0
Other	0	0
Missing	1	0.5
Class Standing		
Freshman	37	19.9
Sophomore	40	21.5
Junior	46	24.7
Senior	56	30.1
Graduate	7	3.8
Missing	0	0
Hispanic/Latino/Spanish Origin		
No	158	84.9
Yes, Mexican or Mexican American	10	5.4
Yes, Cuban	2	1.1
Yes, Puerto Rican	6	3.2
Yes, Other	9	4.8
Missing	1	0.5
Race		
African-American or Black	55	29.6
Asian or Pacific Islander	5	2.7
White	113	60.8
Native American	4	2.2
Middle Eastern or North African (MENA)	0	0
Other	9	4.8
Missing	0	0
Marital Status		
Single	103	55.4
Married	27	14.5
Divorced	4	2.2
In a Committed Relationship	52	28.0
Missing	0	0

Table 1 Continued

	<i>n</i>	%
Sexual Identity		
Heterosexual or straight	140	75.3
Lesbian	5	2.7
Bisexual	27	14.5
Queer	2	1.1
Asexual	0	0
Pansexual	5	2.7
Questioning	2	1.1
Gay	4	2.2
Other	1	0.5
Missing	0	0

Table 2

Descriptive statistics of key study variables

Variable	<i>M</i>	<i>SD</i>	<i>n</i>	Minimum	Maximum
Intrusive Thoughts	29.83	8.79	186	9.00	45.00
Obsessive Beliefs	161.25	38.07	186	58.00	279.00
Responsibility/Threat Estimation	62.88	15.48	186	17.00	107.00
Perfectionism/Certainty	64.53	17.68	186	20.00	109.00
Importance/Control of Thoughts	33.84	12.59	186	12.00	75.00
Maladaptive Responses to Thoughts	22.51	7.11	186	11.00	46.50
Worry Responses to Thoughts	12.74	4.27	186	6.00	24.00
Punishment Responses to Thoughts	9.76	3.51	186	5.00	22.50
Alcohol Misuse	6.47	5.55	186	0.00	30.50

Table 3

Bivariate correlations among study variables

Variable	1	2	3	4	5	6	7	8	9
1. Intrusive Thoughts (WBSI)	.92								
2. Obsessive Beliefs (OBQ-44)	.346	.94							
3. Responsibility/Threat Estimation (OBQ-44 RT)	.384	.892	.86						
4. Perfectionism/Certainty (OBQ-44 PC)	.272	.852	.651	.91					
5. Importance/Control of Thoughts (OBQ-44 ICT)	.193	.729	.553	.372	.88				
6. Total Maladaptive Responses to Thoughts (TCQ)	.505	.561	.494	.479	.414	.90			
7. Worry Responses to Thoughts (TCQ worry)	.480	.502	.440	.478	.304	.930	.87		
8. Punishment Responses to Thoughts (TCQ punish)	.439	.525	.464	.389	.468	.894	.666	.81	
9. Alcohol Misuse (AUDIT)	.108	.213	.206	.148	.182	.185	.247	.075	.85

Note: Significant correlations ($p < .05$) are bolded for emphasis. Cronbach's alphas are shown on the diagonals.

APPENDIX A
MEASURE OF INTRUSIVE THOUGHTS
WHITE BEAR SUPPRESSION INVENTORY

Please indicate how much you agree to each of the following statements on a scale from 1-5, with 1 being strongly disagree and 5 being strongly agree.

Unwanted intrusive thoughts

2. Sometimes I wonder why I have the thoughts I do.
3. I have thoughts that I cannot stop.
4. There are images that come to mind that I cannot erase.
5. My thoughts frequently return to one idea.
6. I wish I could stop thinking of certain things.
7. Sometimes my mind races so fast I wish I could stop it.
9. There are thoughts that keep jumping into my head.
12. Sometimes I really wish I could stop thinking.
15. There are many thoughts that I have that I don't tell anyone.

APPENDIX B

MEASURE OF TYPES OF OBSESSIVE BELIEFS

OBSESSIVE BELIEFS QUESTIONNAIRE-44

This inventory lists different attitudes or beliefs that people sometimes hold. Read each statement carefully and decide how much you agree or disagree with it. For each of the statements, choose the number matching the answer that best describes how you think. Because people are different, there are no right or wrong answers. To decide whether a given statement is typical of your way of looking at things, simply keep in mind what you are like most of the time. Use the following scale:

- 1 = Disagree very much
- 2 = Disagree moderately
- 3 = Disagree a little
- 4 = Neither agree nor disagree
- 5 = Agree a little
- 6 = Agree moderately
- 7 = Agree very much

In making your ratings, try to avoid using the middle point of the scale (4), but rather indicate whether you usually disagree or agree with the statements about your own beliefs and attitudes.

Responsibility/Threat estimation

1. I often think things around me are unsafe.
5. When I see any opportunity to do so, I must act to prevent bad things from happening.
6. Even if harm is very unlikely, I should try to prevent it at any cost.
8. If I don't act when I foresee danger, then I am to blame for any consequences
15. In all kinds of daily situations, failing to prevent harm is just as bad as deliberately causing harm
16. Avoiding serious problems (for example, illness or accidents) requires constant effort on my part.
17. For me, not preventing harm is as bad as causing harm.
19. I should make sure others are protected from any negative consequences of my decisions or actions
22. If I do not take extra precautions, I am more likely than others to have or cause a serious disaster.
23. In order to feel safe, I have to be as prepared as possible for anything that could go wrong.

- 29. I am more likely than other people to accidentally cause harm to myself or to others.
- 33. If my actions could have even a small effect on a potential misfortune, I am responsible for the outcome.
- 34. Even when I am careful, I often think that bad things will happen.
- 36. Harmful events will happen unless I am very careful.
- 39. To me, failing to prevent a disaster is as bad as causing it.
- 41. Even ordinary experiences in my life are full of risk.

Perfectionism/Certainty

- 2. If I'm not absolutely sure of something, I'm bound to make a mistake.
- 3. Things should be perfect according to my own standards.
- 4. In order to be a worthwhile person, I must be perfect at everything I do.
- 9. If I can't do something perfectly, I shouldn't do it at all.
- 10. I must work to my full potential at all times.
- 11. It is essential for me to consider all possible outcomes of a situation.
- 12. Even minor mistakes mean a job is not complete.
- 14. I must be certain of my decisions.
- 18. I should be upset if I make a mistake.
- 20. For me, things are not right if they are not perfect.
- 25. For me, making a mistake is as bad as failing completely.
- 26. It is essential for everything to be clear cut, even in minor matters.
- 31. I must be the best at things that are important to me.
- 37. I must keep working at something until it's done exactly right.
- 40. If I don't do a job perfectly, people won't respect me.
- 43. No matter what I do, it won't be good enough.

Importance/Control of thoughts

- 7. For me, having bad urges is as bad as actually carrying them out.
- 13. If I have aggressive thoughts or impulses about my loved ones, this means I may secretly want to hurt them.
- 21. Having nasty thoughts means I am a terrible person.
- 24. I should not have bizarre or disgusting thoughts.

- 27. Having a blasphemous thought is as sinful as committing a sacrilegious act.
- 28. I should be able to rid my mind of unwanted thoughts.
- 30. Having bad thoughts means I am weird or abnormal.
- 32. Having an unwanted sexual thought or image means I really want to do it.
- 35. Having intrusive thoughts means I'm out of control.
- 38. Having violent thoughts means I will lose control and become violent.
- 42. Having a bad thought is morally no different than doing a bad deed.
- 44. If I don't control my thoughts, I'll be punished.

APPENDIX C

MEASURE OF MALADAPTIVE RESPONSES TO INTRUSIVE THOUGHTS

THOUGHT CONTROL QUESTIONNAIRE

Most people experience unpleasant, and/or unwanted thoughts (in verbal and/or picture form), which can be difficult to control. We are interested in the techniques that you **generally** use to control such thoughts. Below are a number of things that people do to control these thoughts. Please read each statement carefully, and indicate how often you use each technique by selecting the appropriate number. There are no right or wrong answers. Do not spend too much time thinking about each one. When I experience an unpleasant/unwanted thought:

1 = never;

2 = sometimes;

3 = often;

4 = almost always

Worry

- (26) I focus on different negative thoughts
- (22) I think more about the more minor problems I have
- (4) I replace the thought with a more trivial bad thought
- (18) I worry about more minor things instead
- (7) I dwell on other worries
- (24) I think about past worries instead

Punishment

- (6) I punish myself for thinking the thought
- (11) I get angry at myself for having the thought
- (13) I shout at myself for having the thought
- (28) I tell myself that something bad will happen if I think the thought
- (15) I slap or pinch myself to stop the thought
- (2) I tell myself not to be so stupid

APPENDIX D
MEASURE OF ALCOHOL MISUSE
ALCOHOL USE DISORDERS IDENTIFICATION TEST

Please select the answer that is correct for you

1. How often do you have a drink containing alcohol?

0 = Never

1 = Monthly or less

2 = Two to four times a month

3 = Two to three times a week

4 = Four or more times a week

2. How many drinks containing alcohol do you have on a typical day when you are drinking?

0 = 1 or 2

1 = 3 or 4

2 = 5 or 6

3 = 7 to 9

4 = 10 or more

3. How often do you have six or more drinks on one occasion?

0 = Never

1 = Less than monthly

2 = Monthly

3 = Weekly

4 = Daily or almost daily

4. How often during the last year have you found that you were not able to stop drinking once you had started?

0 = Never

1 = Less than monthly

2 = Monthly

3 = Weekly

4 = Daily or almost daily

5. How often during the last year have you failed to do what was normally expected from you because of drinking?

0 = Never

1 = Less than monthly

2 = Monthly

3 = Weekly

4 = Daily or almost daily

6. How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session?

0 = Never

1 = Less than monthly

2 = Monthly

3 = Weekly

4 = Daily or almost daily

7. How often during the last year have you had a feeling of guilt or remorse after drinking?

0 = Never

1 = Less than monthly

2 = Monthly

3 = Weekly

4 = Daily or almost daily

8. How often during the last year have you been unable to remember what happened the night before because you had been drinking?

0 = Never

1 = Less than monthly

2 = Monthly

3 = Weekly

4 = Daily or almost daily

9. Have you or someone else been injured as a result of your drinking?

0 = No

2 = Yes, but not in the last year

4 = Yes, during the last year

10. Has a relative or friend, or a doctor or other health worker been concerned about your drinking or suggested you cut down?

0 = No

2 = Yes, but not in the last year

4 = Yes, during the last year

APPENDIX E
ATTENTION CHECKS

1. Oranges are fruit

1 = strongly disagree

2 = disagree

3 = neither agree nor disagree

4 = agree

5 = strongly agree

2. For this query, mark “neither agree nor disagree” and move on to the following question.

1 = strongly disagree

2 = disagree

3 = neither agree nor disagree

4 = agree

5 = strongly agree

APPENDIX F
DEMOGRAPHIC INFORMATION QUESTIONNAIRE

1. How would you describe yourself? (select all that apply)

☐ Woman

☐ Man

☐ Trans woman

☐ Trans man

☐ Gender queer/non-conforming

☐ Nonbinary

☐ Other (please specify) _____

2. Which sex were you assigned at birth? (that is, what appears on your birth certificate?)

☐ Female

☐ Male

☐ I don't know

☐ Other (please specify) _____

3. What is your age? ____

4. What is your class standing?

{ Choose one }

☐ Freshman

☐ Sophomore

☐ Junior

☐ Senior

☐ Graduate

5. Are you Hispanic, Latino, or of Spanish origin?

☐ No

☐ Yes, Mexican or Mexican American

☐ Yes, Cuban

☐ Yes, Puerto Rican

☐ Yes, Other _____

6. What racial group best describes you?

{Choose one}

☐ African-American or Black

☐ Asian or Pacific Islander

☐ White

☐ Native American

☐ Middle Eastern or North African (MENA)

☐ Other_____

7. What is your marital status?

{Choose one}

☐ Single

☐ Married

☐ Divorced

☐ In a committed relationship

8. There are many ways that individuals think of their sexual identity. Choose all that describe you:

☐ Heterosexual or straight

☐ Lesbian

☐ Bisexual

☐ Queer

☐ Asexual

☐ Pansexual

☐ Questioning

☐ Gay

☐ Other (please specify): _____

VITA

Laura Pettigrew

Old Dominion University
Department of Psychology
250 Mills Godwin Life Sciences Bldg
Norfolk, VA 23529

Education:

Virginia Wesleyan College, Virginia Beach, VA

Bachelor of Arts in Psychology May 2017

Cumulative GPA: 3.69

Experience:

Old Dominion University, Norfolk, VA

Graduate Research Assistant Aug. 2019 – Current

- Assisted with a research project by providing instructions to participants and answering questions