



Universiteit Leiden

Psychologie
Faculteit der Sociale Wetenschappen



Religious Coping, Motivation and Symptoms of Substance Use Disorder: A Match Made in Heaven?

The effect of religious coping and motivation on the prevalence of symptoms of Substance Use Disorder in intrinsic religious patients with Substance Use Disorder.

S. Lok BSc.

Master Thesis Clinical Psychology
Faculty Social and Behavioural Sciences – Leiden University

December 2018

Student number: S1472569
Supervisors: Dr. M.A. Koenders
Prof. H. Schaap-Jonker
Second reader: Dr. A.E. van Giezen
Department: Clinical Psychology

Table of contents

Abstract	3
Introduction	4
1.1 Substance Use Disorder	4
1.2 Substance Use Disorder treatment which includes religion	6
1.3 Religious coping	7
1.4 Motivation.....	9
1.5 The present research	10
Methods	11
2.1 Participants.....	11
2.2 Research design	11
2.3 Procedure	12
2.4 Measures	13
2.5 Statistical analysis	15
Results	16
3.1 Intrinsic religiosity	16
3.2 Religious coping.	19
3.3 Motivation.....	20
3.4 Religious coping and motivation	21
4. Discussion	22
4.1 Intrinsic religiosity	22
4.2 Religious coping	23
4.3 Motivation.....	24
4.4 Religious coping and motivation	25
4.5 Limitations	26
4.6 Practical implications.....	27
4.7 Conclusion	27
References	28
Appendix I, Mediation analyses	35

Abstract

The aim of this study was to see whether motivation reduces the prevalence of Substance Use Disorder (SUD) symptoms above and beyond the consequences of the self-directing coping style and the surrender coping style in patients with SUD. This study used a longitudinal design and was conducted at De Hoop GGZ, a Christian clinic for substance users in The Netherlands. A sample of 64 patients with a mean age of 39;11 years who received treatment, filled in questionnaires regarding intrinsic religiosity, religious coping, motivation and substance use during the first measurement. One month after treatment, patients filled in a questionnaire about substance use. Results of a mediation analysis revealed that there was no significant correlation between intrinsic religiosity and the prevalence of symptoms of SUD after one month (the total effect). In addition, motivation and religious coping styles did not significantly mediate the correlation between intrinsic religiosity and the prevalence of symptoms of SUD. However, correlation between intrinsic religiosity and the religious coping styles were significant. Based on the literature that does confirm the influence of intrinsic religiosity, therapists can choose to integrate patients' religiosity into treatment. This could increase patients' internal and external motivation which could lead to less symptoms of SUD. Finally, treatment for patients who use the surrender coping style should be more focused on solving his or her problems together with God. However, treatment for patients who use the self-directing coping style should be more focused on self-reliance.

KEY WORDS: substance use; intrinsic religiosity; religious coping; motivation; symptoms

Introduction

1.1 Substance Use Disorder

The Diagnostic and Statistical Manual of Mental Disorders 5 (DSM 5), published in 2013, has a widespread importance and has an effect on how different disorders are diagnosed, treated and investigated (Hasin et al., 2013). To be diagnosed with Substance Use Disorder (SUD) a patient needs to meet at least two or more criteria / symptoms (i.e., taking the substance in larger amounts, not able to stop using, even when it puts patients in danger, withdrawal symptoms). The severity of the disorder depends on the amount of diagnostic criteria a patient has met (mild; two to three, moderate; four to five, and severe; six or more). The prevalence of SUD in 2016 was the highest across Eastern Europe and the United States, occurring in five to six percent of the population (Ritchie & Roser, 2018). In Western and Central Europe and Oceania, this prevalence ranged from two to five percent. In 2016 164 million people had alcohol or drug use disorders. Of those people, 317668 have died directly from alcohol and drug use (not included suicide deaths or tobacco smoking) (Ritchie & Roser, 2018).

When trying to reduce those numbers, it is important to identify the right treatment. The meta-analytic review of psychosocial interventions for SUD of Dutra and colleagues (2008) suggests that psychosocial treatments have a positive effect in treating patients with SUD. According to the review of Moos (2007), all those treatments have four common active ingredients. Namely, 1. Support, structure, and goal direction (from family, friends, school, work, religion); 2. Provision of rewards for abstinence (rewards from family, friends, school, work, religious community); 3. Abstinence-oriented norms and models (observation and imitation of family, peer, (religious) community norms), and 4. Building self-efficacy and (religious) coping skills. Religion plays a role in all four ingredients, however, often religion has no place in treatment. At worst, patients' reliance on religion has been pathologized and discouraged (Koenig, Larson, & Weaver, 1998). Besides not adding religion into treatment, 40 to 60 percent of patients treated for SUD return to active substance use within a year following treatment discharge (Finney, Moos, 1992; Hubbard, Craddock, Flynn, Anderson, & Etheridge, 1997; McLellan & McKay, 1998). It is therefore important to emphasize on this specific active ingredient, i.e. religion.

Religion may encourage better adaptation to stress through (religious) coping (Ellison & Levin, 1998; Holt, Clark, Debnam, & Roth, 2014; Musick et al., 2000). Coping is a “cognitive and behavioral effort to master, tolerate, or reduce external and internal demands and conflicts among them” (Folkman & Lazarus, 1980). According to Folkman and Lazarus, there are two sorts of coping, namely ‘emotion-focused’ coping (controlling the emotional response to a stressor) and ‘problem-focused coping’ (solving the problem by changing the situation, or by changing one’s own behaviour). One of the most important emotion-focused coping sources is religion. Religious coping refers to the understanding and dealing with negative life events that are related to the sacred. The sacred can be defined as aspects of life that take on spiritual characters by virtue of their associations with the Divine (Pargament & Abu Raiyam, 2007). Religious coping can predict health and well-being beyond secular types of coping (Pargament, Falb, Ano, & Wachholtz, 2013; Park, Edmondson, & Blank, 2009).

Religious coping can be divided between positive religious coping (benevolent religious re-appraisals, such as belief in a supportive God or higher power, seeking spiritual support and religious forgiveness) and negative religious coping (“spiritual struggles” such as questioning the benevolence of a higher power, feeling abandoned by God, existential crises of a spiritual nature, or interpersonal conflict occurring in a spiritual/religious context) (Pargament, Smith, & Koenig, 1998). Positive religious coping was associated with significantly fewer days of drug use prior to admission, and was modestly, yet significantly associated with lower drug craving. Negative religious coping was associated with lower confidence in the ability to remain abstinent after treatment discharge and higher drug craving (Medlock et al., 2017).

Besides religious coping, motivation has been identified as an important factor in reducing symptoms of SUD (i.e., better patient engagement, increased psychological functioning, longer abstinence and less dropout rate) (DiClemente, Nidecker, & Bellack, 2008; Slesnick et al., 2009). According to the trans-theoretical model (or Stages of Change) there are various stages of change. Different studies have shown significant relationships between stages of change and symptoms of SUD (Callaghan et al., 2005; Coleman-Wallace, Lee, Montgomery, Blix, & Wang, 1999; Dino, Kama, Horn, Kalsekar, & Fernandes, 2004). The trans-theoretical model assumes that treatment strategies and interventions should be based on the stage of change a patient is in (Prochaska & DiClemente, 1986).

Motivation could be improved by religion. Incorporating religion into Cognitive Behaviour Treatment was perceived to potentially increase patients' motivation and fosters a change in identity (Hodge & Lietz, 2014). It was a change in how patients understand themselves, which in turn provides a new, intrinsic source of motivation. This process was facilitated by participation in a religious community that was able to reinforce positive and health promoting self-statements, which provided an additional source of external motivation (Hodge & Lietz, 2014). In conclusion, according to the literature it is important to emphasize religion during treatment, because it has an effect on religious coping, internal and external motivation. Therefore, the current research focuses on religious coping and motivation and how this has an effect on the prevalence of symptoms of SUD in patients with SUD.

1.2 Substance Use Disorder treatment which includes religion

Psychosocial treatments, such as motivational enhancement therapy (MET), cognitive-behavioural treatment (CBT) and contingency management (CM), were most effective for cannabis use and least for polysubstance use (Dutra et al., 2008). The strongest effect was found for contingency management interventions. As mentioned before, all those treatments have four common active ingredients and in all those four active ingredients religion plays a role (Moos, 2007). In the study of Uden and Pieper (2005) therapists were asked about the relation between faith and psychosocial problems. These therapists thought that only about 18 percent of their patients felt a relation between faith and their psychosocial problems.

However in the study of Young and Ensing (1999) they found that religious development was viewed as a central ingredient of recovery for almost all the patients in their study. Patients' reliance on spirituality grew during patients' most intense periods of suffering and it was faith that reportedly helped some to survive those periods. 18 percent seems to be an underestimating of the amount of patients who think that their faith and their psychosocial problems are related and who possibly want to include religion into their treatment. The study of Oxhandler and Parrish (2018) measured nine behaviours related to integrating patients' religion into treatment (e.g. "I use empirically supported interventions that specifically outline how to integrate my patients' religion / spirituality into treatment", "I link patients with religious / spiritual resources when it may potentially help them"). A large majority of professionals did not actively ask about religion during the intake process

and psychologists used those nine behaviours only a few times. In the study of Uden and Pieper (2005) two-third of the therapists think that they do not have sufficient skills to adequately integrate religious aspects in treatment. Half of those therapists indicated that there is a need for further training in the field of faith and ideology. Although therapists did not think that they can integrate religious aspects appropriately, only one percent of patients were referred to spiritual counsellors or therapists who knew more about integrating religious aspects in treatment. Training for mental health care providers is therefore a necessary step. This means that in order to guarantee the quality of care provided to religious patients, religious aspects such as religious coping, should receive a more prominent place in treatment than it currently occupies.

1.3 Religious coping

Coping is a form of information processing, in which the individual is not guided by structural personality traits, but engages in a dynamic interaction with the environment (Pieper & Uden, 2005). The effectiveness of the coping depends on the possibilities to take action in a given situation. When a situation is unchangeable, it is better to use emotion-focused coping. Older people in particular use emotion-focused coping strategies because they do not have the sources needed for problem-focused coping. Patients living in institutions experience their life situation as relatively unchangeable, therefore they use more emotion-focused coping (Pieper & Uden, 2005). As mentioned before, one of the most important emotion-focused coping sources is religion. Religious coping is often used when non-religious coping fails, particularly in situations of loss of life, health, and relational situations. Eighty percent of patients with longstanding psychological complaints indicated that their faith or their religious activities contributed to a better dealing with their symptoms, difficulties, and frustrations (Tepper, Rogers, Coleman, & Malony, 2001).

Pargament and colleagues (1988) proposed that there are three dispositional styles of religious coping: *Self-directing*: a problem-solving approach in which the individual is active and God is primarily passive. God is seen as someone who has given people the freedom and resources to direct their own lives. The self-directing coping style emphasizes the patients' personal responsibility and active role in problem solving and excludes God from the process (Hathaway & Pargament, 1990). In several studies the self-directing coping style has been associated with negative

outcomes, such as anxiety and depression (Bickel et al., 1998; Schaefer & Gorsuch, 1991). The self-directing coping style was tied to lower quality of life and decreased use of recovery-related activities (Yangarber-Hicks, 2004). *Deferring*: a person passively waits for God to take care of everything. *Collaborative*: a person works in active partnership with God to resolve problems. However, Wong-McDonald and Gorsuch (2000) suggest in their study that there is another religious coping style, i.e. surrender. *Surrender*: a person does not passively wait for God to solve all problems (unlike the deferring style, where one passively waits), but, it is an active choice to surrender one's will to God's rule and actively solves problems together with God (same as the collaborative style). However, when the patients' solution differs from God's, the patient chooses to follow God's solution. This distinguishes surrender from collaborative coping. The emphasis in surrender coping is "not as I will, but as You will, Lord" (Matt 26:39) (Wong-McDonald & Gorsuch, 2000). In this study, only the *Self-directing* and the *Surrender* coping styles were examined, because surrender and self-directing coping are opposite coping styles.

Variations in different religious coping styles to situations are assumed to be associated with the degree of intrinsic religiosity (Scheafer & Gorsuch, 1993; Smith & Gorsuch, 1989). Less committed Christians tend to be more self-directing or deferring, whereas more committed ones may choose to work collaboratively with God (Pargament et al., 1988). It could be that that more committed believers use surrender (Wong-McDonald & Gorsuch, 2000).

Religious coping has been examined among SUD patients. Religious coping during early adolescence (age 12–14 years) predicted lower rates of drug use and abuse during mid- to late-adolescence (age 15-16years) (Brechtling & Giancola, 2007) In another study, they found somewhat similar results. Youth who reported high levels of religious coping were found to exhibit more prosocial behaviour and fewer externalizing behaviours than youth with lower levels of religious coping (Eisenberg et al., 2011). The amount of studies about the mechanisms of religiosity and symptoms of SUD is small. Besides this, the studies that have been conducted within clinical psychiatric samples have been essentially descriptive in nature (e.g., assessing the prevalence of church attendance) (Rosmarin et al., 2011). Therefore, a lot of knowledge about the relevance of religious factors to patient care is still unknown. As well as the possible mechanisms (such as motivation) in which religion may have an impact on (Rosmarin et al., 2013).

1.4 Motivation

As mentioned before, religion can have an effect on motivation and when patients try to reduce their symptoms of SUD, motivation is a vital factor. Motivation has been defined as a multidimensional process in which patients move through different stages of readiness to change behavioural patterns that are related to their substance use (Pelissier & Jones, 2006). According to the trans-theoretical model, there are five stages in which patients typically navigate while changing their behaviour (Connors, Donovan, & DiClemente, 2001). During the precontemplation stage (1) SUD patients do not believe that their behaviours are problematic and they have no intention to change their behaviour (DiClemente, Schlundt, & Gemmell, 2004). The contemplation stage (2) starts when these patients begin to realize that their behaviour is problematic. Patients do not take action in this stage, but are distressed by their substance use and wish to control it (Connors et al., 2001). When patients make a commitment to change their behaviour, the preparation stage (3) begins. It is likely that patients have attempted to reduce their substance use in the previous years. When patients take concrete steps (i.e., change their social network or environment) to reduce their substance use, the action stage starts (4) (Prochaska, DiClemente, & Norcross, 1992). Once patients are able to abstain from their substance use for an extended period the maintenance stage (5) begins (DiClemente et al., 2004).

Different studies have shown significant relationships between stages of change and treatment outcomes. Patients in lower stages of change (i.e., pre-action stages) had poorer treatment outcomes (e.g., they were more likely to relapse and or drop out of treatment and were less motivated) compared with those in more advanced stages (Callaghan et al., 2005; Coleman-Wallace, Lee, Montgomery, Blix, & Wang, 1999; Dino, Kama, Horn, Kalsekar, & Fernandes, 2004). Higher motivation was correlated with longer previous smoking abstinence, fewer barriers to quitting, and greater self-efficacy (Martin, Rohsenow, MacKinnon, Abrams, & Monti, 2006). However, according to the Meta-analyse study (review of 87 studies) of Littell and Girvin (2002) the proposed stages are not mutually exclusive. Little evidence has been found in studies of specific problem behaviours (e.g., smoking and substance abuse) about the sequential movement through the different stages. It is therefore important to identify if all the stages of change have an effect on the prevalence of SUD symptoms. This study only wanted to identify if the action stage has an effect on the

prevalence of SUD symptoms, because this is the most visible stage in the process of change (Willoughby & Edens, 1996).

1.5 The present research

Aim of this study is to investigate whether religious coping and motivation had an effect on the prevalence of symptoms of SUD in patients with SUD. Four primary hypotheses were tested (see Figure 1). The first set of hypothesis states that intrinsic religiosity correlates with specific copings styles and with the motivation stage action. Firstly, less intrinsic Christians are assumed to score lower on the motivation stage action (1a). Secondly, less intrinsic Christians are assumed to use more self-directing coping (1b). Lastly, more intrinsic Christians are assumed to use more surrender coping (1c).

Because surrender and self- directing coping are opposite coping styles, it is interesting to examine what kind of effect they have on the prevalence of symptoms of SUD. Therefore, the second set of hypothesis states that intrinsic religiosity and religious coping styles are correlated with the prevalence of symptoms of SUD in patients with a SUD. The study hypothesizes that less intrinsic Christians who tend to use the self-directing coping style, will show more symptoms of SUD (2a) and more intrinsic Christians who tend to use the surrender coping style will show less symptoms of SUD (2b).

Besides this, it is also interesting to examine if motivation has an effect on the prevalence of symptoms of SUD. Therefore, the third hypothesis (3) states that intrinsic religiosity and the motivation stage action correlates with the prevalence of symptoms of SUD in patients with SUD patients. The study hypothesizes that less intrinsic Christians who have less motivation will show more symptoms of SUD than more intrinsic Christians who tend to have more motivation.

Lastly, this study examines whether the motivation stage action reduces the prevalence of SUD symptoms above and beyond the consequences of the self-directing coping style and the surrender coping style. Therefore, the fourth hypothesis (4) states that the motivation stage action mediates the correlation between religious coping styles and the prevalence of symptoms of SUD. According to Bandura's social-cognitive learning theory, an individual's motivation for abstinence is postulated to subsequently influence coping efforts (Bandura, 1986). The study hypothesizes that patients who use the self-directing coping style score lower on the

motivation stage action and have more symptoms of SUD than patients who tend to use the surrender coping style and score higher on the motivation stage action.

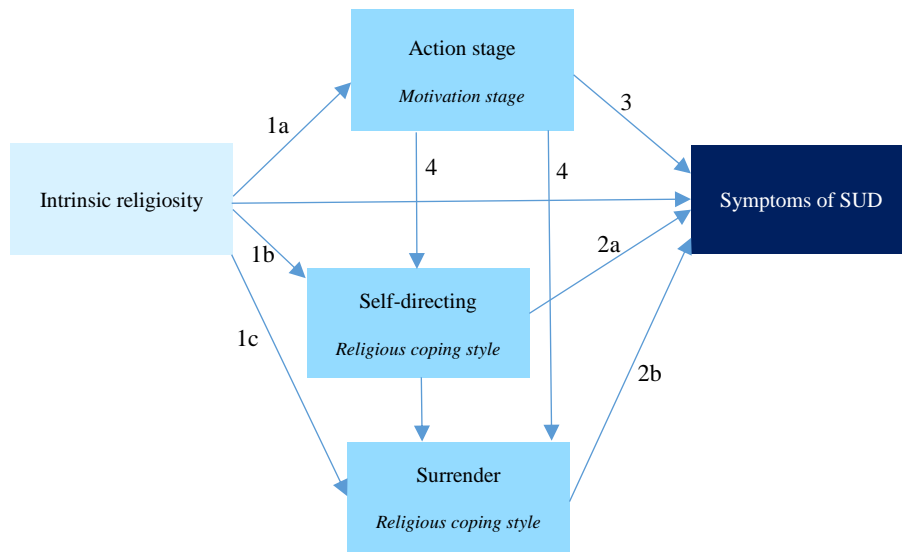


Figure 1. Hypothesized mediation model

Methods

2.1 Participants

This study was part of a larger research, however only the methods of this study were discussed below. This study included 59 participants. Participants were 48 men and 11 women, aged 19 - 60 years old with a mean age of 39;11 years (SD = 11.00 years/months). They were inpatients at the mental health clinic ‘De Hoop GGZ’ in Dordrecht, the Netherlands, who received treatment for Substance Use Disorder for twelve weeks. Patients received cognitive behaviour therapy for SUD, emotion regulation training, schema therapy and drama therapy. Alcohol and cocaine were the foremost primary diagnoses. 49 percent of the participants had an alcohol use disorder as a primary diagnosis, 9 percent participants had cannabis as their primary substance of abuse and 32 percent were diagnosed with a cocaine use problem, the other 10 percent participants were diagnosed with other Substances Use Disorder. Each participant signed an informed consent form. This study is approved by the Ethics Review Board (ERB) of the Faculty of Social and Behavioural Sciences (FMG) of the University of Amsterdam.

2.2 Research design

Patients were invited in the lab for the first measurement moment in their

seventh week of treatment. In the 12th week of treatment, patients completed the clinical treatment. One month after treatment, patients were asked by mail or phone to answer questions about the prevalence of symptoms of SUD. This study used a longitudinal design, which is displayed in Figure 2.

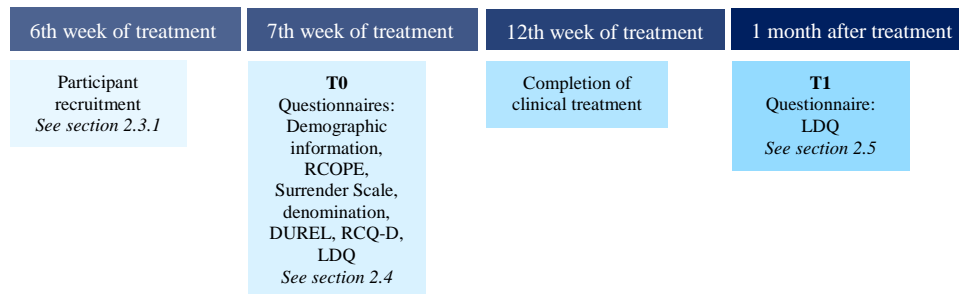


Figure 2. Design of the study

2.3 Procedure

2.3.1 Selection. Over a period of eight months (February 2018 to September 2018) patients were approached by phone to participate in “a study”. Inclusion criteria were patients who had SUD as primary or secondary diagnosis and were treated in the clinics “4Life” or were living in the supervised independent living buildings in Dordrecht at the mental health clinic ‘De Hoop GGZ’. Exclusion criteria were neuro-cognitive problems, history of schizophrenia or participants who were not able to read Dutch. In the first six weeks, patients were able to get used to the treatment and focus only on the treatment. Therefore, patients were called in the sixth week of treatment. Patients received information about the study and were told that withdrawing from the study is an option that will not influence their treatment. After a week of reflections patients were invited to the research lab of the clinic.

2.3.2 Measurement moment (T0). During the measurements, patients filled in questionnaires that were designed with the primary diagnoses of the patients; alcohol (e.g., It is a waste of time thinking about my drinking), cannabis (e.g., It is a waste of time thinking about my cannabis use), cocaine or other substances. The questionnaire consisted demographic information, the Duke University Religion Index (DUREL), de Religious Coping Scale (RCOPE), the Readiness to Change Questionnaire (RCQ-D), Leeds Dependence Questionnaire (LDQ).

2.3.3 Follow-up (T1). In the 12th week of treatment patients completed the clinical treatment. One month after treatment, patients were asked by mail or phone to

answer questions about the prevalence of symptoms of substance use.

2.4 Measures

Six different questionnaires and two questions about age and gender were formed into one questionnaire. The following questionnaires that are discussed below were used to answer the research question of this study.

2.4.1 Intrinsic religiosity. *Duke University Religion Index (DUREL)*. The DUREL was used in this study to measure three major dimensions of religiosity, namely organizational religious activity, non-organizational religious activity, and intrinsic religiosity (or subjective religiosity) (Koenig & Büssing, 2010). The DUREL had five questions, but only three questions were used in this study (3, 4, 5), such as “Are your religious beliefs what really lies behind your whole approach to life?”. Patients responded on a 5-point Likert scale ranging from 1 “definitely not true” to 5 “definitely true”. This questionnaire had a high internal consistence (Cronbach’s alpha’s = 0.94) and a high convergent validity with other measures of religiosity (r ’s = 0.71–0.86) (Koenig & Büssing, 2010).

2.4.2 Religious coping. *Religious coping Scale (RCOPE)*. The RCOPE measures explicitly religious coping with 18 questions about the role of faith in patients’ lives or the role of faith when patients had to deal with problems or with existential experiences (Pargament, Feuille, & Burdzy, 2011). These questions had Likert -scales ranging from 1 “absolutely not applicable to me” to 5 “very strongly applicable to me”. There were six questions for the *self-directing coping style* (9, 11, 13, 18, 20 26), such as “When I think about a problem, I try to find possible solutions without God's help” and “When I have gone through a difficult period, I try to give it a place in my life by myself. I do not assume that God will take care of that”. Only those six questions for the *self-directing coping style* were used in this study. The six questions for the *deferring coping style*, such as “I do not think about possible solutions to my problems, because God gives them to me” were not used. The last six questions for the *collaborative coping style*, such as “When I feel tense or anxious about a problem, I search in prayer together with God for a way to reduce my worries” were not used as well. The RCOPE scales had alpha values of 0.80 or greater, confirming generally high reliability estimates (Pargament et al., 2011).

Surrender Scale. The surrender scale was a twelve-item questionnaire which measured the religious coping style; *surrender* (Wong-McDonald & Gorsuch, 2000).

Surrender represents a coping style of more committed believers, characterized by an internal motivation to follow God and to act in obedience despite the costs (Wong-McDonald & Gorsuch, 2000). Patients responded on a 5-point Likert scale ranging from 1 “not applicable at all” to 5 “fully applicable”. Answers on questions such as “When my solutions to problems are in conflict with God’s alternatives, I will submit to God’s way” and “When I am in distress, my hope is renewed when I act in accordance to God’s directions” were added to calculate a total score. This questionnaire had a high internal consistence (Cronbach’s alpha= 0.96) (Wong-McDonald & Gorsuch, 2000).

2.4.3 Motivation. Readiness to Change Questionnaire (RCQ-D). The RCQ-D was used in this study to measure state of change and motivation (Defuentes-Merillas, Dejong, & Schippers, 2002). This 12-item questionnaire had three 4-item scales representing three stages of change: 1. *Pre-contemplation*, P (e.g., “It is a waste of time thinking about my drinking / drug use”). 2. *Contemplation*, C (e.g., “I am at a stage where I should think about drinking less alcohol / taking less drugs”). 3. *Action*, A (e.g., “I am actually changing my drinking habits right now”) Patients responded on a 5-point Likert scale ranging from 1 “I agree” to 5 “I do not agree”, which means that patients who scored lower on the motivation stage, had higher motivation. In this study only scores on the action stage were examined. The internal consistency of the action scale was calculated (Cronbach’s alpha = 0.73) (Defuentes-Merillas et al., 2002).

2.4.4 SUD symptoms. Leeds Dependence Questionnaire (LDQ). The LDQ was used in this study to measure the prevalence of SUD symptoms (Raistrick et al., 1994). The LDQ is a ten-item questionnaire and contained questions about the importance of alcohol and in this study the importance of drugs as well. Patients had to think about their drinking / drugs use in the past two weeks (e.g., “Do you find yourself thinking about the next time that you will be able to have another drink or take drugs?” and “Do you drink or take drugs in the morning, afternoon and evening?”). Patients responded on a 4-point Likert scale ranging from 0 “never” to 3 “almost always”. Answers were added to calculate a total score (0 = no dependency, 1-10 = low to medium dependence, 11-20 = medium to high dependence, 21-30 = high dependence). According to Raistrick and colleagues (1994), the LDQ had a high internal consistence (Cronbach’s alpha = 0.88).

2.4.5 Follow-up (T1). During the follow-up, patients or the test-assistants filled in a follow-up questionnaire that was again designed with the primary diagnoses of the patient (alcohol, cannabis, cocaine or other substances). This follow-up questionnaire was the Leeds Dependence Questionnaire (LDQ) (See section 2.4.4).

2.5 Statistical analysis

SPSS version 25 was used to complete all data analyses for this study. Different mediation analyses were conducted with Process Analysis to test all the hypotheses. The overall model had as continuous dependent variable *symptoms of SUD* (Y), measured in T1. The independent variable was *intrinsic religiosity* (X) measured in T0. The mediators were *motivation stage action* (M), coping style *surrender* (M) and coping style *self-directing* (M) which were all measured in T0. First, the total effect (c) of the overall model was examined. According to the causal steps approach of Baron and Kenny (1986) it is important that the independent variable has a significant effect on the dependent variable. However, currently there is a relatively large consensus among statisticians that the total effect should not be used as a 'gatekeeper' for tests of mediation (Hayes, 2009; Shrout & Bolger, 2002). Firstly, the causal steps approach depends on multiple significant tests. However, sometimes tests can be derailed and become non-significant, because for example the sample size is too small. Secondly, the total effect (c) is seen as the sum of the direct effect (c') and all indirect effects (ab1, ab2, ab3). However, the indirect effect of X on Y through M1 could be negative, whereas the indirect effect through M2 could be positive, and the two indirect effects are comparable in magnitude. Summing the two indirect effects would give a total effect (c) of zero. Therefore, this study would still examine the correlation between the different variables even when the total effect is not significant. Finally, all variables were standardized which made it possible to report standardized coefficients.

For hypothesis 1 model four of Hayes (2013) was used with all the mediators separate (mediation analysis 1, 2 and 3) with a mediation analysis (see Figure 3). Model six of Hayes (2013) was used for hypothesis 2, 3 and 4 with all the mediators in one model with a regression analysis (see Figure 4). The sequence in which the mediators were added to the model influences the results (Hayes, 2013). There were 12 different sequences in which the mediators could be added (See appendix 1). The study chose to follow Bandura's social-cognitive learning theory, in which it is

postulated that motivation subsequently influence coping efforts (Bandura, 1986). Therefore, hypothesis 2, 3 and 4 were tested with mediation analysis 8 in which the sequence is as follows; *motivation* > *self-directing* > *surrender*. For hypothesis 2 the independent variable and the coping style *self-directing* (M) and coping style *surrender* (M) were used with the dependent variable *symptoms of SUD* (Y). For hypothesis 3 the dependent variable, the independent variable and the mediator *motivation stage action* (M) were used. To determine whether *motivation* reduces the prevalence of *SUD symptoms* beyond the consequences of the *self-directing* coping style and the *surrender* coping style hypothesis 4 was analysed. The dependent variable, the independent variable and all the mediators were used. A significance level of 0.05 was chosen to test the hypotheses in this study.

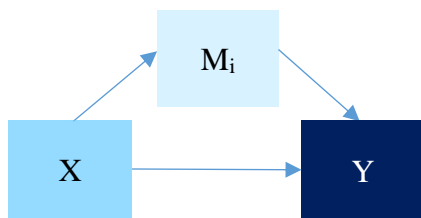


Figure 3. Model 4 (Hayes, 2013)

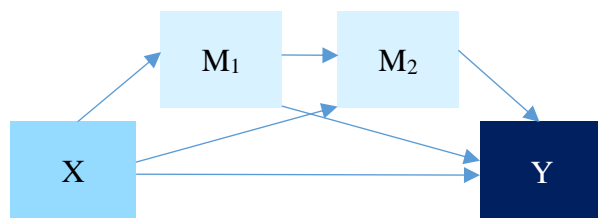


Figure 4. Model 6 with 2 mediators (Hayes, 2013)

Results

Results revealed that the total effect of the independent variable, intrinsic religiosity, on the dependent variable, symptoms of SUD, was negative ($c = -.20$). However this effect was not significant, $F(1,45) = 1.80, p = .19$. This negative correlation is line with the main assumption of this study. Namely, less intrinsic Christians were assumed to show less symptoms of SUD and more intrinsic Christians were assumed to show more symptoms of SUD. However, the association is non-significant and therefore the assumption cannot be confirmed.

3.1 Intrinsic religiosity

The first hypothesis stated that intrinsic religiosity correlates with specific copings styles and with the motivation stage action. Less intrinsic Christians who score lower on the motivation stage action were assumed to use more self-directing coping and more intrinsic Christians were assumed to use more surrender coping and score higher on the motivation stage action.

3.1.1 Motivation. The regression statistics are reported in Table 1. Results revealed that there was no significant correlation between motivation stage action and intrinsic religiosity, $\beta = .29, p = .08$. This was a positive not significant correlation, which is shown in figure 5. As mentioned before, patients who scored lower on the motivation stage, had higher motivation because of the Likert scale ranging from 1 “I agree” to 5 “I do not agree”. This was in contrast with hypothesis 1a, because less intrinsic Christians scored lower on the motivation stage action and more intrinsic Christians scored higher on the motivation stage action. Therefore, hypothesis 1a has been rejected.

Table 1.

Model Summary mediation analysis 1 with standardized coefficients

Factor	Intrinsic religiosity		
	β	SE	p
Total effect	-.20	.26	.19
Motivation	.29	.16	.08
Self-directing	-.74	.10	<.001
Surrender	.46	.12	<.001

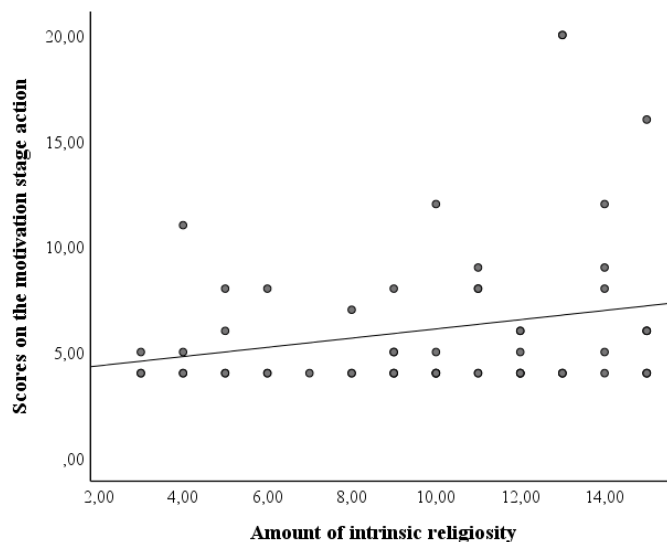


Figure 5. A positive correlation between scores on the motivation stage action and intrinsic religiosity

3.1.2 Coping style self-directing. The regression statistics are reported in Table 1. Results revealed that there was a significant correlation between coping style self-directing and intrinsic religiosity, $\beta = -.74$, $p = <.001$. As Figure 6 indicates, the correlation is negative. In line with hypothesis 1b, less intrinsic Christians scored higher on the coping style self-directing and more intrinsic Christians scored lower on the coping style self-directing.

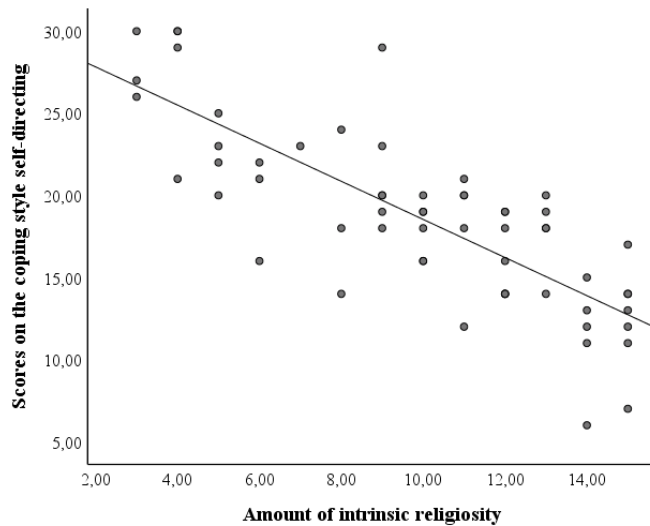


Figure 6. A negative correlation between scores on the self-directing coping style and intrinsic religiosity

3.1.3 Coping style surrender. The regression statistics are reported in Table 1. Results revealed that there was a significant correlation between coping style surrender and intrinsic religiosity, $\beta = .46$, $p = <.001$. The correlation is positive, which is shown in figure 7. In line with hypothesis 1c, less intrinsic Christians scored lower on the coping style surrender and more intrinsic Christians scored higher on the coping style surrender.

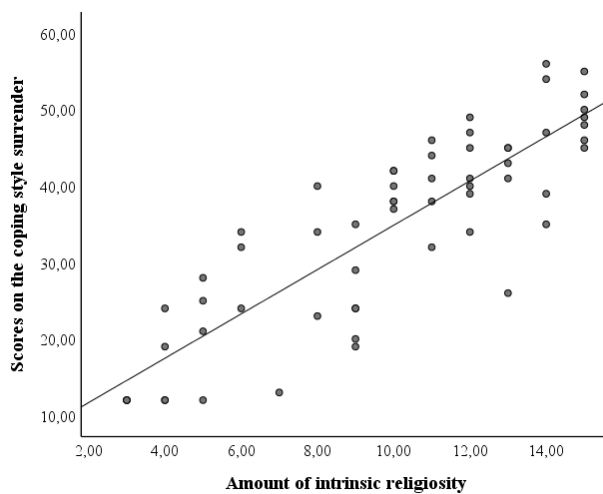


Figure 7. A positive correlation between scores on the surrender coping style and intrinsic religiosity

3.2 Religious coping.

The second hypothesis states that intrinsic religiosity and religious coping styles correlate with the prevalence of symptoms of SUD in patients with a SUD. Less intrinsic Christians who tend to use the self-directing coping style were assumed to have more symptoms of SUD than more intrinsic Christians who tend to use the surrender coping style. First the study examined the effect of intrinsic religiosity and the coping style self-directing on the prevalence of symptoms of SUD (Hypothesis 2a), then the study examined the effect of intrinsic religiosity and the coping style surrender on the prevalence of symptoms of SUD (Hypothesis 2b). Both parts of the hypothesis were examined through a Process Analysis which measured the entire model.

3.2.1 Coping style self-directing. As mentioned before, in line with hypothesis 1b, less intrinsic Christians scored higher on the coping style self-directing ($a_2 = -.74$, see table 1). However, in contrast with hypothesis 2a, patients who scored higher on the coping style self-directing show less symptoms of SUD ($b_2 = -.05$, see figure 8 and table 15 in appendix 1). To confirm whether the effect of coping style self-directing on the prevalence of symptoms of SUD was significant a bias-corrected bootstrap confidence interval for the indirect effect ($ab_2 = .04$) was performed, based on 10000 bootstrap samples. This effect would be significant when the interval did not include zero. In table 2, the lower confidence interval is $-.42$ and the upper level confidence interval is $.64$ of indirect effect 5. This indicated that this indirect effect was not significant. Therefore, hypothesis 2a can be rejected. Less intrinsic Christians who tend to use the self-directing coping style do not show more symptoms of SUD than more intrinsic Christians who tend to use the surrender coping style.

3.2.2 Coping style surrender. In line with hypothesis 1c, less intrinsic Christians scored lower on the coping style surrender and more intrinsic Christians scored higher on the coping style surrender ($a_3 = .46$, see table 1). In line with hypothesis 2b, patients who scored higher on the coping style surrender show less symptoms of SUD ($b_3 = -.07$, see figure 8 and table 15 in appendix 1). To confirm whether this effect was significant a bias-corrected bootstrap confidence interval for the indirect effect ($ab_3 = -.03$) was performed based on 10000 bootstrap samples. As shown in table 2, the lower confidence interval is $-.36$ and the upper level confidence interval is $.32$ of indirect effect 7. This indicated that this indirect effect was not significant. Therefore, hypothesis 2b can be rejected. More intrinsic Christians who

tend to use the surrender coping style do not show less symptoms of SUD than less intrinsic Christians who do not tend to use the surrender coping style.

3.3 Motivation

The third hypothesis states that intrinsic religiosity and the motivation stage action are correlated with the prevalence of symptoms of SUD in patients with SUD. Less intrinsic Christians who score lower on the motivation stage action were assumed to show more symptoms of SUD than more intrinsic Christians who tend to score higher on the motivation stage action. To test this hypothesis, a Process Analysis which measured the entire model was used. According to the results less intrinsic Christians scored lower on the motivation stage action ($a_1 = .29$) and show less symptoms of SUD ($b_1 = -.11$, see figure 8 and table 15 in appendix 1). To confirm whether this effect was significant a bias-corrected bootstrap confidence interval for the indirect effect ($ab_1 = -.03$) was performed based on 10000 bootstrap samples. The interval would be significant when it did not include zero. In table 2, the lower confidence interval is $-.26$ and the upper level confidence interval is $.04$ of indirect effect 1. This indicated that this indirect effect was not significant. Therefore, hypothesis 3 can be rejected. Less intrinsic Christians who scored lower on the motivation stage action did not show less symptoms of SUD than more intrinsic Christians who scored higher on the motivation stage action.

Table 2

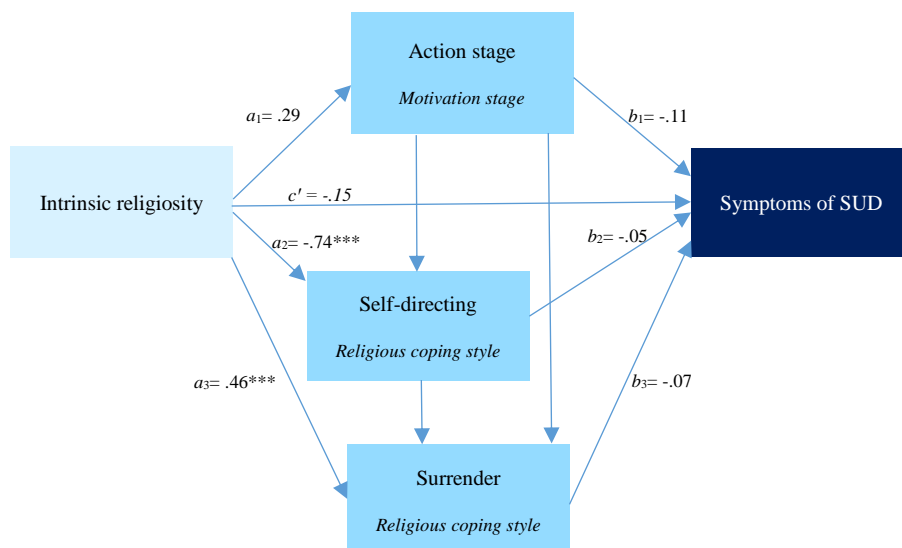
Effects of mediation analysis 8

		Effect	SE	<i>t</i>	LLCI	ULCI
Total effect	<i>c</i>	-.20	.15	-1.34	-.51	.10
Direct effect	<i>c'</i>	-.15	.28	-.52	-.72	.43
		Effect	Boot SE		Boot LLCI	Boot ULCI
Indirect effect	Total	-.05	.25		-.54	.43
IR > MOT > SYMP	Ind1	-.03	.04		-.15	.02
IR > MOT > SD > SYMP	Ind2	.00	.01		-.02	.02
IR > MOT > SU > SYMP	Ind3	-.00	.01		-.01	.01
IR > MOT > SD > SU > SYMP	Ind4	-.00	.00		-.01	.01
IR > SD > SYMP	Ind5	-.03	.26		-.42	.64
IR > SD > SU > SYMP	Ind6	-.02	.14		-.32	.22
IR > SU > SYMP	Ind7	-.03	.17		-.36	.32

3.4 Religious coping and motivation

The fourth hypothesis states that the motivation stage action mediates the correlation between intrinsic religiosity, the religious coping styles and the prevalence of symptoms of SUD. Patients who use the self-directing coping style were assumed to score lower on the motivation stage action and will have more symptoms of SUD than patients who tend to use the surrender coping style and score higher on the motivation stage action. To test this hypothesis, a Process Analysis which measured the entire model was used. The indirect effect (Ind 2) of motivation on the self-directing coping style and symptoms of SUD is .0004 with a lower confidence interval of -.02 and an upper level confidence interval of .02 (see table 2). This indicated that this indirect effect was not significant. Therefore, the hypothesis can be rejected. Patients who use the self-directing coping style do not score lower on the motivation stage action and do not have more symptoms of SUD.

The indirect effect (Ind 3) of motivation on the surrender coping style and symptoms of SUD is -.0002 with a lower confidence interval of -.01 and an upper level confidence interval of .01. This indicated that this indirect effect was not significant. Therefore, the hypothesis can be rejected. Motivation does not reduce the prevalence of SUD symptoms beyond the consequences of the self-directing coping style and the surrender coping. To show the direct and indirect effects more clearly figure 3 is included.



*** = $P < .001$

Figure 8. Results process analysis of mediation model 8 with coefficients and significance

4. Discussion

It was the aim of this study to investigate whether religious coping and motivation had an effect on the prevalence of symptoms of SUD in patients with SUD. In addition, the study wanted to research whether motivation reduces the prevalence of SUD symptoms beyond the consequences of the self-directing coping style and the surrender coping style. Four hypotheses were tested and all hypotheses were tested with a mediation model. First, the study examined the total effect, which turned out to be not significant. In addition, there were no mediators that significantly mediated the total effect. This could be expected, if there is no correlation, it cannot be mediated either. There were however, two significant correlations between intrinsic religiosity and the religious coping styles. Possible reasons why these correlations were not significant will be discussed in order of the mediation analysis, starting with the total effect.

4.1 Intrinsic religiosity

As mentioned before, the correlation between intrinsic religiosity and symptoms of SUD, the total effect, was not significant. This could be because of the small sample size ($n = 47$). Besides this, the indirect effect of X on Y through M_1 (motivation) was in this study negative, however the indirect effect through M_2 (self-directing) was positive. This could give a total effect (c) of zero. Furthermore, results presented in this study rely on one assessment of religiosity at a single time point, which could have an effect on the ability to examine the predictive power of intrinsic religiosity on substance use. The correlation might be causal (e.g., higher intrinsic religiosity might directly reduce the symptoms of SUD). However, religiosity could also be a consequence of substance abuse (e.g., high levels of substance use might lead to increased religiosity as part of an effort to abstain from alcohol or drugs). Therefore, further research could measure religiosity at different time points.

The correlation between intrinsic religiosity and the motivation stage action was not significant either. This could be due to the distribution of scores on the motivation stage action. 52 percent of the patients had a score of 4 out of 20, which means that they scored the lowest possible score, indicating that they had the highest motivation. Those high levels of motivation could be a result of the fact that patients actively sought treatment for their SUD. In addition, it is as well possible that patients

who came to the clinic had more severe substance use problems than patients who did not actively sought treatment. In the study of Ryan, Plant and O'Malley (1995) they found that patients with more severe alcohol problems generally had greater internal motivation for treatment. The severity of the patient's substance problems enhances internal motivation, presumably because the problem severity increases distress and thus influences decision making (DiClemente, Bellino, & Neavins, 1999). Hence, patients in this study had higher levels of motivation. Therefore, it could be possible that the correlation was not significant due to less variability of the scores.

The third correlation that this study wanted to examine was the correlation between intrinsic religiosity and the specific copings styles. Variations in different religious coping styles are assumed to be associated with the degree of intrinsic religiosity (Scheafer & Gorsuch, 1993; Smith & Gorsuch, 1989). Results of this study indicated a significant negative correlation between coping style self-directing and intrinsic religiosity. This correlation is in line with the study of Pargament and colleagues (1988) patients with lower intrinsic religiosity tend to be more self-directing. Results of this study indicated also a significant positive correlation between coping style surrender and intrinsic religiosity. Higher intrinsic religiosity is correlated with the coping style surrender, which is in line with the literature of Wong-McDonald and Gorsuch (2000).

These results indicate that when patients say that they are highly intrinsic religious, therapists could assume that they use a surrender coping style. Therapists could use this valuable information during treatment. For example, this highly intrinsic religious patient would likely be more responsive to treatment which is aimed at solving his or her problems together with God. However, patients who tend to be more self-directing, would likely be more responsive to treatment which is aimed at self-reliance. Therefore, it is important for therapists to know which coping style their patients use, so that they can adjust their treatment strategy.

4.2 Religious coping

The second set of hypothesis states that intrinsic religiosity and religious coping styles are correlated with the prevalence of symptoms of SUD in patients with a SUD. However, according to the results of this study less intrinsic Christians who tend to use the self-directing coping style did not show more symptoms of SUD. Not only this study, but more studies find mixed results when using the self-directing

coping style (Hathaway & Pargament 1990; Wong-McDonald & Gorsuch, 2000). This is to some extent surprising given the theoretical groundwork of the coping style.

One potential explanation for this inconsistent result, may lie in the operationalization of the construct itself. Perhaps the RCOPE does not measure what it was intended to measure, for instance in the RCOPE item “*I solve my problems without God’s help*”. Patients could interpret this in several ways. One interpretation is that God has provided the patient the ability and freedom to engage in the problem-solving process. A second interpretation is that God does not intervene but supports the patient throughout the coping process. A third interpretation is that the patient must cope alone because God has abandoned him or her. These different interpretations could lead to different answers, which could consequently lead to different coping styles. It is therefore important that patients have the same interpretation of the different items.

Furthermore, more intrinsic Christians who tend to use the surrender coping style do not show less symptoms of SUD than less intrinsic Christians who do not tend to use the surrender coping style. This non-significant correlation could be due to the overrepresentation of men in the current sample. Generally, 75 percent of patients with SUD are male, which is lower than the percentage of men in this study, because 81 percent were male in this study (Landelijk Alcohol en Drugs Informatie Systeem, 2016). However, females have generally higher amounts of religiosity than men (Miller & Hoffmann, 1995). Therefore, it is possible that there is less variability of the scores on intrinsic religiosity. Future research should examine if an equal amount of men and woman would increase variability in scores on intrinsic religiosity.

4.3 Motivation

Results of this study indicated that patients who scored lower on intrinsic religiosity and who scored lower on the motivation stage action did not show more symptoms of SUD than patients who scored higher on intrinsic religiosity and who scored higher on the motivation stage action. It is possible that the way motivation has been examined in this study is different from the way that motivation has been examined in other studies which did found significant correlations. A patient tends to be judged as motivated if he or she accepts the therapist's view of the problem (including the need for help and the diagnosis) and complies with treatment prescriptions (Miller, 1985). However, motivating was in this study measured with

agreement to the following statements: “I am actually changing my drinking habits right now”, “I am trying to drink less than I used to”, “I have just recently changed my drinking habits”, “Anyone can talk about wanting to do something about drinking, but I am actually doing something about it”. These statements do not measure the amount of need for help nor how much someone complies with treatment prescriptions. In addition, the questionnaire which measured motivation (RCQ-D) lacked discriminant validity according to Budd and Rollnick (1996). In their study they observed high correlations between the different stages. In other studies stages were also highly interdependent (Rollnick, Heather, Gold, & Hall, 1992; Sutton, 1996). Therefore, it is possible that this study, which measured the action stage, actually measured the pre-contemplation stage and the contemplation stage as well. However, patients in lower stages of change (i.e., pre-contemplation and contemplation) have poorer treatment outcomes and lower motivation (Callaghan et al., 2005; Coleman-Wallace, Lee, Montgomery, Blix, & Wang, 1999; Dino, Kama, Horn, Kalsekar, & Fernandes, 2004). Therefore, it is unclear whether a lower score on the action stage actually meant a higher motivation. Future research should examine if other ways of measuring motivation would increase the correlation between motivation stage action and the prevalence of symptoms of SUD.

4.4 Religious coping and motivation

Lastly, this study wanted to examine whether the motivation stage action reduces the prevalence of SUD symptoms above and beyond the consequences of the self-directing coping style and the surrender coping style. Results of this study indicated that there was not a significant indirect effect of motivation on the self-directing coping style and symptoms of SUD. Results of this study also indicated also that there was not a significant indirect effect of motivation on the surrender coping style and symptoms of SUD. Therefore, motivation does not mediate the relation between religious coping styles and the prevalence of symptoms of SUD.

As mentioned before, it is possible that the reason why motivation is not a mediator, is because there was no significant relation between religious coping styles and the prevalence of symptoms of SUD to begin with. However, it was not expected that there would be no significant correlation between religious coping styles and the prevalence of symptoms of SUD, given the literature that supports this correlation (Brechtling & Giancola, 2007; Eisenberg et al., 2011). As mentioned before, there are

some potential reasons why there was no significant correlation in this study; indirect effects were in the opposite directions which could lead to a total effect of zero, measurement of the variables was only at one single time point and these measurements could have measured something that was not intended to measure. In addition, there was not an equal amount of men and woman and there was a skewed distribution of scores in different variables. Hence, this study has several limitations which could have led to the non-significant correlations.

4.5 Limitations

First, the number of patients who provided complete data was relatively small ($n = 47$). This low number participants likely yielded limited statistical power. Second, this study's sample may not be representative of the general population of patients in residential substance use treatment. Patients were in a supervised drug-free environment of a Christian mental health clinic and were actively seeking for help. Therefore, it is possible that the results of this study are not generalizable.

Third, although most patients were in treatment for twelve weeks, data that quantified the exact number of days that patients were enrolled in treatment was not available. In addition, some patients terminated treatment earlier. These patients filled in their follow-up measurement earlier. Future research should examine if length of treatment is related to treatment outcomes and if different follow-up measurement times have an effect on treatment outcomes.

Fourth, non-religious coping strategies were not examined in this study and although previous research demonstrated the predictive power of religious coping variables above and beyond traditional coping strategies (Pargament, Falb, Ano, & Wachholtz, 2013; Park, Edmondson, & Blank, 2009), exploring these coping styles in patients with SUD would be essential. Research has shown that traditional coping strategies influence both the development and course of SUD and its treatment outcome (del Mar Capella & Adan, 2017; Marquez-Arrico, Benaiges, & Adan, 2015; Walker & Stephens, 2014). Additionally, reliance on other religious coping styles such as the deferring and the collaborative coping style should be examined in future research.

4.6 Practical implications

Besides the limitations, recommendations for future research and theoretical implications, this study also generated some practical implications. A practical implication stemming from this study is that it is important to examine the role of religion in treatment of SUD further, because religion continues to play an important role in treatment (Moos, 2007). This is relevant to help patients and therapists. If higher intrinsic religiosity does reduce the symptoms of SUD, therapists can integrate patients' religiosity into treatment and this could benefit the patient.

In addition, incorporating religion into Cognitive Behaviour Treatment was perceived to potentially increase patients' internal and external motivation (Hodge & Lietz, 2014). Despite the fact that higher motivation did not lead to less symptoms of SUD in this study, other studies did find these results (DiClemente, Nidecker, & Bellack, 2008; Martin, Rohsenow, MacKinnon, Abrams, & Monti, 2006; Slesnick et al., 2009). It is therefore important to include the possibility that incorporating religion into treatment could increase patients' internal and external motivation which could lead to less symptoms of SUD. When it does reduce symptoms of SUD therapists have another reason why they should integrate patients' religion into treatment.

Another practical implication stemming from this study is that when therapists choose to integrate patients' religion into treatment they should adjust their treatment strategy to the right religious coping style. Treatment for patients who tend to use the surrender coping style should be more focused on solving his or her problems together with God. However, treatment for patients who tend to use the self-directing coping style should be more focused on self-reliance. Nevertheless, in connection to the mixed results of the research on the self-directing coping style, the results should be interpreted with caution.

4.7 Conclusion

In conclusion, this study examines the relationship between intrinsic religiosity, motivation, religious coping and the prevalence of symptoms of SUD in patients with SUD. Results reveal that there is no significant correlation between intrinsic religiosity and the prevalence of symptoms of SUD (the total effect). In addition, motivation and religious coping styles do not significantly mediate the

correlation between religious coping and the prevalence of symptoms of SUD. Therefore, hypotheses 2a, 2b, 3 and 4 are rejected. However, this study does find significant correlations between intrinsic religiosity and the self-directing coping style and between intrinsic religiosity and the surrender coping style. Therefore, hypothesis 1b and 1c is confirmed. There is no significant correlation between intrinsic religiosity and motivation in this study, hence hypothesis 1a is rejected. Even though this study confirms the correlation between intrinsic religiosity and religious coping, the influence of intrinsic religiosity remains unclear in the present sample. Further research, keeping in mind the current limitations, is advised.

References

- Asher, M.K., Martin, R.A., Rohsenow, D.J., MacKinnon, S.V., Traficante, R., Monti, P.M., 2003. Perceived barriers to quitting smoking among alcohol dependent patients in treatment. *Journal of Substance Abuse* 24, 169–174.
- Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51, 1173-1182.
- Bobo, J.K., McIlvain, H.E., Lando, H.A., Walker, R.D., Leed-Kelly, A., 1998. Effect of smoking cessation counseling on recovery from alcoholism: findings from a randomized community intervention trial. *Addiction* 93, 877–887.
- Brechtling, E. H., & Giancola, P. R. (2007). A longitudinal study of coping strategies and substance use in adolescent boys. *Journal of Child & Adolescent Substance Abuse*, 16, 51-67.
- Budd, R. J., & Rollnick, S. (1996). The structure of the Readiness to Change Questionnaire: A test of Prochaska & DiClemente's transtheoretical model. *British Journal of Health Psychology*, 1, 365-376.
- Callaghan, R. C., Hathaway, A., Cunningham, J. A., Vettese, L. C., Wyatt, S., & Taylor, L. (2005). Does stages of change predict dropout in a culturally diverse sample of adolescents admitted to inpatient substanceabuse treatment? A test of the transtheoretical model. *Addictive Behaviors*, 30, 1834–1847.
- Centraal Bureau voor de Statistiek. (2016). *Helft Nederlanders is kerkelijk of religieus*. Retrieved August 25, 2018, from <https://www.cbs.nl/nl-nl/nieuws/2016/51/helft-nederlanders-is-kerkelijk-of-religieus>

- Coleman-Wallace, D., Lee, J. W., Montgomery, S., Blix, G., & Wang, D. T. (1999). Evaluation of developmentally appropriate programs for adolescent tobacco cessation. *The Journal of School Health, 69*, 314–319.
- Connors, G. J., Donovan, D. M., & DiClemente, C. C. (2001). *Substance abuse treatment and the stages of change*. NY, NY: Guilford Press.
- Defuentes-Merillas, L., Dejong, C. A. J., & Schippers, G. M. (2002). Reliability and validity of the Dutch version of the Readiness to Change Questionnaire. *Alcohol and Alcoholism, 37*, 93-99.
- del Mar Capella, M., & Adan, A. (2017). The age of onset of substance use is related to the coping strategies to deal with treatment in men with substance use disorder. *PeerJ, 5*, e3660.
- DiClemente, C. C., Bellino, L. E., & Neavins, T. M. (1999). Motivation for change and alcoholism treatment. *Alcohol Research and Health, 23*, 87-92.
- DiClemente, C. C., Nidecker, M., & Bellack, A. S. (2008). Motivation and the stages of change among individuals with severe mental illness and substance abuse disorders. *Journal of Substance Abuse Treatment, 34*, 25–35.
- DiClemente, C. C., Schlundt, D., & Gemmell, L. (2004). Readiness and stages of change in addiction treatment. *The American Journal on Addictions, 13*, 103–119.
- Dino, G., Kamal, K., Horn, K., Kalsekar, I., & Fernandes, A. (2004). Stages of change and smoking cessation outcomes among adolescents. *Addictive Behaviors, 29*, 935–940.
- Dutra, L., Stathopoulou, G., Basden, S. L., Leyro, T. M., Powers, M. B., & Otto, M. W. (2008). A meta-analytic review of psychosocial interventions for substance use disorders. *American Journal of Psychiatry, 165*, 179-187.
- Eisenberg, N., Castellani, V., Panerai, L., Eggum, N. D., Cohen, A. B., Pastorelli, C., & Caprara, G. V. (2011). Trajectories of religious coping from adolescence into early adulthood: Their form and relations to externalizing problems and prosocial behavior. *Journal of personality, 79*, 841-873.
- Ellison, C. G., & Levin, J. S. (1998). The religion-health connection: Evidence, theory, and future directions. *Health Education & Behavior, 25*, 700-720.
<http://dx.doi.org/10.1177/109019819802500603>

- Finney, J. W., & Moos, R. H. (1992). The long-term course of treated alcoholism: II. Predictors and correlates of 10-year functioning and mortality. *Journal of studies on alcohol*, *53*, 142-153.
- Finney, J. W., Wilbourne, P. L., & Moos, R. H. (2007). Psychosocial treatments for substance use disorders. *A guide to treatments that work*, *3*, 179-202.
- Folkman, S., & Lazarus, R. S. (1980). An analysis of coping in a middle-aged community sample. *Journal of health and social behavior*, *21*, 219-239.
- Hasin, D. S., O'Brien, C. P., Auriacombe, M., Borges, G., Bucholz, K., Budney, A., . . . Grant, B. F. (2013). DSM-5 criteria for substance use disorders: recommendations and rationale. *American Journal of Psychiatry*, *170*, 834-851.
- Hathaway, W.L., & Pargament, K. I. (1990). Intrinsic religiousness, religious coping, and psychosocial competence: A covariance structure analysis. *Journal for the Scientific Study of Religion*, *29*, 423-441.
- Hayes, A. F. (2009). Beyond Baron and Kenny: Statistical mediation analysis in the new millennium. *Communication monographs*, *76*, 408-420.
- Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis: a regression-based approach*. New York: Guilford
- Hodge, D., & Lietz, C. (2014). Using Spiritually Modified Cognitive-Behavioral Therapy in Substance Dependence Treatment: Therapists' and Clients' Perceptions of the Presumed Benefits and Limitations. *Health & Social Work*, *39*, 200-210.
- Holt, C. L., Clark, E. M., Debnam, K. J., & Roth, D. L. (2014). Religion and health in African Americans: The role of religious coping. *American journal of health behavior*, *38*, 190-199. <http://dx.doi.org/10.5993/AJHB.38.2.4>
- Hubbard, R. L., Craddock, S. G., Flynn, P. M., Anderson, J., & Etheridge, R. M. (1997). Overview of 1-year follow-up outcomes in the Drug Abuse Treatment Outcome Study (DATOS). *Psychology of Addictive Behaviors*, *11*, 261.
- Koenig, H. G., & Büssing, A. (2010). The Duke University Religion Index (DUREL): A Five-Item Measure for Use in Epidemiological Studies. *Religions*, *1*, 78-85. doi:10.3390/rel1010078
- Koenig, H. G., King, D., & Carson, V. B. (2012). *Handbook of religion and health* (2nd ed.). New York: Oxford University Press.

- Koenig, H.G., Larson, D.B., & Weaver, A.J. (1998). *Research on religion and serious mental illness. Spirituality and religion in recovery from mental illness* (pp. 81- 95). San Fransisco. CA: Jossey-Bass Inc. Publishers.
- Landelijk Alcohol en Drugs Informatie Systeem. (2016). *Kerncijfers Verslavingszorg 2015*. Houten: Stichting Informatie Voorziening Zorg.
- Littell, J. H., & Girvin, H. (2002). Stages of change: A critique. *Behavior Modification, 26*, 223-273.
- Marquez-Arrico, J. E., Benaiges, I., & Adan, A. (2015). Strategies to cope with treatment in substance use disorder male patients with and without schizophrenia. *Psychiatry research, 228*, 752-759. DOI 10.1016/j.psychres.2015.05.028.
- Martin, R. A., Rohsenow, D. J., MacKinnon, S. V., Abrams, D. B., & Monti, P. M. (2006). Correlates of motivation to quit smoking among alcohol dependent patients in residential treatment. *Drug and Alcohol Dependence, 83*, 73-78.
- McLellan, A. T., & McKay, J. R. (1998). The treatment of addiction: What can research offer practice. *Bridging the gap between practice and research: Forging partnerships with community-based drug and alcohol treatment*, 147-186.
- Medlock, M. M., Rosmarin, D. H., Connery, H. S., Griffin, M. L., Weiss, R. D., Karakula, S. L., & McHugh, R. K. (2017). Religious coping in patients with severe substance use disorders receiving acute inpatient detoxification. *The American journal on addictions, 26*, 744-750.
- Miller, A., & Hoffmann, J. (1995). Risk and Religion: An Explanation of Gender Differences in Religiosity. *Journal for the Scientific Study of Religion, 34*, 63-75.
- Miller, W. R. (1985). Motivation for treatment: A review with special emphasis on alcoholism. *Psychological bulletin, 98*, 84.
- Moos, R. H. (2007). Theory-based active ingredients of effective treatments for substance use disorders. *Drug and alcohol dependence, 88*, 109-121.
- Musick, M. A., Traphagan, J. W., Koeing, H. G., & Larson, D. B. (2000). Spirituality in physical health and aging. *Journal of Adult Development, 7*, 73-86. <http://dx.doi.org/10.1023/A:1009523722920>

- Oosterhuis, H. (2012). Religie in de Nederlandse Psychiatrie en Geestelijke Gezondheidszorg. In P. Verhagen, & H. v. Megen, *Handboek Psychiatrie, Religie en Spiritualiteit* (pp. 17-30). Utrecht: De Tijdstroom.
- Oxhandler, H. K., & Parrish, D. E. (2018). Integrating clients' religion/spirituality in clinical practice: A comparison among social workers, psychologists, counselors, marriage and family therapists, and nurses. *Journal of clinical psychology, 74*, 680-694.
- Pargament, K.I., Falb, K., Ano, G., Wachholtz, A.B., 2013. The religious dimension of coping: advances in theory, research, and practice. *Handbook of Psychology of Religion*, second ed. Guilford Press, New York, pp. 560-580.
- Pargament, K. I., Feuille, M., & Burdzy, D. (2011). The Brief RCOPE: Current psychometric status of a short measure of religious coping. *Religions, 2*, 51-76.
- Pargament, K. I., Kennell, J., Hathaway, W., Grevengoed, N., Newman, J., & Jones, W. (1988). Religion and the problem-solving process: Three styles of coping. *Journal for the scientific study of religion, 27*, 90-104.
- Pargament, K. I., Smith, B. W., Koenig, H. G., & Perez, L. M. (1998). Patterns of positive and negative religious coping with major life stressors. *Journal for the scientific study of religion, 37*, 710-724.
- Pargament, K. I., Koenig, H. G., & Perez, L. M. (2000). The many methods of religious coping: Development and initial validation of the RCOPE. *Journal of clinical psychology, 56*, 519-543.
- Pargament, K. I., & Raiya, H. A. (2007). A decade of research on the psychology of religion and coping: Things we assumed and lessons we learned. *Psyke & logos, 28*, 25.
- Park, C. L., Edmondson, D., & Blank, T. O. (2009). Religious and non-religious pathways to stress-related growth in cancer survivors. *Applied Psychology: Health and Well-Being, 1*, 321-335.
- Pelissier, B., & Jones, N. (2006). Differences in motivation, coping style, and self-efficacy among incarcerated male and female drug users. *Journal of substance abuse treatment, 30*, 113-120.
- Pieper, J., & Uden, M. (2005). *Religion and Coping in Mental Health Care*. Amsterdam-New York: Rodopi.

- Prochaska, J. O., & DiClemente, C. C. (1986). *Toward a comprehensive model of change*. In W. R. Miller, & N. Heather (Eds.), *Treating addictive behaviors: Processes of change* (pp. 3–27). New York: Plenum Press.
- Prochaska, J. O., DiClemente, C. C., & Norcross, J. C. (1992). In search of how people change. *American Psychologist*, *47*, 1102–1114.
- Raistrick, D., Bradshaw, J., Tober, G., Weiner, J., Allison, J., & Healey, C. (1994). Development of the Leeds Dependence Questionnaire (LDQ): a questionnaire to measure alcohol and opiate dependence in the context of a treatment evaluation package. *Addiction*, *89*, 563-572.
- Ritchie, H. & Roser, M. (2018). *Substance Use*. Retrieved August 28, 2018, from 'https://ourworldindata.org/substance-use'
- Rollnick, S., Heather, N., Gold, R., & Hall, W. (1992). Development of a short 'readiness to change' questionnaire for use in brief, opportunistic interventions among excessive drinkers. *British journal of addiction*, *87*, 743-754.
- Rosmarin, D. H., Bigda-Peyton, J. S., Kertz, S. J., Smith, N., Rauch, S. L., & Björgvinsson, T. (2013). A test of faith in God and treatment: The relationship of belief in God to psychiatric treatment outcomes. *Journal of affective disorders*, *146*, 441-446.
- Rosmarin, D.H., Pirutinsky, S., Auerbach, R.P., Bjorgvinsson, T., Bigda-Peyton, J., Andersson, K.I., . . . Krumrei, E.J., (2011). Incorporating spiritual beliefs into a cognitive model of worry. *Journal of Clinical Psychiatry* *67*, 691-700.
- Ryan, R. M., Plant, R. W., & O'Malley, S. (1995). Initial motivations for alcohol treatment: Relations with patient characteristics, treatment involvement, and dropout. *Addictive behaviors*, *20*, 279-297.
- Schaefer, C.A., & Gorsuch, R.L. (1991). Psychological adjustment and religiousness: The multivariate belief-motivation theory of religiousness. *Journal for the Scientific Study of Religion*, *30*, 448-461.
- Shrout, P. E., & Bolger, N. (2002). Mediation in experimental and nonexperimental studies: New procedures and recommendations. *Psychological Methods*, *7*, 422-445.
- Slesnick, N., Bartle-Haring, S., Erdem, G., Budde, H., Letcher, A., Bantchevska, D., & Patton, R. (2009). Troubled parents, motivated adolescents: Predicting motivation to change substance use among runaways. *Addictive Behaviors*, *34*, 675–684.

- Sobell, M.B., Sobell, L.C., Kozlowski, L.T. (1995). *Dual recoveries from alcohol and smoking problems*. In: Fertig, J.B., Allen, J.P. (Eds.), *Alcohol and Tobacco: From Basic Science to Clinical Practice*. Research Monograph 30. National Institute on Alcohol Abuse and Alcoholism, pp. 207–224.
- Sutton, S. (1996). *Can 'stages of change' provide guidance in the treatment of addictions? A critical examination of Prochaska & DiClemente's model*. In G. Edwards & C. Dare (Eds), *Psychotherapy, Psychological Treatments and the Addictions*, pp. 189-205. Cambridge: Cambridge University Press.
- Tepper, L., Rogers, S. A., Coleman, E. M., & Malony, H. N. (2001). The prevalence of religious coping among persons with persistent mental illness. *Psychiatric Services, 52*, 660-665.
- van Uden, M. H. F. & Pieper, J. Z. T. (2005). Religie in de geestelijke gezondheidszorg. *Gedrag en gezondheid, 33*, 101–106.
- Walker, R., & Stephens, R. S. (2014). Protective behavioral strategies mediate problem-focused coping and alcohol use in college students. *Addictive behaviors, 39*, 1033-1037. DOI 10.1016/j.addbeh.2014.02.006.
- Wei, C. C., Heckman, B. D., Gay, J., & Weeks, J. (2011). Correlates of motivation to change in adolescents completing residential substance use treatment. *Journal of substance abuse treatment, 40*, 272-280.
- Willoughby, F.W., & Edens, J.F. (1996). Construct validity and predictive utility of the stages of change scale for alcoholics. *Journal of Substance Abuse, 8*, 275 - 291.
- Wong-McDonald, A., & Gorsuch, R. L. (2000). Surrender to God: An additional coping style?. *Journal of Psychology and Theology, 28*, 149-161.
- Yangarber-Hicks, N. (2004). Religious coping styles and recovery from serious mental illnesses. *Journal of Psychology and Theology, 32*, 305-317.
- Young, S.X., & Ensing, D.S. (1999). Exploring recovery from the perspective of people with psychiatric disabilities. *Psychiatric Rehabilitation Journal, 99*, 219-231.

Appendix I, Mediation analyses

Mediation analysis 1, model 4 with mediator	MOT		
Mediation analysis 2, model 4 with mediator	SD		
Mediation analysis 3, model 4 with mediator	SU		
Mediation analysis 4, model 6 with mediator	SD	SU	MOT
Mediation analysis 5, model 6 with mediator	SD	MOT	SU
Mediation analysis 6, model 6 with mediator	SU	SD	MOT
Mediation analysis 7, model 6 with mediator	SU	MOT	SD
Mediation analysis 8, model 6 with mediator	MOT	SD	SU
Mediation analysis 9, model 6 with mediator	MOT	SU	SD
Mediation analysis 10, model 6 with mediator	SD	SU	
Mediation analysis 11, model 6 with mediator	SD	MOT	
Mediation analysis 12, model 6 with mediator	SU	SD	
Mediation analysis 13, model 6 with mediator	SU	MOT	
Mediation analysis 14, model 6 with mediator	MOT	SD	
Mediation analysis 15, model 6 with mediator	MOT	SU	

Table 3

Model Summary mediation analysis 1

Antecedent		Consequent						
		M ₁ (MOT)			Y (Symptoms)			
		Coeff.	SE	<i>p</i>	Coeff.	SE	<i>p</i>	
X (IR)	<i>a</i> ₁	.29	.16	.08	<i>c</i> '	-.29	.27	.29
M ₁ (MOT)		-	-	-	<i>b</i> ₁	-.19	.24	.43
Constant	<i>i</i> _{M1}	3.54	1.68	<.001	<i>i</i> _Y	9.87	2.87	.001
		R ² = .07			R ² = .05			
		<i>F</i> (1,45) = 3.25, <i>p</i> = .08			<i>F</i> (2,44) = 1.20, <i>p</i> = .31			

Table 4

Effects of mediation analysis 1

		Effect	SE	<i>t</i>	LLCI	ULCI
Total effect	<i>c</i>	-.35	.26	-1.34	-.87	.18
Direct effect	<i>c'</i>	-.29	.27	-1.08	-.84	.25
		Effect	Boot SE		Boot LLCI	Boot ULCI
Indirect effect		-.06	.07		-.26	.04
Part. Stand. Ind. effect		-.01	.01		-.04	.01
Comp. Stand. Ind. effect		-.03	.04		-.14	.02

Table 5

Model Summary mediation analysis 2

		Consequent						
		M ₁ (SD)			Y (Symptoms)			
Antecedent		Coeff.	SE	<i>p</i>	Coeff.	SE	<i>p</i>	
X (IR)	<i>a</i> ₁	-1.09	.14	<.001	<i>c'</i>	-.36	.41	.39
M ₁ (SD)		-	-	-	<i>b</i> ₁	-.01	.29	.98
Constant	<i>i</i> _{M1}	29.21	1.43	<.001	<i>i</i> _Y	9.43	8.86	.29
R ² = .59				R ² = .04				
<i>F</i> (1,45) = 63.74, <i>p</i> = <.001				<i>F</i> (2,44) = .88, <i>p</i> = .42				

Table 6

Effects of mediation analysis 2

		Effect	SE	<i>t</i>	LLCI	ULCI
Total effect	<i>c</i>	-.35	.26	-1.34	-.87	.18
Direct effect	<i>c'</i>	-.36	.41	-.87	-1.18	.47
		Effect	Boot SE		Boot LLCI	Boot ULCI
Indirect effect		.01	.34		-.58	.75
Part. Stand. Ind. effect		.00	.05		-.09	.12
Comp. Stand. Ind. effect		.01	.19		-.32	.44

Table 7

Model Summary mediation analysis 3

		Consequent						
		M ₁ (SU)			Y (Symptoms)			
Antecedent		Coeff.	SE	<i>p</i>	Coeff.	SE	<i>p</i>	
X (IR)	<i>a</i> ₁	2.76	.29	<.001	<i>c'</i>	-.28	.45	.54
M ₁ (SU)		-	-	-	<i>b</i> ₁	-.02	.13	.86
Constant	<i>i</i> _{M1}	6.85	3.09	.03	<i>i</i> _Y	9.35	2.91	.002
R ² = .66				R ² = .04				
<i>F</i> (1,45) = 88.42, <i>p</i> = <.001				<i>F</i> (2,44) = .89, <i>p</i> = .42				

Table 8

Effects of mediation analysis 3

		Effect	SE	t	LLCI	ULCI
Total effect	c	-.35	.26	-1.34	-.87	.18
Direct effect	c'	-.28	.45	-.62	-1.19	.63
		Effect	Boot SE		Boot LLCI	Boot ULCI
Indirect effect		-.07	.39		-.87	.70
Part. Stand. Ind. effect		-.01	.06		-.14	.11
Comp. Stand. Ind. effect		-.04	.22		-.49	.40

Table 9

Model Summary mediation analysis 4

Antecedent		Consequent														
		M ₁ (SD)			M ₂ (SU)			M ₃ (MOT)			Y (Symptoms)					
		Coeff.	SE	p	Coeff.	SE	p	Coeff.	SE	p	Coeff.	SE	p			
X (IR)	a ₁	-1.09	.14	<.001	a ₂	1.56	.40	<.001	a ₃	.24	.30	.42	c'	-.26	.49	.60
M ₁ (SD)		-	-	-		-	-	-		-	-	-	b ₁	-.05	.34	.88
M ₂ (SU)		-	-	-		-	-	-		-	-	-	b ₂	-.03	.16	.83
M ₃ (MOT)		-	-	-		-	-	-		-	-	-	b ₃	-.19	.25	.44
Constant	i _{M1}	29.21	1.43	<.001	i _{M2}	39.25	8.60	<.001	i _{M3}	4.23	6.67	.53	i _Y	11.65	10.97	.30
		R ² = .59				R ² = .75				R ² = .07				R ² = .05		
		F(1,45) = 63.74,				F(2,44) = 66.57,				F(3,43) = 1.05,				F(4,42) = .59,		
		p = <.001				p = <.001				p = .38				p = .67		

Table 10

Effects of mediation analysis 4

		Effect	SE	<i>t</i>	LLCI	ULCI
Total effect	c	-.35	.26	-1.33	-.87	.18
Direct effect	c'	-.26	.49	-.52	-1.24	.73
		Effect	Boot SE		Boot LLCI	Boot ULCI
Indirect effect	Total	-.09	.43		-.95	.73
	Ind1	.06	.46		-.71	1.13
	Ind2	-.04	.24		-.56	.38
	Ind3	-.01	.06		-.17	.08
	Ind4	-.00	.03		-.06	.04
	Ind5	-.05	.30		-.62	.55
	Ind6	-.00	.03		-.09	.05
	Ind7	-.05	.09		-.37	.05
Partially Standardized Indirect effect	Total	-.01	.07		-.15	.12
	Ind1	.01	.07		-.11	.18
	Ind2	-.01	.04		-.09	.06
	Ind3	-.00	.01		-.03	.01
	Ind4	-.00	.00		-.01	.01
	Ind5	-.01	.05		-.10	.09
	Ind6	-.00	.01		-.02	.01
	Ind7	-.01	.02		-.06	.01
Completely Standardized Indirect effect	Total	-.05	.24		-.52	.43
	Ind1	.03	.26		-.39	.64
	Ind2	-.02	.14		-.32	.22
	Ind3	-.00	.03		-.10	.05
	Ind4	-.00	.02		-.04	.02
	Ind5	-.03	.16		-.35	.32
	Ind6	-.00	.02		-.05	.03
	Ind7	-.03	.05		-.21	.03

Table 11

Model Summary mediation analysis 7

Antecedent	Consequent												Y (Symptoms)			
	M ₁ (SU)			M ₂ (MOT)			M ₃ (SD)									
	Coeff.	SE	p	Coeff.	SE	p	Coeff.	SE	p	Coeff.	SE	p				
X (IR)	<i>a</i> ₁	2.76	.29	<.001	<i>a</i> ₂	.25	.28	.37	<i>a</i> ₃	-.42	.21	.05	<i>c</i> '	-.26	.49	.60
M ₁ (SU)	-	-	-	-	-	-	-	-	-	-	-	-	<i>b</i> ₁	-.03	.16	.83
M ₂ (MOT)	-	-	-	-	-	-	-	-	-	-	-	-	<i>b</i> ₂	-.19	.25	.44
M ₃ (SD)	-	-	-	-	-	-	-	-	-	-	-	-	<i>b</i> ₃	-.05	.34	.88
Constant	<i>i</i> _{M1}	6.85	3.09	.03	<i>i</i> _{M2}	3.45	1.78	.06	<i>i</i> _{M3}	30.89	1.38	<.001	<i>i</i> _Y	11.65	10.97	.29
		R ² = .66				R ² = .07				R ² = .70				R ² = .05		
		<i>F</i> (1,45) = 88.42,				<i>F</i> (2,44) = 1.60,				<i>F</i> (3,43) = 32.71,				<i>F</i> (4,42) = .59,		
		<i>p</i> = <.001				<i>p</i> = .21				<i>p</i> = <.001				<i>p</i> = .67		

Table 12

Effects of mediation analysis 7

		Effect	SE	<i>t</i>	LLCI	ULCI
Total effect	<i>c</i>	-.35	.26	-1.34	-.87	.18
Direct effect	<i>c</i> '	-.26	.49	-.52	-1.24	.73
		Effect	Boot SE		Boot LLCI	Boot ULCI
Indirect effect	Total	-.09	.43		-.95	.74
	Ind1	-.09	.52		-1.14	.90
	Ind2	-.01	.05		-.14	.06
	Ind3	.03	.28		-.39	.74
	Ind4	.00	.01		-.01	.02
	Ind5	-.05	.09		-.35	.04
	Ind6	-.00	.02		-.02	.04
	Ind7	-.02	.20		-.31	.55
Partially	Total	-.01	.07		-.15	.12
Standardized	Ind1	-.01	.08		-.18	.15
Indirect effect	Ind2	-.00	.01		-.02	.01
	Ind3	.01	.05		-.07	.12
	Ind4	.00	.00		-.00	.00
	Ind5	-.01	.01		-.06	.01
	Ind6	.00	.00		-.00	.01
	Ind7	.01	.03		-.05	.09
Completely	Total	-.05	.24		-.52	.43
Standardized	Ind1	-.05	.29		-.64	.53
Indirect effect	Ind2	-.00	.03		-.08	.03
	Ind3	.02	.16		-.22	.42
	Ind4	.00	.01		-.01	.01

Ind5	-.03	.05	-.20	.03
Ind6	.00	.01	-.01	.02
Ind7	.01	.11	-.17	.32

Table 13

Model Summary mediation analysis 8 with unstandardized coefficients

Antecedent	Consequent															
	M ₁ (MOT)			M ₂ (SD)			M ₃ (SU)			Y (Symptoms)						
	Coeff.	SE	p	Coeff.	SE	p	Coeff.	SE	p	Coeff.	SE	p				
X (IR)	<i>a</i> ₁	.29	.16	.08	<i>a</i> ₂	-1.08	.14	<.001	<i>a</i> ₃	1.55	.41	<.001	<i>c'</i>	-.26	.49	.60
M ₁ (MOT)	-	-	-	-	-	-	-	-	-	-	-	-	<i>b</i> ₁	-.19	.25	.45
M ₂ (SD)	-	-	-	-	-	-	-	-	-	-	-	-	<i>b</i> ₂	-.05	.34	.88
M ₃ (SU)	-	-	-	-	-	-	-	-	-	-	-	-	<i>b</i> ₃	-.03	.16	.82
Constant	<i>i</i> _{M1}	3.54	1.68	.04	<i>i</i> _{M2}	29.30	1.51	<.001	<i>i</i> _{M3}	39.17	8.76	<.001	<i>i</i> _Y	11.65	10.97	.29
		R ² = .07				R ² = .59				R ² = .75				R ² = .05		
		<i>F</i> (1,45) = 3.24,				<i>F</i> (2,44) = 31.20,				<i>F</i> (3,43) = 43.38,				<i>F</i> (4,42) = .59,		
		<i>p</i> = .08				<i>p</i> = <.001				<i>p</i> = <.001				<i>p</i> = .67		

Table 14

Effects of mediation analysis 8 with unstandardized coefficients

		Effect	SE	<i>t</i>	LLCI	ULCI
Total effect	c	-.35	.26	-1.34	-.87	.18
Direct effect	c'	-.26	.49	-.52	-1.24	.73
		Effect	Boot SE		Boot LLCI	Boot ULCI
Indirect effect	Total	-.09	.43		-.93	.76
	Ind1	-.06	.07		-.26	.04
	Ind2	.00	.01		-.02	.03
	Ind3	-.00	.01		-.03	.02
	Ind4	-.00	.01		-.02	.01
	Ind5	-.06	.45		-.70	1.13
	Ind6	-.04	.23		-.55	.37
	Ind7	-.05	.29		-.60	.56
Partially Standardized Indirect effect	Total	-.01	.07		-.15	.12
	Ind1	-.01	.01		-.04	.01
	Ind2	.00	.00		-.00	.01
	Ind3	.00	.00		-.00	.00
	Ind4	.00	.00		-.00	.00
	Ind5	.01	.07		-.11	.18
	Ind6	-.01	.04		-.09	.07
	Ind7	-.01	.05		-.09	.09
Completely Standardized Indirect effect	Total	-.05	.25		-.53	.44
	Ind1	-.03	.04		-.14	.02
	Ind2	.00	.01		-.01	.02
	Ind3	-.00	.01		-.02	.01
	Ind4	-.00	.00		-.01	.01
	Ind5	.03	.26		-.40	.64
	Ind6	-.02	.13		-.31	.23
	Ind7	-.03	.16		-.33	.32

Table 15

Model Summary mediation analysis 8 with standardized coefficients

Antecedent	Consequent															
	M ₁ (MOT)			M ₂ (SD)			M ₃ (SU)			Y (Symptoms)						
	Coeff.	SE	p	Coeff.	SE	p	Coeff.	SE	p	Coeff.	SE	p				
X (IR)	<i>a</i> ₁	.29	.16	.08	<i>a</i> ₂	-.74	.10	<.001	<i>a</i> ₃	.46	.12	<.001	<i>c'</i>	-.15	.28	.60
M ₁ (MOT)	-	-	-	-	-	-	-	-	-	-	-	-	<i>b</i> ₁	-.11	.15	.45
M ₂ (SD)	-	-	-	-	-	-	-	-	-	-	-	-	<i>b</i> ₂	-.05	.29	.88
M ₃ (SU)	-	-	-	-	-	-	-	-	-	-	-	-	<i>b</i> ₃	-.07	.31	.83
Constant	<i>i</i> _{M1}	.09	.16	.58	<i>i</i> _{M2}	-.04	.09	.72	<i>i</i> _{M3}	-.05	.07	.72	<i>i</i> _Y	.00	.15	.98
		R ² = .07				R ² = .59				R ² = .75				R ² = .05		
		<i>F</i> (1,45) = 3.24,				<i>F</i> (2,44) = 31.20,				<i>F</i> (3,43) = 43.38,				<i>F</i> (4,42) = .59,		
		<i>p</i> = .08				<i>p</i> = <.001				<i>p</i> = <.001				<i>p</i> = .67		

Table 16

Effects of mediation analysis 8 with standardized coefficients

	Effect	Boot SE	Boot LLCI	Boot ULCI	
Partially Standardized Indirect effect	Total	-.05	.25	-.55	.44
	Ind1	-.03	.04	-.15	.02
	Ind2	.00	.01	-.01	.02
	Ind3	.00	.01	-.02	.01
	Ind4	.00	.00	-.01	.01
	Ind5	.00	.27	-.43	.64
	Ind6	-.02	.14	-.32	.23
	Ind7	-.03	.17	-.35	.34
Completely Standardized Indirect effect	Total	-.05	.24	-.52	.43
	Ind1	-.03	.04	-.14	.02
	Ind2	.00	.01	-.01	.02
	Ind3	-.00	.01	-.02	.01
	Ind4	-.00	.00	-.01	.01
	Ind5	.03	.26	-.40	.63
	Ind6	-.02	.13	-.31	.22
	Ind7	-.03	.16	-.34	.31

Table 17

Model Summary mediation analysis 11

Antecedent		Consequent										
		M ₁ (SD)			M ₂ (MOT)			Y (Symptoms)				
		Coeff.	SE	<i>p</i>	Coeff.	SE	<i>p</i>	Coeff.	SE	<i>p</i>		
X (IR)	<i>a</i> ₁	-1.09	.14	<.001	<i>a</i> ₂	.25	.25	.32	<i>c</i> '	-.31	.42	.46
M ₁ (SD)		-	-	-		-	-	-	<i>b</i> ₁	-.01	.29	.96
M ₂ (MOT)		-	-	-		-	-	-	<i>b</i> ₂	-.19	.25	.44
Constant	<i>i</i> _{M1}	29.21	1.43	<.001	<i>i</i> _{M2}	4.51	5.43	.41	<i>i</i> _Y	10.30	8.96	.26
		R ² = .59				R ² = .07				R ² = .05		
		<i>F</i> (1,45) = 63,74,				<i>F</i> (2,44) = 1.61,				<i>F</i> (3,43) = .78,		
		<i>p</i> = <.001				<i>p</i> = .21				<i>p</i> = .51		

Table 18

Effects of mediation analysis 11

		Effect	SE	<i>t</i>	LLCI	ULCI
Total effect	<i>c</i>	-.35	.26	-1.34	-.87	.18
Direct effect	<i>c</i> '	-.31	.42	-.74	-1.15	.53
		Effect	Boot SE		Boot LLCI	Boot ULCI
Indirect effect	Total	-.04	.36		-.69	.77
	Ind1	.02	.34		-.59	.81
	Ind2	-.01	.05		-.14	.05
	Ind3	-.05	.09		-.33	.05
Partially	Total	-.01	.06		-.11	.12
Standardized	Ind1	.00	.06		-.09	.13
Indirect effect	Ind2	-.00	.01		-.02	.01
	Ind3	-.01	.01		-.05	.01
Completely	Total	-.02	.21		-.39	.45
Standardized	Ind1	.01	.20		-.33	.48
Indirect effect	Ind2	-.00	.03		-.08	.03
	Ind3	-.03	.05		-.19	.03

Table 19

Model Summary mediation analysis 12

Antecedent		Consequent										
		M ₁ (SU)			M ₂ (SD)			Y (Symptoms)				
		Coeff.	SE	<i>p</i>	Coeff.	SE	<i>p</i>	Coeff.	SE	<i>p</i>		
X (IR)	<i>a</i> ₁	2.76	.29	<.001	<i>a</i> ₂	-.43	.20	.04	<i>c</i> '	-.30	.48	.53
M ₁ (SU)		-	-	-		-	-	-	<i>b</i> ₁	-.04	.16	.82
M ₂ (SD)		-	-	-		-	-	-	<i>b</i> ₂	-.05	.34	.88
Constant	<i>i</i> _{M1}	6.85	3.08	.03	<i>i</i> _{M2}	30.84	1.31	<.001	<i>i</i> _Y	10.83	10.87	.32
		R ² = .66				R ² = .70				R ² = .04		
		<i>F</i> (1,45) = 88.42,				<i>F</i> (2,44) = 50.18,				<i>F</i> (3,43) = .59,		
		<i>p</i> = <.001				<i>p</i> = <.001				<i>p</i> = .63		

Table 20

Effects of mediation analysis 12

		Effect	SE	<i>t</i>	LLCI	ULCI
Total effect	<i>c</i>	-.35	.25	-1.34	-.87	.18
Direct effect	<i>c</i> '	-.30	.48	-.63	-1.27	.67
		Effect	Boot SE		Boot LLCI	Boot ULCI
Indirect effect	Total	-.05	.41		-.87	.77
	Ind1	-.10	.51		-1.11	.88
	Ind2	.03	.27		-.40	.69
	Ind3	.02	.19		-.33	.49
Partially	Total	-.01	.07		-.14	.13
Standardized	Ind1	-.02	.08		-.17	.15
Indirect effect	Ind2	.01	.04		-.07	.11
	Ind3	.00	.03		-.05	.08
Completely	Total	-.03	.24		-.50	.45
Standardized	Ind1	-.06	.29		-.63	.52
Indirect effect	Ind2	.02	.16		-.23	.39
	Ind3	.01	.11		-.18	.28

Table 21

Model Summary mediation analysis 15

Antecedent	Consequent											
	M ₁ (MOT)			M ₂ (SU)			Y (Symptoms)					
	Coeff.	SE	<i>p</i>	Coeff.	SE	<i>p</i>	Coeff.	SE	<i>p</i>			
X (IR)	<i>a</i> ₁	.29	.16	.08	<i>a</i> ₂	2.75	.31	<.001	<i>c</i> '	-.23	.46	.61
M ₁ (MOT)	-	-	-	-	-	-	-	-	<i>b</i> ₁	-.19	.25	.44
M ₂ (SU)	-	-	-	-	-	-	-	-	<i>b</i> ₂	-.03	.13	.87
Constant	<i>i</i> _{M1}	3.54	1.68	.04	<i>i</i> _{M2}	6.70	3.27	.05	<i>i</i> _Y	10.01	3.04	.002
		R ² = .07				R ² = .66				R ² = .05		
		<i>F</i> (1,45) = 3.25,				<i>F</i> (2,44) = 43.27,				<i>F</i> (3,43) = .79,		
		<i>p</i> = .08				<i>p</i> = <.001				<i>p</i> = .51		

Table 22

Effects of mediation analysis 15

		Effect	SE	<i>t</i>	LLCI	ULCI
Total effect	<i>c</i>	-.35	.26	-1.34	-.19	.18
Direct effect	<i>c</i> '	-.23	.46	-.51	-1.16	.69
		Effect	Boot SE		Boot LLCI	Boot ULCI
Indirect effect	Total	-.12	.39		-.89	.66
	Ind1	-.05	.07		-.25	.04
	Ind2	-.00	.01		-.02	.01
	Ind3	-.06	.39		-.83	.72
Partially	Total	-.02	.06		-.14	.11
Standardized	Ind1	-.01	.01		-.04	.01
Indirect effect	Ind2	.00	.00		-.00	.00
	Ind3	-.01	.06		-.13	.12
Completely	Total	-.06	.22		-.50	.37
Standardized	Ind1	-.03	.04		-.14	.02
Indirect effect	Ind2	-.00	.01		-.01	.01
	Ind3	-.03	.22		-.46	.41