FILLING THE SPIRITUAL VOID: SPIRITUAL STRUGGLES AS A RISK FACTOR FOR ADDICTION

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ABSTRACT

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Research has provided robust evidence that religious/spiritual variables can serve as protective factors against developing addictive behaviors, such as substance-related abuse (see review by Booth & Martin, 1998). However, there is a dearth of empirical data investigating religious/spiritual variables as risk factors in the development of addictive behaviors. One such variable, spiritual struggles, is receiving increased attention and has been linked empirically to various negative psychological and physical outcomes (see review by Ano and Vasconcelles, 2005). Additionally, the majority of addiction research has focused on substance-related abuse and has largely overlooked other behavioral expressions of addiction (e.g., addictions to shopping, sex, gambling, etc.). The current study longitudinally examined spiritual struggles as a predictor in the development of addictive behaviors among a sample of freshmen college students. Findings indicate that spiritual struggles predicted a statistically significant increase in 11 of 15 measures of addictive behavior. Additionally, specific domains of spiritual struggle (e.g., divine, interpersonal, and intrapersonal) were shown to predict change in addictive behavior over time. These results suggest that spiritual struggles may be a risk factor in the development of a wide range of addictive behaviors for first-year college students. Limitations and practical implications are discussed.

This thesis is dedicated to my mentor Dr. Regina Roth

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INTRODUCTION

In the literature of religion and psychology, the concept of spiritual struggles has received increased attention. To date, spiritual struggles have been linked to negative psychological, spiritual, and even physical outcomes (McConnell, Pargament, Ellison & Flannelly, in press; Exline, Yali & Sanderson, 2000; Ano & Vasconcelles, 2005; Pargament, et al., 1990; Pargament, Koenig, Tarakeshwar & Hahn, 2004). However, the relationship between this aspect of spirituality and addictive behavior has not yet been empirically examined, although there are reasons to suspect a link between these dimensions. The purpose of the current study is to examine whether spiritual struggles predict a greater risk of developing addictive problems over the course of a semester among a sample of college students.

Spiritual Struggles

Spiritual and Religious Coping

Researchers have investigated ways that individuals utilize a personal religious or spiritual framework to cope with stress. In 1998, Pargament and colleagues introduced the concept of positive and negative religious coping with major life stressors. They define positive religious coping as a way of interpreting and responding to life events that reflect a secure relationship with God, a sense of meaning and purpose in life, spiritual connectedness with others, and a sense of spirituality. This pattern of coping has been empirically linked to healthier psychological adjustment in multiple studies (see review by Ano & Vasconcelles, 2005). Much research have focused solely on positive forms of religious coping (see Pargament, 1997 for review); however, it is important to consider other aspects of spirituality that could have more detrimental effects on quality of life, psychological adjustment, and behavior patterns. This leads to the topic of spiritual struggles.

Spiritual Struggles

Spiritual struggles are "a sign of spirituality in tension and in flux" (Pargament, Desai & McConnell, 2006, p. 124). Spiritual struggles do not have to be a "sign of pathology or weak faith" (Pargament, 2007); quite the contrary, they can represent a turning point in life, an enduring lifetime experience, or a fleeting state (see Pargament, 2007 for a review). Struggles can be understood as "efforts to conserve or transform a spirituality that has been threatened or harmed" (Pargament, Murray-Swank, Magyar & Ano, 2005). In other words, a struggle is a response to a threat or challenge to one's framework of religious or spiritual thought, practice, relationship, and experience and can lead to either decline or growth (Pargament, Desai & McConnell, 2006).

Three types of religious and spiritual struggles have been conceptualized and studied in the literature: interpersonal, intrapersonal, and divine. (Pargament, Murray-Swank, Magyar & Ano, 2005; Exline, 2002). Interpersonal spiritual struggles refer to spiritual conflicts with friends, family, and/or congregation. For example, people who feel excluded from church groups or lack spiritual support from core individuals in their lives may be in the midst of interpersonal spiritual struggles. In contrast, intrapersonal spiritual struggles are marked by personal doubts and questions regarding one's spirituality, faith tradition, or life purpose. Lastly, divine spiritual struggles are expressions of conflict, questions, and tension in relationship to God, such as feeling abandoned by or angry with the divine. These three types of spiritual struggles can have pervasive effects on individual, social, and physical health and well-being.

Research has linked spiritual struggles to various negative psychological and physical outcomes. In a meta-analysis of 49 studies, Ano & Vasconcelles (2005) concluded that spiritual struggles are related to poorer psychological adjustment to stress. These findings indicate a

modest statistically significant relationship (cumulative effect size from 22 Z_r's = .22, 95% C.I. = .19-.24) between individuals who utilize negative coping strategies (such as passive religious deferral, reappraisal of God's powers, anger at God, feeling punished by God) and overall self-reported anxiety, depression, and distress.

Similarly, in a recent cross-sectional study, religious strife was associated with higher levels of psychological distress, including depression and suicidality, in both clinical (54 adults receiving psychotherapy) and non-clinical samples (200 college students) regardless of the level of religiosity or comfort received from religion (Exline, Yali & Sanderson, 2000). Religious strain was measured using a 20-item face-valid scale over three domains: alienation from God, religious rifts, and fear/guilt. The Alienation from God subscale includes items such as "feeling abandoned by God," "difficulty trusting God," and "feeling that your faith is weak" and was shown to be internally consistent in both the student (Cronbach's alpha=.77) and clinical samples (Cronbach's alpha=.75). The Religious Rifts subscale includes items such as "belief that you have committed a sin too big to be forgiven," "belief that sin has caused your problems," and "fear of evil or of the devil." Similarly, this subscale demonstrated adequate reliability in the student (Cronbach's alpha=.67) and clinical sample (Cronbach's alpha=.69). Lastly, the Fear/Guilt subscale assesses religious strain through items such as "bad memories of past experiences with religion or religious people," "disagreement with something that your religion or church teaches," and "feeling lonely or different from others because of your beliefs." This subscale demonstrated adequate reliability in the student sample (Cronbach's alpha=.72) but not in the clinical sample (Cronbach's alpha=.52). Subjects were asked "To what extent are you currently having each of these experiences?" (Exline, Yali & Sanderson, 2000).

Religious strain was associated with greater suicidal ideation for the clinical sample (r=.34, $p<.05$) and higher levels of self-reported depressive symptoms for both clinical (r=.44, $p<.01$) and non-clinical samples (r=.38, $p<.001$) (Exline, Yali & Sanderson, 2000). These findings further support the link between spiritual flux and psychological distress.

Spiritual struggles have also been connected to more severe levels of psychopathological symptoms. In a recent study of a national cross-sectional sample of people with and without a personal illness, spiritual struggles were associated with a wide range of psychopathology (McConnell, Pargament, Ellison & Flannelly, in press). Overall, the results were robust and specific. For example, spiritual struggles as measured by negative religious coping, significantly predicted greater levels of anxiety ($R^2=.23$, $p<.001$), greater phobic anxiety ($R^2=.14$, $p<.001$), interpersonal sensitivity ($R^2=.31$, $p<.001$), depression ($R^2=.33$, $p<.001$), paranoid ideation ($R^2=.30$, $p<.001$), hostility ($R^2=.20$, $p<.001$), obsessive-compulsiveness ($R^2=.17$, $p<.001$), and somatization ($R^2=.15$, $p<.001$) even after controlling for demographic and religious variables.

In addition, in a longitudinal study of 268 medically ill, hospitalized, elderly patients, spiritual struggles were shown to be a risk factor for mortality. Pargament and colleagues (2004) investigated whether or not religious coping was predictive of spiritual outcome, stress-related growth, quality of life, depressed mood, physical, and cognitive functioning. Specifically, religious coping was measured at baseline using the full R-COPE (Pargament, Koenig & Perez, 2000) and at follow-up (approximately two years post-baseline) using the Brief R-COPE (Pargament, Smith, Koenig & Perez, 1998). A three-item, valid spiritual outcome measure assessed perceived changes in closeness to the church, God, and spiritual growth following the onset of a physical illness (Pargament, et al., 1990). Stress-related growth was assessed using a validated 15-item survey measuring attainment of wisdom and empathy and other positive

outcomes of stress (Park, Cohen & Murch, 1996). In addition, quality of life was assessed using a five-item index measuring functioning, social support, general activity, and psychological and health functioning (Spitzer, Dobson, Hall, et al., 1981). Depressive symptoms were measured using an 11-item survey that was validated against clinical diagnoses of major depression in older medical patients (Koenig, Cohen, Blazer, Meador & Westlund, 1992). In this study, physical functioning was assessed using a 20-item self-report measure of the ability to independently perform physical and instrumental activities of daily living (ADL's) (Fillenbaum, 1985; Katz, Ford, Moskowitz, Jackson & Jaffe, 1963). Finally, cognitive functioning was determined utilizing the abbreviated Mini-Mental State Exam (MMSE), which asks 10 time and place questions (e.g., name the county currently in, etc…) as well as three immediate recall items (e.g., count backwards from 100 using increments of seven) (Folstein, Folstein & McHugh, 1975).

Findings indicated that, over the two years of the study, negative religious coping was predictive of declines in quality of life ($R^2 = -.13$, $p \leq .01$), spiritual outcome ($R^2 = -.11$, $p \leq .05$), and ADL's ($R^2 = .20$, $p \leq .01$), and an increase in depressed mood ($R^2 = .15$, $p \leq .001$) (Pargament, Koenig, Tarakeshwar & Hahn, 2004).

In another set of analyses using the same dataset, mortality during the follow-up period was assessed as the major outcome variable for the original set of 596 participants. Most importantly, results showed that individuals who endorsed feelings of being unloved by and alienated from God ("Questioned God's love for me," "Wondered whether God had abandoned me"), or felt that the devil was involved in their illness ("Decided the devil made this happen") were 20-30% more likely to die over a two-year period, even when controlling for physical and mental health, and demographic variables (risk ratio for death, 1.06; 95% confidence interval,

1.01-1.11; $X^2 = 5.89$; $p = .02$) (Pargament, Koenig, Tarakeshwar & Hahn, 2004). Therefore, spiritual struggles have implications not only for quality of life, physical functioning, and spiritual outcomes, but also for mortality in a sample of medically ill elderly patients.

However, in light of these findings, it is important to note that there is evidence to suggest that spiritual struggles can lead to positive outcomes, as well as spiritual- and stress-related growth (Pargament, Koenig, Tarakeshwar & Hahn, 2004; Pargament, Koenig & Perez, 1998). Nonetheless, upon reviewing the literature, the links between spiritual struggles and negative outcomes, such as psychopathology and distress, are robust and strong. Taken as a whole, these findings underscore the importance of developing a deeper understanding of the construct of spiritual struggles so that the lessons learned can be applied to clinical practice.

Addiction

Although spiritual struggles are emerging as a salient predictor of mental health status, very few studies have looked at the specific relationship between spiritual struggles and addiction. Previous research has focused on broad concepts of spirituality and religion, yet a narrow view of addiction, which centers on mainly one behavioral expression -- substance abuse. Some studies have examined gross indicators of religiousness (e.g., religious affiliation, religious practices) and have not addressed deeper spiritual and religious perspectives (e.g., concepts of God). Similarly, most studies on addiction have been limited to substance abuse and have overlooked the processes of addiction in general (e.g., addictions to shopping, sex, gambling, etc.). In the large majority of studies that have examined broad concepts of spirituality and their relationship to substance abuse-related addiction, religion/spirituality has emerged as a factor that protects against the development of addiction. There is an obvious dearth of empirical data

on non-substance-related addiction processes and the possible negative effects of religiousness/spirituality (i.e., spiritual struggles).

The Global Measurement of Religion and Spirituality in Addiction Research

Researchers have noted the rising interest in spirituality among addiction researchers and clinical practitioners (Cook, 2004). Spirituality has been defined and operationalized in a variety of ways in this literature. In a recent review of 265 published papers and books on the topic of spirituality and addiction by Christopher Cook (2004), the concept of spirituality varied greatly across studies. Twelve areas were specifically identified: relatedness, transcendence, humanity, core/force/soul, meaning/purpose, authenticity/truth, values, non-materiality, (non)religiousness, wholeness, self-knowledge, creativity, and consciousness. Cook argues that these terms are too broad and the term "spirituality" is not adequately defined or operationalized in the current literature. He recommends that researchers make use of more specific conceptual components of "spirituality" instead of the broadly defined topics, such as "transcendence" or "meaning/purpose," or apply a multidimensional approach to the conceptualization of spirituality.

In addition, religious/spiritual research in the field of addiction has been criticized for using general measures of religiousness and spirituality, such as religious affiliation or practices (Gorsuch, 1995; Miller, 1998; Booth & Martin, 1998). Therefore, one of the aims of this project is to narrow the scope of religious/spiritual variables to the concept of "spiritual struggles" and examine its relationship to addiction within a college population.

Substance Abuse as the Focus of Addiction Research

Addiction has been described as "a habitual response and a source of gratification or security…a way of coping with internal feelings and external pressures that provides the addict

with predictable gratifications, but that has concomitant costs" (Peele & Brodsky, 1991, p. 42). Or, as stated in the book, *Love and Addiction*, "addiction can be considered a pathological habit" that expands beyond substance use (Peele & Brodsky, 1975, p. 15) to many areas of life, including interpersonal relationships (Peele & Brodsky, 1975). Others have explained addiction as "any repetitive behavior that interferes with our being fully present to our feelings" (Cornell, 1996, p. 54). It is clear then, as Peele and Brodsky (1991) explain, an addiction can be viewed across a continuum and "may involve *any* attachment or sensation that grows to such proportions that it damages a person's life" (p. 42). Although they state there is no easy way to differentiate between an addiction and a bad habit, researchers have posited some common themes that mark addictive behaviors: a loss of priorities, perspective, and control, as well as a "single-minded grasping of a magic-seeming object or involvement" (Peele & Brodsky, 1991, p. 42). Using this definition, people become addicted not to a particular chemical or substance, but to the *experience* of the behavior, within his or her life context.

The majority of research in the area of spirituality/religion and addiction has focused mainly on substance-related use and abuse. In the literature review by Cook (2004) mentioned above, the majority of articles (85%) on the topic of spirituality and addiction addressed substance abuse as the mode of behavioral expression. Specifically, upon reviewing 265 published papers and books on the topic of spirituality and addiction, Cook found that the majority of data focused on alcohol addiction (36%, n=95) or polysubstance addiction (49%, n=130). Other topics included "drugs other than alcohol (n=11), dual diagnosis (n=1), smoking (n=2), behavioral addictions (n=9), codependence and children of substance-abusing parents (n=5), or was unspecified (n=8)."

When considering these findings in the context of Peele and Brodsky's definition of addiction, a broader perspective of addiction would contribute to a deeper understanding of the relationship between spiritual struggles and addiction. Therefore, the current study focuses on addiction in a broader sense (e.g., gambling, shopping, sex). Before turning to this project, however, it is important to review the findings that have emerged from studies of the links between spirituality and substance addiction.

Empirical Studies of Spirituality and Substance-Related Addiction

A clear and consistently strong relationship between global indices of religion/spirituality and indicators of addiction has emerged from the literature. These findings provide empirical support for the notion that religiousness/spirituality can play a positive role in reducing the likelihood of developing addictions.

Religion and Spirituality as a Protective Factor

Research in this area consistently underscores the role of religion and spirituality as a factor that protects against developing substance-related addiction. For instance, in a literature review of general measures of religiousness (e.g., religious preferences and practices) and substance use in adolescents and college students, Booth and Martin (1998) found that religion was inversely related to substance use in seven of the eight studies (p. 176). Higher levels of religious activity (e.g., church attendance, etc…) were predictive of substance non-abuse later in life, in time intervals ranging from one to fifteen years (Booth & Martin, 1998, p. 176; Gorsuch, 1995).

Similarly, Hodge and colleagues (2001) conducted a study with a multicultural sample of rural youths in the Southwest United States and found a link between religious and spiritual variables and drug use. Four hundred and fourteen participants were asked to complete a survey

in which religious participation and level of spirituality were compared to the probability of abstinence from alcohol, marijuana, and hard drugs. Religious participation was assessed using a single item, "I participate in church-related activities/events/special programs" where they had to select: weekly, monthly, once or twice a year, or never. Spirituality was measured using the Index of Core Spiritual Experiences (INSPIRIT) scale. This validated instrument (Cronbach's alpha=.90) asks participants to rate his or her subjective spiritual reality with items such as, "God dwells within you" (Kass, Friedman, Leserman, Zuttermeister & Benson, 1991). Findings indicated that religious participation significantly increased the probability of abstinence from alcohol (Wald $X^2 = 4.709$, $p<.05$). Similarly, spirituality was tied to a greater probability of abstinence from marijuana (Wald $X^2 = 5.041$, $p<.05$) and hard drugs (Wald $X^2 = 5.899$, $p<.05$) (Hodge, Cardenas & Montova, 2001).

Religiousness has also emerged as a protective factor in non-drug/alcohol-related research. Weaver and colleagues (2003) conducted a meta-analysis of empirical studies that examined the effect of religion on tobacco use in adolescents. Twenty-nine articles published between 1990 and 2003 were identified via an electronic search in the National Library of Medicine's database (PubMed) and the American Psychological Association's database (PsycINFO). The majority of articles cited sample sizes between 1,000 and 5,000 (58.6%); however, one-quarter of the studies (24.1%) had sample sizes below 500, while the remaining 17.2% had sample sizes that exceeded 10,000 participants. Ages of participants ranged from eight to 19 years old. Religion was generally measured with a single item or question across one or more of three domains (attendance/participation, affiliation/denomination, importance/religiosity). Cigarette smoking was assessed for 21 of the 29 studies using a nominal scale, and frequency of use or interval scales were utilized for the remaining articles. Tobacco

users were generally grouped into one of three categories (occasional use, regular use, or lifetime use).

Results indicated that religion was significantly inversely related to tobacco use after controlling for demographic and other influential variables associated with tobacco use [no specific effect sizes reported]. The authors concluded that religiousness and attendance at religious services showed a relatively small but consistent effect on tobacco use in this population (Weaver, Flannelly & Strock, 2005). These and other studies provide support that spirituality and religiousness may serve as a protective factor from the development of substance-related addictions.

Religion and Spirituality as a Risk Factor

There is strong evidence to suggest that spirituality/religion can protect against the development of addiction. However, is it possible that some forms of religiousness/spirituality may actually *increase* the risk of addictive behaviors? Little is known about the potential risks of spirituality/religiousness, perhaps because the research has focused almost exclusively on global indictors of these constructs. In addition, it is difficult to determine from the given research if spirituality/religion contribute to the development of addictive behaviors in general because the current empirical focus is specific to substance-related addiction. However, there are reasons to believe that spiritual struggles could increase the risk of addictive behaviors.

Theory

Spiritual Vacuum

People who are struggling with interpersonal, intrapersonal or divine spiritual questions may feel a lack of meaning and purpose or a void in the organizing center of their lives. Unable to find or develop meaningful and compelling answers to these questions, they may experience a

spiritual vacuum and seek out a new form of significance, including potentially destructive habits, to fill this vacuum. Along these lines, Gorsuch and Butler (1976) concluded from their review that some people abuse substances as a way to escape from "mental anguish and suffering."

Conversely, people who have a stronger and more stable religious framework may have a viable source of meaning and significance at the core of their lives. For these religiously oriented individuals, a Higher Power or the sacred becomes an organizing force, one that guides and steers them in constructive directions (Emmons, 1999). Other sources of meaning and significance may be seen as unnecessary or inferior to what is understood as sacred. Thus, individuals who are not engaged in spiritual struggles should be at lower risk for addiction.

Addiction as Idolatry

The concept of idolatry may also help to explain the mechanism by which those who are experiencing a loss of meaning or significance become more vulnerable to developing addictive behaviors. For example, a recent study by Lynn (2005) investigated idolatry and its relationship to drug and alcohol addiction, among other psychosocial constructs (such as general well-being, life attitudes, narcissism, religious orientation, spiritual well-being, and global religiousness) in 200 college undergraduates. Idolatry was defined in this study as "the worship of ideals and objects other than the divine" and was measured using the Idolatry Index, which was developed for this research. The Idolatry Index assesses God's centrality and degree of importance as compared with other aspects of one's life, such as family, friends, and material goals (e.g., "God is a part of my life, but not the most important part"). Participants rated 23 items on a seven-point Likert scale ranging from -3 (Strongly Disagree) to +3 (Strongly Agree). Answers were summed to create a composite score with higher values representing higher levels of idolatry

(Lynn, 2005).

Drug and alcohol addiction was measured using the Shorter PROMIS Questionnaire (SPQ). This 160-item scale queries participants on various aspects of addictive behavior (e.g., gambling, shopping, drugs and alcohol, etc…). Only the drug and alcohol subscales (20 items in total) were used for Lynn's study. Addictive tendencies toward alcohol and drug use were assessed (e.g., "I have found that having one drink tended not to satisfy me but made me want more," "I have tended to use drugs as both a comfort and a strength") using a Likert scale ranging from 1="not like me" to 6="like me." The SPQ has demonstrated strong validity for both the alcohol (Cronbach's alpha=.94) and drug scales (Cronbach's alpha=.98) (Christo et al., 2003).

Results from this study indicated that idolatry was positively related to addiction. Specifically, Lynn found that higher scores on the Idolatry Index predicted higher levels of alcohol use ($\Delta R^2 = .02$, $p \leq .03$; $\beta = .29$, $p \leq .03$) after controlling for intrinsic religiousness and demographic variables. According to Lynn, these findings suggest "alcohol, drugs, and the self have become central to those who engage in idolatry, pushing aside the divine from the core of their lives" (Lynn, 2005). There is reason to believe that these types of questions and struggles may be particularly prominent in college-aged youth as they transition to university life.

College as a Time of Transition

The first year of college has been identified as a time of important personal and spiritual/ religious exploration and development. A recent longitudinal study of 112,232 students from 236 colleges within the United States investigated the spiritual and religious values and beliefs, occupational and educational aspirations of first-year college students (Astin, et al., 2004). The purpose of the study was to answer questions about spiritual searching, spiritual self-perception,

how college experiences impact spiritual/ religious quests, affinity for religious practices and how these affect academic and personal development. Students were asked to complete a 160-item questionnaire about his/her perspectives and practices relating to spirituality and religion. The majority of the respondents (66%) attended public universities and colleges; 17% of the students attended nonsectarian private institutions. The remaining participants attended Catholic (7%), Evangelical (3%), or "other" Church-Affiliated institutions (8%).

In contrast with the stereotype that college students have relatively little interest in spiritual matters, the findings from this study indicated that religious and spiritual issues are an important part of life for the entering college student. Most students reportedly believe in God (79%) and agree strongly or somewhat that "religious beliefs provide strength, support, and guidance" (69%).

Moreover, college was identified as a place and time for personal development and spiritual/ religious exploration. In the same study, over two-thirds of college students indicated that it is "very important" or "essential" that college develop their personal values (67%), enhance self-understanding (69%), and expect college to provide for students' emotional development (63%). Additionally, almost half of the students indicate that it is "essential" or "very important" to seek out opportunities to grow spiritually (47%) and that personal expression of spirituality be encouraged while in college (48%). It is clear that the first year of college is an important place for personal self-discovery and spiritual meaning-making.

Despite the salience of religious and spiritual beliefs, however, many first-year college students simultaneously expressed religious reservations or doubts. Only 42% identified themselves as "secure" in their current views on spiritual/ religious matters. Nearly half of the time, students described themselves as "doubting" (10%), "seeking" (23%), or "conflicted"

(15%) in their views of spiritual/ religious matters. Additionally, only 15% of the time students indicated that they were "not interested" in these types of concerns.

Finally, this same study provided one of the first indications that religious struggles may be associated with substance use. Specifically, those who scored high on items measuring religious struggles, such as feelings of distance from God, questioning of religious beliefs and feeling unsettled about religious matters, were more likely to drink wine or liquor (65% versus 48%) and beer (55% versus 42%) than those reporting low levels of religious struggles. Therefore, there is reason to believe that this population may be at particular risk, not only for experiencing spiritual struggles, but also for substance use.

These findings were corroborated in another promising study investigating whether spiritual struggles were predictive of alcohol problems throughout the first two years of college. Johnson, et al., (2006) queried 1515 incoming freshmen during the summer before college (Wave 1), and again during the spring of freshman (Wave 2) and sophomore (Wave 3) years regarding their religious/spiritual involvement, view of God, and alcohol consumption. Religious and spiritual involvement was assessed by asking the extent of one's private and public religious practices, positive spiritual experiences, ability to utilize religiousness/spirituality as a healthy source of support and coping, and finally, the level of personal identification with one's own religion. Spiritual struggles, called religious distress in this study, were measured using the Brief R-COPE (Pargament, Smith, Koenig & Perez, 1998) and Punishing God Reappraisal subscale from the full version of the R-COPE (Pargament, Koenig & Perez, 2000).

Results from this study indicated that religious distress and alcohol consumption were positively related. Specifically, Johnson and colleagues found that change in overall mean level of religious distress and change in religious distress from Wave 1 to Wave 2 predicted change in

alcohol problems from Wave 2 to Wave 3 (β=.09, t=2.65, p<.01). Similarly, the more religious distress increased from Wave 1 to Wave 2, the more alcohol problems increased from Wave 2 to Wave 3 (β=.11, t=.31, p<.001). Finally, higher overall mean religious distress predicted a greater increase in alcohol problems overall ($F_{(3, 612)}$=2.60, p<.05) (Johnson, Sheets & Kristeller, 2006). In summary, students who experienced increases in religious distress during the first year of college and higher overall levels of religious distress in general reported significantly more alcohol problems than their counterparts.

Although both of these studies looked at spiritual struggles and addiction, they both focused on addiction in terms of substance use. However, their findings help set the stage for the current study that investigated spiritual struggles and a broad scope of addictive behaviors during the transition to college.

PRESENT STUDY

Study Design

Study Aim 1

The purpose of the current study is to examine whether spiritual struggles are predictive of a greater risk of developing addictive behavior over the course of a semester among a sample of college freshmen. The majority of research in this area has focused on religion/spirituality as a protective factor against developing addiction; however, there is a paucity of empirical data regarding religion/spirituality as a *risk factor* for developing addiction. Therefore, the first aim of the current study is to explore this relationship in terms of risk and not prevention.

Study Aim 2

In addition, the empirical data reported in this field generally draws on diffuse conceptualization and measurement of religion/spirituality (e.g., global religiousness items) and

employs a limited perspective on addictive behaviors (substance-related addiction). The second aim of the current study is to expand on the current research base by specifying spiritual struggles as the religion/spirituality variable of interest and broadening the scope of addiction to include a wider range of addictive behaviors, not simply substance-related addiction.

Hypotheses

The first hypothesis proposes that higher levels of spiritual struggles at Time 1 would be associated with higher levels of addictive behavior at Time 2 after controlling for Time 1 addictive behavior. The second hypothesis is that higher levels of spiritual struggles at Time 1 will be associated with higher levels of addictive behavior at Time 2 after controlling for Time 1 addictive behavior, demographic variables, global religious variables, and other control indices (life stressors and neuroticism).

Control Variables

Life stressors and neuroticism were selected as control variables because of their potential influence on the development of addictive behaviors beyond that of spiritual struggles alone. Since we are studying students during their transition to college, there are many potential life stressors that may contribute to addictive behaviors (e.g., the transition to college, demands of coursework, social stress). Specifically, we are investigating whether spiritual struggles are merely a reflection of the stress of being a college freshman or whether struggles have a unique predictive power above and beyond that of perceived stress level. The objective measurement of stress (e.g., external attribution of a major life event) is not as important a predictor of distress as is the individual's perception and attributions of that stress. Therefore, we have included a measure of perceived stress level.

Neuroticism is also included as a control variable because of its potentially confounding effects on the research question. Specifically, neuroticism is a personality feature that is characterized by a tendency to have increased emotional reactivity to life events and experience more negative emotions such as depression, anger, and anxiety. These characteristics can diminish one's ability to cope effectively with stress, think clearly, and make decisions. A person who is categorized as high on a scale of neuroticism may also have a greater tendency to develop addictive behaviors, due to this decreased ability to cope and make decisions. Therefore, neuroticism is assessed to determine if spiritual struggles were predictive of the development of addictive behaviors beyond that of the effect of neuroticism alone.

Summary

The purpose of the current study is to contribute to a greater understanding of the link between religion/spirituality and addiction. This understanding, in turn, could facilitate improvements in preventive and interventional efforts to promote the health and well-being of clients.

METHOD

Participants and Procedures

The current sample consisted of 90 students who were recruited from a mid-sized Midwest University after the study was approved by the institution's internal review board. All participants were college freshmen enrolled in an Introduction to Psychology course. The project was introduced during class as a two-part study investigating spirituality and addiction. Students were informed of the voluntary nature of participation and the confidentiality of their information. Participants volunteered to complete the 45-minute survey at two time points in the semester for a total of two extra credit points that were applied to their course grade. Each individual accessed the study online, where they signed the Informed Consent form electronically and then completed the surveys. All information was stored in a secure electronic data file without identifying information attached; only the Principal Investigator had access to the data.

A total of 165 students completed the survey at Time 1; 55% (90) of those students also participated in Time 2. There were no significant differences on religious or demographic variables between those students who completed only Time 1 (N=74) and those who completed both Time 1 and Time 2 (N=90), with the exception of the item, "I have doubts or questions about God." Participants who completed both Time 1 and Time 2 scored significantly higher on this variable than those who did not complete the second round of surveys {t (159) = 2.14, $p <$ 05}. Only the 90 participants who completed both Time 1 and Time 2 surveys were included in this study; all remaining cases were dropped from the analyses.

As presented in Table 1, all subjects were current college freshmen, and 65 (72.2%) of the 90 participants were female. The majority of the sample (83.3%) identified themselves as

White/European; 8.9% of the participants were Black/ African-American; while the remaining 7.7% identified themselves as Latino/a or "Other." Almost half of respondents (45.6%) endorsed affiliation with Catholicism; while the remaining 41.1% of people identified themselves as "Other Christian" or "Protestant;" 4 participants (4.4%) categorized themselves as Jewish or "other," and 9.9% of the total sample indicated that they have no religious preference. Participants rated themselves on a five-point Likert scale (1=strongly disagree to 5=strongly agree) for the following items: "I see myself as a religious person" and "I see myself as a spiritual person." Eighty-eight participants responded and 40% (n=36) identified themselves as a "religious person" (rating of 4 or 5 on the Likert scale) while 44.5% respondents (n=40) saw themselves as a "spiritual person" (rating of 4 or 5 on the Likert scale)

Measures

Spiritual Struggles

Spiritual struggles were assessed through the Negative Religious Coping subscales of the RCOPE. The Negative Religious Coping subscales assess multiple facets of spiritual struggles. In a prior study of a college sample, the subscales demonstrated good reliability on seven subscales: Interpersonal Religious Discontent (5 items; Cronbach's alpha=.82), Spiritual Discontent (6 items; Cronbach's alpha=.88), Pleading for Direct Intercession (5 items; Cronbach's alpha=.84), Passive Religious Deferral (5 items; Cronbach's alpha=.83), Reappraisal of God's Powers (4 items; Cronbach's alpha=.78), Demonic Reappraisal (5 items; Cronbach's alpha=.90), and Punishing God Reappraisal (5 items; Cronbach's alpha=.92) (Pargament, Koenig & Perez, 2000).

A modified version of the Negative Religious Coping subscale was included in this study. Three subscales were used: Divine Spiritual Struggles (e.g., "Feeling punished by God for my

lack of devotion"); Intrapersonal Spiritual Struggles (e.g., "Wondering if God really exists"); and Interpersonal Spiritual Struggles (e.g., "Arguing with my parents because of our religious beliefs"). These subscales were chosen as they are particularly appropriate to the college student sample and the issues associated with addiction. Previous research with college students has found acceptable reliability for each subscale (Cronbach's alpha = .89, .90, .74 respectively) (Desai, 2006).

Outcome Variables

The SPQ

The Shorter PROMIS Questionnaire (SPQ) is a 160-item survey, grouped into 16 separate subscales that assess a wide range of addictive patterns, including alcohol, prescription drugs, recreational drugs, nicotine, caffeine, sex, gambling, food starving, food bingeing, work, exercise, shopping, dominant and submissive relationships, and dominant and submissive compulsive helping (See Appendix B). The SPQ measures both individual attitudes (e.g., "I have used alcohol as both a comfort and a strength") and behaviors (e.g., "I have often avoided meal times by claiming that I have already eaten when it is not true"). Subscale items are administered in random order and scored on a 0 ("Not like me") to 5 ("Like me") Likert scale, for a total subscale score ranging from 0-50 (overall SPQ score ranging from 0 to 800). In the current study, the dominant and submissive relationships and dominant and submissive compulsive helping subscales (40 items) were eliminated to reduce participant fatigue. Therefore, there will be a total of 120 SPQ questions included for this project.

The SPQ was tested in both clinical and non-clinical samples. The clinical sample consisted of 497 participants (53% male, mean age = 35.2 years) admitted to the PROMIS Recovery Centre between 1995 and 1999. Primary diagnosis, as reported by client and recorded

by the nursing staff, included: alcohol use (34%), drug use (22%), bulimia (9%), alcohol and drug abuse (8%), gambling (1%), with the remaining 13% of participants reporting a combination of alcohol/drug use and/or eating disorders.

Participants in the clinical sample were asked to complete the SPQ as well as multiple previously validated measures of clinical drinking problems (CAGE; Mayfield, MacLeod & Hall, 1974; and Short Michigan Alcohol Screening Test (SMAST); Selzer, Vinokur & Van Rooijen, 1975), alcohol consumption and dependence (Severity of Alcohol Dependency Questionnaire (SADQ); Stockwell, Hodgson, Edwards, Taylor & Rankin, 1979; Stockwell, Murphy & Hodgson, 1983), opiate dependency (Severity of Opiate Dependency Questionnaire (SODQ), Sutherland et al., 1986), dependence severity for heroin, cocaine, amphetamines (Severity of Dependence Scale (SDS); Gossop et al., 1995), binge eating symptoms and severity (Bulimic Investigatory Test, Edinburgh (BITE); Henderson & Freeman, 1987), bulimia and anorexia behaviors and beliefs (Eating Disorder Inventory (EDI); Garner, Olmstead & Polivy, 1993), and a screening tool of pathologic gamblers in clinical populations (South Oaks Gambling Screen (SOGS), Lesieur & Blume, 1987). These questionnaires were used to validate the SPQ for various addictive thoughts and behavioral patterns.

The non-clinical sample consisted of 508 participants (39% male, mean age = 30.1 years) and were recruited from a university, general medical clinic, and through a ‘pyramid’ sampling method whereby participants identified five names to the researchers as potential participants. This convenience sample was matched with the clinical sample in terms of sex, age, and social background. Participants were not actively involved in treatment for any addictive behavior and were asked to complete only the SPQ.

Six SPQ subscales were correlated with answers from the eight validated scales

measuring addictive patterns and beliefs. Ten SPQ subscales were eliminated due to an inability to directly compare with archival data from the other measures. Findings indicate that the SPQ alcohol subscale correlated most strongly with the alcohol measures (CAGE, r=.78, p<.001; SADQ, r=.73, p<.001; SMAST, r=.74, p<.001). Additionally, the SPQ recreational drugs subscale was correlated with the drug dependency scales (SODQ, r=.64, p<.001; SDS, r=.76, p<.001) but with no other scales. Furthermore, as expected, the SPQ gambling subscale was most strongly correlated with the SOGS (r=.50, p<.001) but it was also significantly related with two alcohol-related measures (SODQ, r=.26, p<.001; SDS, r=.31, p<.001). Lastly, the SPQ food bingeing subscale was correlated with the EDI (r=.74, p<.001) and the BITE (r=.73, p<.001), as was the SPQ food starving subscale (EDI, r=.61, p<.001; BITE, r=.64, p<.001).

Eight of the sixteen subscales did not demonstrate convergent and discriminant validity. Due to the small number of participants who reported problems with caffeine, tobacco, sex, compulsive helping, work, relationships, shopping, or exercise, the corresponding subscales on the SPQ could not be tested in comparison with the clinical sample. However, each scale demonstrated adequate face validity [exact numbers are not reported in the paper] and therefore will not be eliminated from the current study.

Lastly, the internal consistency between the clinical sample's scores and the 16 SPQ subscales indicate that Cronbach's alpha coefficient scores for each subscale were adequate (mean Cronbach's alpha=.89, S.D=.05, range .82-.98) as was the test-retest reliability over a mean of 18.9 days (Cronbach's alpha=.80) (Christo, et al., 2003).

Video Games

The Problem Video Game Playing scale (PVP) measures negative effects generally associated with excessive video game use (Salguero & Moran, 2002). The PVP is a nine-item

scale measuring nine dimensions of addiction (preoccupation, tolerance, loss of control, withdrawal, escape, lies and deception, disregard for physical or psychological consequences, and family/school disruption) on a dichotomous scale (yes/no; See Appendix D). Developers of this scale created items based on existing addiction literature and the DSM-IV criteria for pathological gambling and substance dependence. However, the PVP is not considered a diagnostic tool for pathologic video game use and does not provide a cut-off to differentiate between recreational players and problem users. Nevertheless, it demonstrated adequate internal consistency (Cronbach's alpha=.69) and construct validity in that it was associated with other measures problematic video game use, such as higher mean and longest times per session, frequency of play, self and parental ratings of excessive use, and scores on the Severity of Dependence Scale. Therefore, the PVP can be used as an adequate measure of the problems that are generally associated with excessive video game use (Salguero & Moran, 2002).

Internet

The Problematic Internet Use Questionnaire (PIUQ) is a 20-item survey used to assess behaviors and possible negative effects of internet use (Thatcher & Goolam, 2005). Participants are asked to answer how often the following item is true for them on a five-point Likert scale (1=never; 5=always; See Appendix E). The PIUQ demonstrated strong internal reliability (Cronbach's alpha=.90) and assesses three factors of problematic internet use, all with adequate reliability: Online Preoccupation (Cronbach's alpha=.88), Adverse Effects (Cronbach's alpha=.77), and Social Interactions (Cronbach's alpha=.74). Items are based on the theoretical definition of problematic internet use and are not considered a diagnostic tool for Internet "Addiction." However, the PIUQ was correlated with other measures shown to predict problematic internet use, including feelings of depression, isolation and loneliness; total time

online (r =.46); types of activities conducted online (e.g., messaging, chatting, gaming); and with Young's criteria of Internet addiction (Thatcher & Goolam, 2005).

Control Variables

Perceived Stress

The Perceived Stress Scale (PSS) is designed to assess an individual's appraisal of an event as stressful (Cohen, Kamarck & Mermelstein, 1983) and is the most widely used measure of perceived stress in the psychological literature (Mind Garden, Inc., 1994). This fourteen-item scale measures how uncontrollable, overloaded, and unpredictable participants find their lives (See Appendix F). Respondents are asked about the frequency of certain thoughts and feelings over the past month using a five-point scale (0=never; 1=almost never; 2=sometimes; 3=fairly often; 4=very often). The PSS is scored by reversing four items and then summing the total responses. This scale demonstrated adequate reliability in two college samples of 322 and 114 participants (Cronbach's alpha=.84 and .85, respectively) (Cohen, Kamarck & Mermelstein, 1983).

Personality

To control for individual personality traits that might influence a participant's propensity towards addictive behaviors unrelated to spiritual struggles, a neuroticism index was used in this study. The Neuroticism Index is part of the Big Five personality trait classification system, which groups personality into five broad descriptive domains. These empirically supported factors include: openness to experience, conscientiousness, extroversion, agreeableness, and neuroticism (Goldberg, 1993). The neuroticism index contains 20 items that ask a broad range of questions regarding one's feelings and behaviors (e.g., "I have frequent mood swings," "I am filled with doubts about things," "I remain calm under pressure," "I am relaxed most of the time") (see

Appendix G). Participants are asked how true each statement is for them during the last month, using a five-point Likert scale ranging from Very Inaccurate to Very Accurate. This scale is widely used and has demonstrated strong reliability (Cronbach's alpha=.91) (IPIP, 2006).

Global Religiousness

A Global Religiousness scale combining six questions (frequency of prayer, church attendance, belief in God, questions or doubts about God, and the degree to which a participant rated himself or herself a spiritual and a religious person) was constructed to yield a composite score for participant religiousness.

Demographic Variables

As noted in the literature review, items assessing global religiousness are part of the customary battery in psychology of religion research. Therefore, in this study, five questions assessed self-rated religiousness, self-rated spirituality, frequency of church attendance, and frequency of prayer. In addition, standard demographic variables such as gender, ethnicity, and year in school were included in the online surveys (see Appendix C).

RESULTS

In the following section, descriptive statistics of the predictors and the outcome measures are presented. Then, the reliability analyses of all measures used in the study are described. Next, correlations between the different predictors and the outcome measures are reported, as well as the results of the hierarchical regression analyses. Lastly, a post-hoc analysis investigating the relationship between addiction measures and spiritual struggles subscales (divine, intrapersonal, interpersonal) are presented.

Descriptive statistics of predictors and outcome measures

Descriptive statistics (mean, standard deviation, range) for each scale (Global Religiousness, Neuroticism, Stress, Negative RCOPE, Video Games, Internet, SPQ Overall) and the specific subscales of the SPQ (Alcohol, Caffeine, Exercise, Food Bingeing, Food Starving, Gambling, Prescription Drugs, Recreational Drugs, Sex, Shopping, Tobacco, and Work) are presented in Table 1.

According to research on the SPQ, absolute levels of each of these subscales can be categorized in a level of behavioral concern (None, Average, High Range, Cause of Concern, Significant Problem, Serious Problem, or Extreme Problem) (Christo et al., 2003). Therefore, the average range for Time 1 and Time 2 scores for the SPQ subscales is categorized as follows: Alcohol (in between the Average and High Range); Caffeine (a Significant Problem); Exercise (a Cause of Concern); Food Bingeing (in between the High Range and Cause of Concern); Gambling (a Significant Problem); Sex (a Cause of Concern); Shopping (in between the High Range and Cause of Concern); Prescription Drugs (a Significant Problem); Recreational Drugs (a Cause of Concern); Food Starving (a Cause of Concern); Tobacco (in between Average and High

Range); and Work (in between the Average and High Range). There are no comparative scores available in the literature for the PVP (Video Games), and PIUQ (Internet).

A t-test was performed to determine whether the control and predictor variables were stable across Time 1 and Time 2. No significant differences were revealed, with the exception of the Neuroticism Index, which was higher at Time 1 than Time 2 ($t(89) = 2.713$, $p<.01$). However, since Neuroticism is a measure of a trait, it was decided to use the Neuroticism scores from only one time point. Neuroticism was significantly correlated with more outcome measures at Time 2 than at Time 1. Thus, to err on the conservative side, I decided to use Time 2 as a control variable in the hierarchical regressions.

Reliability analyses

Internal consistency estimates (Cronbach's alpha) were conducted on all measures in the current sample to ensure they were comparable with the data presented in the validation articles. Findings indicated that the scales used in this study demonstrated adequate reliability (α ranging from .73 to.97), with the exception of the Perceived Stress Index at Time 2, which exhibited a marginal Cronbach's alpha of .66.

Correlational analyses

Table 2 presents a correlation matrix between spiritual struggles (at Time 1 and Time 2) and control, predictor, and outcome variables for each timepoint. Analyses revealed that spiritual struggles at Time 2 were more strongly related to the outcome variables than were spiritual struggles at Time 1.

Specifically, higher scores on spiritual struggles at Time 1 were correlated with higher addiction scores on seven out of the 30 addiction scales: the Overall SPQ at Time 1($r = .33$, $p<.001$); Exercise at Time 1 ($r = .22$, $p<.05$); Food Bingeing at Time 1 ($r = .33$, $p<.01$) and Time

2 (r = .24, p<.05); Prescription Drugs at Time 1 (r = .23, p<.05); Work at Time 1 (r = .31, p<.01) and Time 2 (r = .25, p<.05).

In contrast, higher scores on spiritual struggles at Time 2 were correlated with higher scores on 24 of the 30 addiction scales: the Overall SPQ at Time 1 ($\underline{r}$ = .47, p<.001) and Time 2 ($\underline{r}$ = .57, p<.001); Caffeine at Time 1 ($\underline{r}$ = .38, p<.001) and Time 2 ($\underline{r}$ = .48, p<.001); Exercise at Time 1 ($\underline{r}$ = .29, p<.01) and Time 2 ($\underline{r}$ = .40, p<.001); Food Bingeing at Time 1 ($\underline{r}$ = .43, p<.001) and Time 2 ($\underline{r}$ = .44, p<.001); Food Starving at Time 1 ($\underline{r}$ = .28, p<.01) and Time 2 ($\underline{r}$ = .45, p<.001); Gambling at Time 1 ($\underline{r}$ = .22, p<.05) and Time 2 ($\underline{r}$ = .43, p<.001); Prescription Drugs at Time 1 ($\underline{r}$ = .40, p<.001) and Time 2 ($\underline{r}$ = .54, p<.001); Recreational Drugs at Time 1 ($\underline{r}$ = .35, p<.01) and Time 2 ($\underline{r}$ = .43, p<.001); Sex at Time 1 ($\underline{r}$ = .30, p<.01) and Time 2 ($\underline{r}$ = .40, p<.001); Shopping at Time 2 ($\underline{r}$ = .41, p<.001); Tobacco at Time 2 ($\underline{r}$ = .34, p<.01); and Work at Time 1 ($\underline{r}$ = .37, p<.001) and Time 2 ($\underline{r}$ = .53, p<.001).

Measures of video game use and alcohol addiction were not significantly correlated with spiritual struggles at either time point; thus, both of these addiction subscales were dropped from further analyses. The finding that spiritual struggles predicted multiple addictive behaviors but did not predict alcohol or problematic video game use is interesting. More will be said about this finding in the discussion section.

Correlational Analysis with Control Variables

In order to determine the variables that needed to be controlled for in the regression analyses, the correlations between the potential control variables (i.e., Neuroticism, Stress, Global Religiousness, demographics) and the outcome measures were calculated.

As shown in Table 2, Neuroticism, Stress, and Global Religiousness were significantly correlated with different addiction scales. Specifically, higher scores on Neuroticism at Time 2

were significantly correlated with higher scores on the addiction scales, including the Overall SPQ at Time 1 ($\underline{r}$ = .25, p<.05) and Time 2 ($\underline{r}$ = .32, p<.01); Exercise at Time 2 ($\underline{r}$ = .34, p<.01); Food Bingeing at Time 1 ($\underline{r}$ = .21, p<.05) and Time 2 ($\underline{r}$ = .37, p<.001); Food Starving at Time 1 ($\underline{r}$ = .33, p<.01) and Time 2 ($\underline{r}$ = .38, p<.001); Shopping at Time 1 ($\underline{r}$ = .23, p<.05) and Time 2 ($\underline{r}$ = .36, p<.01); Work at Time 1 ($\underline{r}$ = .36, p<.01) and Time 2 ($\underline{r}$ = .33, p<.01); and Internet at Time 1 ($\underline{r}$ = .25, p<.05) and Time 2 ($\underline{r}$ = .25, p<.05).

Higher scores on Perceived Stress at Time 2 were significantly correlated with higher scores on the Overall SPQ at Time 1 ($\underline{r}$ = .26, p<.05) and Time 2 ($\underline{r}$ = .22, p<.05); Alcohol at Time 1 ($\underline{r}$ = .23, p<.05) and Time 2 ($\underline{r}$ = .26, p<.05); Food Starving at Time 1 ($\underline{r}$ = .29, p<.01) and Time 2 ($\underline{r}$ = .25, p<.05); Prescription Drugs at Time 1 ($\underline{r}$ = .29, p<.01); Shopping at Time 2 ($\underline{r}$ = .24, p<.05); Tobacco at Time 1 ($\underline{r}$ = .24, p<.05); and Work at Time 1 ($\underline{r}$ = .22, p<.05) and Time 2 ($\underline{r}$ = .29, p<.001).

Higher scores on Global Religiousness at Time 2 were significantly correlated with lower scores on Prescription Drugs at Time 1 ($\underline{r}$ = -.31, p<.01) and Time 2 ($\underline{r}$ = -.26, p<.05); Recreational Drugs at Time 1 ($\underline{r}$ = -.30, p<.01) and Time 2 ($\underline{r}$ = -.29, p<.01); Sex at Time 1 ($\underline{r}$ =-.28, p<.01) and Time 2 ($\underline{r}$ = -.22, p<.05); Video Games at Time 1 ($\underline{r}$ = -.33, p<.01) and Time 2 ($\underline{r}$ = -.27, p<.05).

Additionally, gender, religious attendance, private prayer, and religious preference were correlated with different addiction measures. A one-way ANOVA analysis revealed that there were significant differences between males and females in their scores on Video Games at Time 1 {F (1, 88) = 40.02, $\underline{p}$ < .001} and at Time 2 {F (1, 88) = 21.56, $\underline{p}$ < .001}, Gambling at Time 1 {F (1, 88) = 6.49, $\underline{p}$ < .05}, Recreational Drugs at Time 1 {F (1, 88) = 6.23, $\underline{p}$ < .05}, Sex at Time 1 {F (1, 88) = 14.61, $\underline{p}$ < .0},and Time 2 {F (1, 88) = 5.29, $\underline{p}$ < .05}, Shopping at Time 1 {F

(1, 88) = 8.66, p < .01} and Time 2 {F (1, 88) = 7.33, p < .01}. More specifically, males scored significantly higher than females on Video Games at both Time 1 and Time 2, Gambling at Time 1, and Sex at Time 1 and Time 2. On the other hand, females scored significantly higher on Recreational Drugs at Time 1 and Shopping at both Time 1 and Time 2

Higher scores on attendance at religious services (reported at Time 2) were significantly correlated with lower scores on the Overall SPQ at Time 1 ($r = -.21$, $p<.05$); Alcohol at Time 1($r = -.28$, $p<.01$) and Time 2 ($r = -.28$, $p<.01$); Prescription Drugs at Time 1 ($r = -.26$, $p<.05$) and Time 2 ($r = -.24$, $p<.05$); Recreational Drugs at Time 1 ($r = -.29$, $p<.01$) and Time 2 ($r = -.26$, $p<.05$); and Sex at Time 1 ($r = -.25$, $p<.05$) and Time 2 ($r = -.23$, $p<.05$).

Higher scores on private prayer (reported at Time 2) were significantly correlated with lower scores on Prescription Drugs at Time 1 ($r = -.29$, $p<.01$) and Time 2 ($r = -.25$, $p<.05$); Recreational Drugs at Time 1 ($r = -.31$, $p<.01$) and Time 2 ($r = -.31$, $p<.01$); Sex at Time 1 ($r = -.29$, $p<.01$) and Time 2 ($r = -.21$, $p<.05$); Shopping at Time 1 (($r = -.23$, $p<.05$); and Video Games at Time 1 ($r = -.33$, $p<.01$) and Time 2 ($r = -.28$, $p<.01$).

A one-way ANOVA analysis revealed that there were a significant differences between people with different religious preferences on Exercise at Time 1 {F (5, 84) = 2.89, p < .05. More specifically, participants who indicated that they have no religious preference scored significantly higher on the addictive measurement of Exercise at Time 1 than Protestant participants {t (89) = 1.23, $p < .05$}, “Other Christians” (excluding Catholics) {t (89) = 1.00, $p < .05$}, and participants who distinguished their religious preference as “Other” {t (89) = 1.33, $p < .05$}.

Hierarchical Analyses

To test whether spiritual struggles predicted change in addictive behavior over time, and

above and beyond the effects of control variables (demographics, Neuroticism, Perceived Stress, and Global Religiousness), hierarchical regression analyses were performed. Indices of addictive behavior at Time 2 served as the criterion variables for the regression analyses. Addictive behavior at Time 1 and demographic and control variables were then entered as one block in the first step of the analysis. Spiritual struggles at Time 2 were then entered into the second step of the hierarchical regression analysis, and the change in R^2 was examined for significance. When the change in R square was significant, the beta weights were examined for statistical significance. I focused on spiritual struggles at Time 2 as the predictor of changes in addiction because the correlations suggested that spiritual struggles at Time 2 had more significant implications for addiction than spiritual struggles at Time 1.[1] Conceptually, it could also be argued that spiritual struggles at Time 2 presumably occur between Times 1 and 2 and should be more functionally connected to changes in addiction.

After controlling for variables that were correlated with the outcome measures, spiritual struggles at Time 2 predicted change in addiction on 11 of the 15 measurements (see Table 2). Higher scores on spiritual struggles were tied to greater scores for 11 addiction scales: the Overall SPQ ($\beta = .30$, $p<.001$), Caffeine ($\beta = .23$, $p<.01$), Exercise ($\beta = .16$, $p<.05$), Food Starving ($\beta = .27$, $p<.001$), Gambling ($\beta = .33$, $p<.001$), Prescription Drugs ($\beta = .33$, $p<.001$), Recreational Drugs ($\beta = .2526$, $p<.01$), Sex ($\beta = .18$, $p<.05$), Shopping ($\beta = .264$, $p<.01$), Tobacco ($\beta = .2726$, $p<.001$), and Work ($\beta = .34$, $p<.001$).

Post-Hoc Analyses

To identify whether particular types of spiritual struggles were significantly linked to

[1] However, to check this assumption, the hierarchical regression analyses were also conducted with spiritual struggles at Time 1 as a predictor of changes in addiction. The analyses indicated that spiritual struggles at Time 1 did not significantly predict change in any of the 15 measures of addictive behavior.

greater risk of increased addiction, post-hoc analyses were performed using the specific indices of addiction at Time 2 as criterion variables and the three different types of spiritual struggles measured by the Modified Negative RCOPE (divine, interpersonal, intrapersonal) as the predictors. Specifically, the above hierarchical regression procedure was repeated whereby addictive behavior at Time 1, demographics, and control variables were entered as one block in the first step of the regression analysis. Then, the specific subscale from the RCOPE at Time 2 was entered in the next block. Change in R^2 was examined for significance and beta weights were calculated.

As shown in Tables 4 – 14, ten out of the 11 addiction scales were significantly associated with one or more of the spiritual struggle subscales. Specifically, higher scores on the divine dimension of spiritual struggles were significantly correlated with higher scores on ten addiction scales: the Overall SPQ ($\beta = .26$, $p<.01$), Caffeine ($\beta = .23$, $p<.01$), Food Starving ($\beta = .22$, $p<.01$), Gambling ($\beta = .32$, $p<.01$), Prescription Drugs ($\beta = .27$, $p<.01$), Recreational Drugs ($\beta = .18$, $p<.05$), Sex ($\beta = .16$, $p<.05$), Shopping ($\beta = .22$, $p<.01$), Tobacco ($\beta = .22$, $p<.01$), and Work ($\beta = .26$, $p<.01$).

Higher scores on the interpersonal dimension of spiritual struggles were significantly associated with higher scores on nine addiction scales: the Overall SPQ ($\beta = .21$, $p<.05$), Caffeine ($\beta = .19$, $p<.01$), Food Starving ($\beta = .24$, $p<.01$), Gambling ($\beta = .32$, $p<.001$), Prescription Drugs ($\beta = .23$, $p<.01$), Recreational Drugs ($\beta = .18$, $p<.05$), Shopping ($\beta = .19$, $p<.05$), Tobacco ($\beta = .16$, $p<.05$), and Work ($\beta = .23$, $p<.01$).

Finally, higher scores on the intrapersonal subscale were significantly correlated with higher scores on six addiction scales: the Overall SPQ ($\beta = .18$, $p<.05$), Food Starving ($\beta = .18$, $p<.05$), Prescription Drugs ($\beta = .22$, $p<.05$), Recreational Drugs ($\beta = .19$, $p<.05$), Shopping ($\beta =$

.18, $p<.05$), and Work ($\beta = .28$, $p<.01$).

DISCUSSION

The purpose of the current study was to examine whether spiritual struggles predict a greater risk of developing addictive problems over the course of a semester among a sample of college students. Specifically, this project was unique in two respects. First, it specified spiritual struggles as the religious/spiritual domain of interest. Second, it broadened the conceptual scope of addiction to include a wide range of addictive behaviors, not simply substance-related addiction. In this section I highlight and offer interpretation of the notable findings. I then consider the practical implications of these results. Lastly, I discuss the limitations of the study and suggest some directions for future research.

Notable Findings

Spiritual Struggles Predict Increases in Addictive Behaviors

As hypothesized, the overall findings in this study demonstrated that spiritual struggles are a significant predictor of an increase in addictive behavior for this sample. Students who indicated higher levels of spiritual struggles reported increases in scores on 11 of 15 measurements of addiction: the Overall SPQ, Caffeine, Exercise, Food Starving, Gambling, Prescription Drugs, Recreational Drugs, Sex, Shopping, Tobacco, and Work. Spiritual struggles were not predictive of changes in Internet and Video Game use or for Food Bingeing and Alcohol subscales.

These findings supported the central thesis that spiritual struggles serve as a risk factor for the development of addictive behaviors in freshmen college students. The results are consistent with the theory that spiritual tensions and conflicts during this developmental stage produce an internal void which individuals fill with a new form of significance: addictive behaviors. This is the first study of its kind to demonstrate that spiritual angst may be a risk

factor in the development of a wide range of potentially destructive behaviors. It builds upon existing literature in the field that has demonstrated a robust link between spiritual struggles and negative health and emotional outcomes (see review by Ano & Vasconcelles, 2005) but expands the focus to include addictive behaviors as another set of negative outcomes tied to spiritual struggles. Furthermore, these findings support a theoretical framework of addiction as idolatry as originally posited by Smith (1996) and supported in research by Lynn (2005), whereby an individual becomes vulnerable to "false substitutes" when the divine is pushed aside.

Although the central premise of this study was supported, a few findings were somewhat surprising. Contrary to the hypothesis, higher levels of spiritual struggles at Time 2, rather than Time 1, were predictive of an increase in addictive behaviors. Higher levels of spiritual struggles at Time 1 did not significantly predict any changes in reported addictive behavior. One possible explanation for this discrepancy is that spiritual struggles at Time 2 were more proximal to changes in addictive behavior during the study than spiritual struggles at Time 1. It seems likely that spiritual struggles measured at Time 1 encompassed the struggling process that took place before Time 1. Spiritual struggles measured at Time 2 may have addressed those tensions and conflicts the students were experiencing in between Time 1 and Time 2. Thus, the Time 2 measure of spiritual struggles may have been most directly related to changes in addictive behaviors during the study period.

Although findings indicated that students experienced increases in multiple domains of addictive behavior, it is notable that four relatively prevalent addictive behaviors showed no significant changes as a function of spiritual struggles. Specifically, spiritual struggles did not predict an increase in the Internet and Video Game use, Food Bingeing, and Alcohol scales. Perhaps this reflects the normative and social nature of these domains of addiction. Specifically,

internet and video game use, alcohol use and food bingeing are arguably relatively socially accepted. Moreover, they are generally manifested in an inclusive, cohesive social environment. In contrast, the other domains of addiction (with the exception of caffeine) are generally not as socially accepted (e.g., food starving, sex, drug use). Furthermore, they are generally expressed in isolation or in a small, socially exclusive/competitive group (e.g., gambling, work, recreational drugs, exercise).

Spiritual struggles are typically marked by isolation from God, self, and/or others and involve topics and/or questioning that are not perceived as socially acceptable. For instance, social and religious cultures generally dissuade individuals from questioning the divine; and open disagreement or struggling with ultimate issues is usually not promoted or widely accepted. Therefore, individuals who are undergoing a spiritual struggle may be feeling isolated from others, self and the divine, as well as guilt or shame about their struggle or questioning. Perhaps these four domains of addiction did not show change related to spiritual struggles over time because they all tend to be socially accepted *and* are behaviors that can connect an individual with a large group of others.

For instance, social networking internet sites, such as "Facebook.com" and "Myspace.com" are used a great deal by college-aged youths. Additionally, interactive gaming technologies that connect multiple players over the internet are an increasingly popular segment of the video gaming industry. Both of these activities are known as a way to remain in contact with others in a socially open manner, unlike work, exercise, or gambling, which are arguably generally done in isolation or promote competition with others. Additionally, video gaming and internet use differ from the other domains of addiction in that they are not illegal (in contrast to drug use), perceived as risky or unhealthy (as in the case of food starving, tobacco use, and sex),

and are not generally associated with detrimental financial consequences (as is the case for shopping or gambling). Perhaps internet and video gaming connect individuals to others in a meaningful, socially acceptable way and, as a result, protect people from the negative effects of spiritual struggles.

Alcohol consumption and food bingeing are also commonplace in college, are generally accepted by society, and tend to be social in nature. In a national survey, approximately 67% of undergraduates indicated that they drank alcohol during the past month; 46% of students were considered "binge drinkers" (Department of Health and Human Services, 2006). Food bingeing is also a socially accepted behavior in the American culture. For instance, the vast number of 'all you can eat' buffets and the 'supersize' meals reflect a culture that promotes and supports bingeing in open social contexts. Therefore, unlike food starving or drug use, these domains are arguably widely socially acceptable and are generally done in large inclusive – rather than exclusive – groups. Perhaps these characteristics protect the individual from the isolation and personal condemnation (e.g., guilt, shame) generally present in spiritual struggles.

Alcohol consumption also warrants a more detailed discussion. In contrast to the present findings, prior studies have linked spiritual struggles to higher levels of alcohol use, specifically in first-year college students (see review by Gorsuch, 1995; Johnson, et al., 2006; Astin, et al., 2004). This incongruity could be a result of the relatively short period of time between time points in this study (average time elapsed between Time 1 and Time 2 was 5 weeks; whereas Johnson, et al., queried students at three timepoints over approximately two years). Furthermore, data were collected at the end of the second semester of freshman year – arguably a time when students' alcohol use patterns in college are already established. Thus, addictive behaviors for

alcohol may have been relatively stable in this sample. A longer period of time may be necessary to detect links between spiritual struggles and alcoholic behaviors in college students.

Post-Hoc Analysis: Domains of Spiritual Struggles Predict an Increase in Addictive Behavior

A post-hoc analysis was conducted to explore the role of each domain of spiritual struggle (divine, interpersonal, and intrapersonal) as significant predictors of addictive behavior. Results indicated that divine spiritual struggles had the greatest impact on addictive behavior, with significant changes observed in ten out of 11 scales. Interpersonal spiritual struggles were predictive of increases in nine out of 11 scales. Lastly, intrapersonal spiritual struggles predicted changes in six out of 11 addictive behavior indices. These findings may offer some insight into the ways each dimension of spiritual struggle impact second-semester freshmen college students.

Divine spiritual struggles reflect individuals' difficulties with God. Students who scored high on this domain express feelings of abandonment by, punishment by, or anger towards the divine. Like the general American population, the majority of participants in this sample indicated that they believe in God (89%). Individuals who believe in God may look to the divine for meaning, comfort, and a sense of transcendence. Thus the divine can serve a critical role in personal coping and in how people view the world. When their relationship with the divine is strained or challenged, people may be less able to tap into this resource and find meaning, comfort, and transcendence. Strugglers may lose their capacity to transform stress and pain into an opportunity for growth and enhanced understanding. Thus, divine spiritual struggles may be particularly troublesome. Furthermore, individuals who are disconnected or experiencing strain with the divine may be particularly prone to addictive behaviors that soothe, console, and 'lift' themselves up from stress. This may work in concert with the notion of "filling" the spiritual void. In lacking a meaningful source of understanding, transcendence, and comfort, divine

strugglers may also be searching for "replacements" to fill this void. Therefore, the individual may become particularly vulnerable to the spiritual vacuum, which may "pull in" other forms of perceived meaning, such as addictive behavior. Data from this study build on the existing literature that provides evidence of a robust relationship between divine spiritual struggles and poor mental health and physical outcomes (see review by Ano and Vasconcelles, 2005). However, these results take the data one step further by suggesting that divine spiritual struggles are a risk factor in the development of addictive behaviors.

Interpersonal spiritual struggles refer to spiritual conflicts with others, including feeling a lack of spiritual support from core others and/or feelings of exclusion from or tension within church groups. According to Astin et al. (2004), 48% of the students indicated that it is "essential" or "very important" for personal expression of spirituality to be encouraged while in college. Difficulties finding religious and spiritual support may lead individuals to search for cohesion and connectedness with others in a meaningful way; however, it could also lead them to alternative unhealthy addictive patterns to provide a salve for interpersonal spiritual conflicts. Many studies have linked interpersonal religious conflict in a college sample with psychological distress, such as greater anxiety, negative mood, lower self-esteem (Pargament, Zinnbauer, et al., 1998), and increased depression (Exline, Yali & Sanderson, 2000). The current study corroborates and extends these findings with evidence of the deleterious effect of interpersonal spiritual struggles on the risk of developing addictive behaviors in college students.

Lastly, intrapersonal spiritual struggles were predictive for six out of 11 scales of addictive behaviors. Intrapersonal spiritual struggles are marked by personal doubts and questions regarding one's spirituality, faith tradition, or life purpose. This is a common experience in college students' development. As the research team of Astin et al (2004) found,

over half (57%) of the college students sampled nationwide questioned their religious beliefs and less than half indicated that they feel secure in their current views about "spiritual/religious matters." These kinds of personal doubts and spiritual uncertainty have been associated with distress, including greater anxiety (Kooistra & Pargament, 1999), and even suicidality in a sample of 200 college students (Exline, Yali & Sanderson, 2000). An individual who is feeling personal uncertainty and religious doubt may turn to addictive behaviors to distract him/herself from the distress and emotional discomfort that accompanies this intrapersonal tension. This may account for the rise in addictive behaviors as seen in this sample. The current study builds on previous findings on this topic by revealing that intrapersonal spiritual struggles are also a predictor in the development of addictive behaviors.

Practical Implications

The freshman year of college has been described as a developmental window period when students explore their own identities, grapple with questions of the meaning of their lives, and learn how to handle multiple stressors as they move toward greater autonomy (Astin, et al., 2004). Clearly, many students encounter spiritual struggles as they deal with these developmental tasks. Moreover, the findings in this study indicate that these struggles have significance for the health and well-being of college students. Several practical implications follow.

First, interventions for spiritual struggles seem warranted. One such intervention that may decrease the impact of spiritual struggle that some students experience is to educate incoming freshmen about the prevalence and progression of spiritual questioning and doubts. Orientation programs could be developed to teach students and parents that spiritual searching and struggling, regardless of religious heritage or beliefs, are a normal process in life and that

some of the most prominent people, including exemplary religious figures, have experienced similar struggles (e.g., Mother Teresa). These programs could educate people on the three types of struggles and their empirically based links with anxiety and depression. This normalization and psychoeducation may help decrease the "struggle" when she or he encounters spiritual and religious tension. Letting students know that they are not "alone" in this process may buffer the feelings of abandonment and isolation common to those struggling, which in turn may decrease their risk for developing addictive processes.

Second, these results suggest that students are utilizing unhealthy patterns (e.g., addictive behaviors) as a way to cope with their spiritual questioning and other life stressors. Therefore, universities and clinicians may consider providing students with training on more adaptive and functional coping techniques, such as meditation, seeking healthy social support, and positive self care. Some colleges have already implemented free "Stress Clinics" so that students can learn positive coping patterns, such as decreasing cognitive distortions, building self care, and meditation patterns. However, these programs rarely target a spiritual type of stressor, such as spiritual struggles. This study underscores the critical importance of giving students alternative spiritually targeted coping strategies to address maladaptive cognitions related to the divine and powerful emotions such as guilt or shame that often accompany spiritual struggles. Literature on religious coping outline specific attributions of the divine and ways of approaching and relating to the world that have been associated with positive mental and physical outcomes (see Pargament, 1997). Bolstering positive religious coping strategies and other spiritually sensitive techniques may decrease students' propensity to engage in maladaptive coping through addictive behaviors when they encounter spiritual struggles.

Lastly, addressing spiritual and religious concerns in counseling is becoming a more prominent focus in the literature and initial findings suggest that it is an effective form of treatment (see review in Pargament, 2007). This form of counseling may be particularly useful for college-aged students considering the findings of the Astin et al., study (2003) that students have identified this stage of their lives as a time to address spiritual and religious concerns. The results from the current study underscore this need for students to have opportunities in college to grow spiritually, emotionally, and receive spiritual guidance and support during this transitional time. Resources, such as campus ministries and individual counselors could assess their students for signs of spiritual struggles. In addition, religious and non-religious groups, such as spiritually sensitive psychological process groups, could be directed towards the development of a healthy spirituality and sense of self.

Some promising efforts have already been undertaken in this regard. For instance, Tarakeshwar, Pearce, and Sikkema (2005) developed and implemented an eight-week spiritually oriented group for community members coping with HIV. Sessions were devoted to several topics: processing shame, guilt, and stigma of HIV; discussing unhealthy relationship patterns with others and with a Higher Self; understanding spirituality and mental and physical health; identifying religious resources and sources of strain; developing spiritual and religious goals; and fostering hope. Comparing participants before and after the intervention, participants reported a decrease in negative religious coping (pre=2.31, post=1.61, $p < 0.02$), an increase in self-rated religiosity (pre=2.92, post=3.38, $p < 0.05$), and a decrease in depression (pre=18.00, post=12.73, $p < 0.05$; Tarakeshwar, Pearce, & Sikkema, 2005). The efficacy of this program over a relatively short period of time helps set the stage for interventions that addresses spiritual struggles in college students.

A similar study investigated the outcome of an eight-week spiritually integrated intervention for a small group of females (2 subjects) who experienced sexual abuse as children (Murray-Swank & Pargament, 2005). Sessions focused on understanding images of God; engaging in and working through spiritual struggles, such as feelings of anger and resentment towards God; processing feelings of shame; and developing a sense of spiritual connection. Participants completed a daily measurement log assessing positive and negative religious coping, spiritual self-worth, and spiritual distress. A survey battery measuring spiritual well-being, religious coping, and image of God were administered pre- and post- intervention. Results indicated that both participants improved in spiritual well-being, positive religious coping and images of God. Additionally, qualitative assessment of the impact of the intervention was marked; one client stated, "I believe [this program] was something that was meant to bring to the surface what I still need to deal with in a healthy, safe way. I don't believe that in all the therapy I have been through I ever dealt with some of the stuff that is now at the surface …" (Murray-Swank & Pargament, 2005; page 200). These promising studies show that, although spiritual struggles have detrimental effects on health and well-being of college students, counseling programs may help people process and resolve their struggles.

Furthermore, data from this study may alert clinicians and clergy to focus on specific issues related to spiritual struggles and to watch for a list of addictive patterns of coping that go beyond traditional substance-related concerns. Helping professionals could use these data to focus their discussion and interventions with students on exploring and processing the specific negative religious/ spiritual coping patterns that accompany spiritual struggles (e.g., personal doubts and questions regarding one's spirituality, faith tradition, or life purpose, feeling abandoned by or angry with the divine, feeling excluded from church groups, etc…).

Additionally, these findings could help broaden a clinician's perspective in identifying problematic patterns of use/abuse in multiple areas of addiction – not solely substance-related concerns – when working with individuals coping with spiritual struggles and existential tension.

Study Limitations and Future Direction

Data from this study provided evidence of a relationship between spiritual struggles and addiction. However, these results should be viewed as exploratory in nature and the limitations should be addressed in future investigations. First, this study utilized a small, ethnically and religiously homogenous sample from a single medium-sized Midwest university. Therefore, this study was limited in its generalizability. Future research should attempt to extend these findings to a larger and more diverse sample of freshmen students at multiple universities.

Second, this study employed retrospective self-report measures and therefore may have reflected biases due to response subjectivity and recall difficulties. Future studies should utilize more diverse data collection methods, including ecological momentary assessment strategies such as daily diaries on Palm Pilots to collect real-time data and decrease retrospective recall biases. Additionally, although there was no evidence in this study of underreporting, researchers should remain sensitive to anonymity in all sampling procedures, as participants may be hesitant to report use of illicit substances or perceived socially unacceptable behaviors in their surveys.

Third, the current study queried participants at two time points within the second semester of freshman year, times which may reflect the end of the developmental stage of this transitional year. Future research should survey students at the onset of their first year of college and at multiple points during the year. It may also be beneficial to query students throughout the duration of their college career to look for trends and patterns of use/abuse, and resolution or deepening of spiritual struggles during that timeframe.

While a plethora of studies have been devoted to establishing links between positive religious coping, the field in general has overlooked ways that spiritual struggles may exacerbate problems. Taken in context with the other studies on this topic, future research on religious/spiritual risk factors seems warranted.

Specifically, future researchers should consider investigating factors that may buffer the impact of spiritual struggles on addictiveness, such as meditation, promoting feelings of acceptance of struggles, or having social/ mentor support that provides outlets for discussing and processing spiritual struggles. Understanding the possible mediators and moderators of the connection between struggles and addiction would contribute to a deeper understanding of both spirituality and addiction. Moreover, it would set the stage for the development of targeted interventions to help people cope with and possibly even resolve spiritual struggles in an adaptive and healthy way. Evaluative studies of these spiritually integrated interventions for coping could be most informative to researchers, clinicians, clergy, and university administrators interested in facilitating the development of college students not only educationally, psychologically, and socially, but spiritually as well.

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APPENDIX A

Modified Negative RCOPE

The following items deal with feelings that individuals may experience concerning their faith. their relationship with God, and their relationship with other people. Using the scale below, please circle the number that best describes how much you are currently experiencing each item.

I am currently…

	Not At All	Some-what	Quite A Bit	A Great Deal
1. Wondering whether God has abandoned me. [D]	1	2	3	4
2. Feeling punished by God for my lack of devotion. [D]	1	2	3	4
3. Wondering what I did for God to punish me. [D]	1	2	3	4
4. Questioning God's love for me. [D]	1	2	3	4
5. Questioning the power of God. [D]	1	2	3	4
6. Wondering if God really exists. [*I]	1	2	3	4
7. Feeling angry that God is not there for me. [D]	1	2	3	4
8. Questioning if religious scriptures are really the inspired word of God. [*I]	1	2	3	4
9. Questioning the teachings of my faith. [*I]	1	2	3	4
10. Doubting the religious scriptures of my faith. [*I]	1	2	3	4
11. Questioning core beliefs of my church (synagogue or temple). [*I]	1	2	3	4
12. Confused about my relationship with God. [*D]	1	2	3	4
13. Frustrated with God. [*D]	1	2	3	4
14. Feeling secluded from God. [*D]	1	2	3	4
15. Feeling isolated from God. [*D]	1	2	3	4
16. Wishing that God was here for me. [*D]	1	2	3	4

17. Shaky and nervous when thinking about God. *D	1	2	3	4
18. Become tense when thinking about God. *D	1	2	3	4
19. Arguing with my parents because of our religious beliefs. *P	1	2	3	4
20. Having problems with my friends because our religious beliefs are different. *P	1	2	3	4
21. Feeling isolated from members of my religious community (including congregation members, prayer groups, etc). *P	1	2	3	4
22. Being judged by people that I care about because of my religious beliefs. *P	1	2	3	4
23. Experiencing tension in my relationships with my friends and family because of differences in religious opinions. *P	1	2	3	4

Notes.
* indicates items added to the NRCOPE
I = intrapersonal
D = divine
P = interpersonal

APPENDIX B

The Shorter **PROMIS** Questionnaire (SPQ)

In this questionnaire certain terms are used which have general meaning attached to them. For example, "drugs" should be taken to mean cannabis, heroin, cocaine, LSD, magic mushrooms, 'designer drugs,' amphetamines, and other stimulants. Similarly, "alcohol" should be taken to mean beer, wine, hard liquor (e.g., vodka), mixed drinks, etc.

Each question is on a six-point scale. Please read each question carefully before answering. Circle a number on the scale to indicate the extent to which the statement is 'Like' you or 'Not like' you.

For example: Circling a '6' would indicate that the statement is definitely like you. Circling a '1' would indicate that the statement is definitely not like you. Circling a number between the two extremes indicates more or less agreement with one extreme. E.g., if you felt that 'Like me' is more appropriate than 'Not like me' you would circle a '4' or a '5'.

If you think that a question is just not applicable or incomprehensible to you please answer 'Not like me' ('1').

Alcohol

4 I find that feeling light-headed is often irrelevant in deciding when to stop drinking alcohol.
18 I find that having one drink tends not to satisfy me but makes me want more.
37 After drinking alcohol, I have had a complete blank of ten minutes or more in my memory when I try to recall what I was doing on the previous day or night.
43 I use alcohol as both a comfort and a strength.
51 I tend to gulp down the first (alcoholic) drink fairly fast.
74 In my prime(or even now) I had a good head for alcohol so that others appeared to get drunk more readily than me.
82 I would find it strange to leave half a glass of (alcoholic) drink.
134 I get irritable and impatient if there is more than ten minutes conversation at a meal or social function before my host offers me an alcoholic drink.
136 I would have an alcoholic drink before going out for the evening to somewhere alcohol may not be available.
140 I often drink significantly more alcohol than I intend to.

Caffeine

1 I have an intimate relationship with caffeine so that in a strange way I only feel real when I am using it.
22 I prefer to take caffeine on my own rather than in company.
28 It would be more painful for me to give up caffeine than to give up a close friend.
31 I have regularly stolen or helped myself to other peoples caffeine even though I had enough money to buy my own.
52 I tend to time my intake of caffeine so that others are not really aware of my total intake.
60 I have a sense of increased tension and excitement when I buy caffeine substances or when I see advertisements for them.
107 I find that my intake of another form of caffeine tends to increase when I am off my own favourite.
115 When I have used too much caffeine I tend to feel defiant as well as disappointed in myself.

142 I sometimes rush through a meal or skip it altogether so that I can have some caffeine.
145 I am often capable of drinking twenty cups of tea/coffee/coke etc. in a day.

Exercise

3 I often get so tired with exercise that I find it difficult to walk or to climb upstairs.
19 I prefer to exercise alone rather than in company.
33 I always try to take exercise several times a day.
54 I particularly enjoy getting wringing wet with sweat when I exercise.
68 I feel a sense of tension and excitement when I am about to take exercise.
79 I would respond positively to an unexpected invitation to exercise despite having just finished my regular exercise.
97 I feel that I only really become myself when I am exercising.
105 I tend to use exercise as both a comfort and strength even when I am perfectly fit and do not need any more.
129 I often take exercise just to tire myself sufficiently for sleep.
154 I often take sports clothes and equipment with me when I go out `just in case' the opportunity to exercise arises.

Food Bingeing

10 I tend to think of food not so much as a satisfier of hunger but as a reward for all the stress I endure.
23 I tend to use food as both a comfort and a strength even when I am not hungry.
44 I find that being full is often irrelevant in deciding when to stop eating.
50 I find that I sometimes put on weight even when I am trying to diet.
71 Others have expressed repeated serious concern about my excessive eating.
85 I prefer to eat alone rather than in company.
95 When I have definitely eaten too much I tend to feel defiant as well as disappointed in myself.
113 I prefer to graze like a cow throughout the day rather than ever allowing myself to get hungry.
116 I have had three or more different sizes of clothes in my adult, (non-pregnant if female), wardrobe.
138 I am aware that once I have consumed certain foods I find it difficult to control further eating.

Food Starving

13 In a restaurant or even at home I often try to persuade others to choose dishes that I know I would like even though I would probably refuse to eat them.
34 When I eat in company I like to be with special friends or family members I can rely on to finish off some foods for me.
53 I have had a list of so many things that I dare not eat, so that there is very little left that I can eat.
57 I often chew something and then take it out of my mouth and throw it away.
100 I particularly enjoy eating raw vegetables and also salty or sour things.
109 When I am eating in company I tend to time my eating as a form of strategy so that others are not really aware of just how little I am eating.
139 I get irritable and impatient at meal times if someone tries to persuade me to eat something.
144 I often avoid meal times by claiming that I have already eaten when it is not true.
152 Some food makes me wish I could eat it like other people do but I nonetheless find that I cannot bring myself to do so.
119 When I eat something reasonably substantial I tend to feel disappointed or even angry with myself as well as slightly relieved.

Gambling

7 I find that the amount that I have won or lost is often irrelevant in deciding when to stop gambling or risk taking.

65 I have stolen/embezzled to cover gambling losses or to cover my losses in risky ventures.
77 It would be more painful for me to give up gambling and risk taking than it would be for me to give up a close friendship.
89 Others have expressed repeated serious concern over my gambling or risk taking.
94 I tend to accept opportunities for further gambling or risk taking despite having just completed a session or a project.
108 I prefer to gamble or to take risks in one way or another throughout the day rather than at particular times.
120 I tend to use gambling or risk-taking as a form of comfort and strength even when I do not feel that I particularly want to gamble or take further risks.
135 I would gamble or take a risk at the first opportunity in case I did not get the chance later on.
137 If my favourite form of gambling or risk taking was unavailable I would gamble on something else I normally disliked.
147 I get irritable and impatient if there is a complete break of ten minutes in a gambling session.

Prescription Drugs

15 I feel an increased tension or awareness when it is coming to the time when I normally take my medication.
38 Others have expressed repeated serious concern about my use of prescription medicines.
42 I take more than the prescribed dose of my medication as and when I feel it necessary.
92 If my medical supply was being strictly controlled I would hang onto some old tablets even if they were definitely beyond their expiry date.
99 Others (e.g. Doctors) have commented that he/she would be knocked out by a fraction of the medication that I regularly take.
112 I find that my previous doses of medication are no longer successful in controlling my symptoms.
121 I continue to take medication because I find that it helps me, even though the original stresses for which the original medication was prescribed, have been resolved.
125 If I had run out of my prescribed medication I would take an alternative even if I was not sure of its effects.
153 I get irritable and impatient if my prescribed medication is delayed for ten minutes.
157 I often find myself taking more prescribed medication than I intend to.

Recreational Drugs

9 I particularly enjoy getting a really strong effect from recreational drugs.
24 I feel a sense of increased tension and excitement when I know that I have the opportunity to get some drugs.
41 Others have expressed repeated serious concern about aspects of my drug use.
66 I find that getting high tends to relax me so that I go on to take more drugs if they are available.
76 I tend to use drugs as both a comfort and a strength.
88 I often find that I use all of the drugs in my possession even though I had intended to spread them out over several occasions.
98 I tend to make sure that I have the drugs or the money for drugs before concentrating on other things.
141 I get irritable and impatient if my supply of drugs is delayed for ten minutes or so for no good reason.
143 I tend to use more drugs if I have got more.
159 I would use drugs before going out for an evening if I felt there might not be the opportunity to use them later.

Sex

2 I find it difficult to pass over an opportunity for casual or illicit sex.
20 Others have expressed repeated serious concern over my sexual behaviour.
30 I pride myself on the speed with which I can get to have sex with someone and find that sex with a

complete stranger is stimulating.

70 I would take an opportunity to have sex despite having just had it with somebody else.

75 I find making a sexual conquest causes me to lose interest in that partner and leads me to begin looking for another.

90 I tend to ensure that I have sex of one kind or another rather than wait for my regular partner to be available again after an illness or absence.

110 I have had repeated affairs even though I had a regular relationship.

114 I have had three or more regular sexual partners at the same time.

128 I have had voluntary sex with someone that I dislike.

148 I tend to change partners if sex becomes repetitive.

Shopping

8 I feel uncomfortable when shopping with other people because it restricts my freedom.

17 I particularly enjoy shopping bargains so that I often finish up with more than I need.

48 I tend to use shopping as both a comfort and a strength even when I do not need anything.

59 I tend to go shopping just in case I might see something I want.

61 When I am shopping with family members or friends or others I tend to disguise the full extent of my purchases.

80 I often buy so many goods (groceries, sweets, household goods, books etc.) that it would take a month to get through them.

84 I prefer always to keep my shopping supplies topped up in case of war or natural disaster, rather than let my stocks run low.

93 I think of buying things not so much as a means of providing necessities but more as a reward that I deserve for the stresses that I endure.

123 I feel that I only become a real person when I am shopping.

156 I go shopping to calm my nerves.

Tobacco

6 I prefer to use tobacco throughout the day rather than only at specific times.

21 I tend to use tobacco as both a comfort and strength even when I feel that I don't want any.

47 I am afraid that I will put on excessive amounts of weight or become particularly irritable or depressed if I gave up using tobacco altogether.

64 I often find that having my first use of tobacco in any day tends not to satisfy me, but to make me want more.

83 I have continued to use tobacco even when I have had a bad cold or even more serious respiratory problem.

104 I find that my tobacco consumption goes up or down when I am off alcohol or drugs or when I am on a diet.

131 I would use tobacco before going out somewhere for the evening where I may not be able to use it.

132 If I ran out of my favourite tobacco, I would accept the offer of an alternative that I do not particularly like.

146 I often smoke to calm my nerves.

151 I often use tobacco significantly more than I intend to.

Work

12 I have taken on a piece of work that I actively disliked not so much out of necessity but more simply to keep myself occupied.

26 I tend to work faster and for longer hours than any other people of my own ability so that they find it difficult to keep up with me.

36 When I have definitely overworked and got myself irritable and overtired I tend to feel defiant as well as

slightly ashamed.

40 I tend to tidy up the mess that someone else has got into at work, even when I have not been asked to do so.

46 I find that finishing a specific project is often irrelevant in deciding when to stop working.

56 When I am working with others I tend to disguise the full amount of time and effort that I put into my work.

67 I tend to keep reserve projects up my sleeve just in case I find some time, even a few minutes to spare.

73 I have regularly covered other people's work and responsibilities even when there was no need for me to do so.

102 Others have expressed repeated serious concern over the amount of time I spend working.

133 Once I start work in any day I find it difficult to get `out of the swing of it' and relax.

APPENDIX C
Global Religiousness

To what extent do you agree with the following statements?	Strongly disagree				Strongly agree
1. I believe in God.	1	2	3	4	5
2. I believe in life after death.	1	2	3	4	5
3. I have doubts or questions about God.	1	2	3	4	5
4. The Bible is God's word and everything will happen exactly as it says.	1	2	3	4	5
5. The Bible is the answer to all important human problems.	1	2	3	4	5
6. I see myself as a religious person.	1	2	3	4	5
7. I see myself as a spiritual person.	1	2	3	4	5

Please answer the following questions.

1. What is your religious preference?

_____ Christian/Protestant
_____ Christian/Catholic
_____ Non-denominational Christian
_____ Muslim
_____ Jewish
_____ Hindu
_____ None
_____ Other (specify): _____

2. How often do you attend religious services?

____ Several times a week
____ Every week
____ Nearly every week
____ 2-3 times per month
____ About once per month
____ Several times a year
____ About once or twice a year
____ Less than once per year
____ Never

3. How often do you pray privately in places other than church or synagogue or temple?

____ More than once per day
____ Once a day
____ A few times a week
____ Once a week
____ A few times a month
____ Once a month
____ Less than once a month
____ Never

APPENDIX D
Problem Video Game Playing Scale (PVP)

How true are the following statements for you?

		No	Yes
1.	When I am not playing with the video games, I keep thinking about them (i.e., remembering games, playing the next game, etc.).	0	1
2.	I spend an increasing amount of time playing video games.	0	1
3.	I have tried to control, cut back or stop playing, or I usually play with the video games over a longer period than I intended.	0	1
4.	When I can't use the video games I get restless or irritable.	0	1
5.	When I feel bad (e.g., nervous, sad, or angry) or when I have problems, I use the video games more often.	0	1
6.	When I lose in a game or I have not obtained the desired results, I need to play again to achieve my target.	0	1
7.	Sometimes I conceal my video game playing to others, such as my parents, friends, teachers, etc.	0	1
8.	In order to play video games I have skipped classes, skipped work, lied, stolen, or had an argument or fight with someone.	0	1
9.	Because of video game playing, I have reduced my homework or schoolwork, or I have not eaten, gone to bed late, or spent less time with my friends or family.	0	1
10.	I think I play video games too much.	0	1
11.	I think I have some type of problem associated with my video game playing.	0	1
12.	Others (friends, family, boyfriend/girlfriend, etc.) are worried because they think I play video games too much.	0	1

APPENDIX E

Problematic Internet Use Questionnaire (PIUQ)

Please answer the following questions.		Never				Always
1.	Do you ever find that you stay on the Internet much longer than intended?	1	2	3	4	5
2.	Do you find that you need to spend more and more time on the Internet to feel satisfied?	1	2	3	4	5
3.	Do you feel distressed when you cannot connect to the Internet?	1	2	3	4	5
4.	Do you find it easier to interact with others online as opposed to face to face?	1	2	3	4	5
5.	Do you find yourself thinking about the next time you will be able to get onto the Internet?	1	2	3	4	5
6.	Do you find that you keep secrets from others regarding your time spend on the Internet?	1	2	3	4	5
7.	Do you tend to seek out certain individuals on the Internet?	1	2	3	4	5
8.	Do you find yourself looking forward to spending time on the Internet and feeling as if you can't wait to be online?	1	2	3	4	5
9.	Do you spend as long as possible online?	1	2	3	4	5
10.	Has your use of the Internet resulting in the loss of a significant relationship, job or career opportunity?	1	2	3	4	5
11.	Have you ever suffered any serious adverse physical/ health-related consequences because of your use of the Internet?	1	2	3	4	5
12.	Have you ever suffered any serious adverse psychological consequences because of your use of the Internet?	1	2	3	4	5
13.	Have you ever suffered any serious adverse financial consequences because of your use of the Internet?	1	2	3	4	5
14.	Have you experienced a situation where you tried to escape problems by going onto the Internet?	1	2	3	4	5
15.	Have you ever tried unsuccessfully to stop using the Internet?	1	2	3	4	5
16.	Do you prefer online socializing to other forms of socializing?	1	2	3	4	5
17.	Do you go online when you know there are more important things you should do?	1	2	3	4	5
18.	Do you feel misunderstood by people who don't see the attraction of the Internet?	1	2	3	4	5
19.	Does your use of the Internet cause problems in your daily life?	1	2	3	4	5
20.	Do you find yourself relying on the Internet to brighten up your life?	1	2	3	4	5

APPENDIX F

Perceived Stress Scale

The questions in this scale ask you about your feelings and thoughts **during the last month.** In each case, you will be asked to indicate by circling *how often* you felt or thought a certain way.

		Never	Almost Never	Some times	Fairly Often	Very Often
1.	In the last month, how often have you been upset because of something that happened unexpectedly?	0	1	2	3	4
2.	In the last month, how often have you felt that you were unable to control the important things in your life?	0	1	2	3	4
3.	In the last month, how often have you felt nervous and "stressed?"	0	1	2	3	4
4.	In the last month, how often have you felt confident about your ability to handle your personal problems?	0	1	2	3	4
5.	In the last month, how often have you felt that things were going your way?	0	1	2	3	4
6.	In the last month, how often have you found that you could not cope with all the things that you had to do?	0	1	2	3	4
7.	In the last month, how often have you been able to control irritations in your life?	0	1	2	3	4
8.	In the last month, how often have you felt that you were on top of things?	0	1	2	3	4
9.	In the last month, how often have you been angered because of things that were outside of your control?	0	1	2	3	4
10.	In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?	0	1	2	3	4
11.	In the last month, how often have you been angered because of things that happened that were outside of your control?	0	1	2	3	4
12.	In the last month, how often have you found yourself thinking about things that you have to accomplish?	0	1	2	3	4
13.	In the last month, how often have you been able to control the way you spend your time?	0	1	2	3	4
14.	In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?	0	1	2	3	4

APPENDIX G

Neuroticism Index

The following items describe people's behaviors. Please use the rating scale below to indicate how accurately each statement describes ***you***. Describe yourself as you generally are now, not as you wish to be in the future. Describe yourself as you honestly see yourself, in relation to other people you know of the same sex as you are, and roughly your same age. So that you can describe yourself in an honest manner, your responses will be kept in absolute confidence. Please read each item carefully!

	How accurately does this statement describe you right now?	Very Inaccurate	Moderately Inaccurate	Neither Inaccurate nor Accurate	Moderately Accurate	Very Accurate
1.	Often feel blue.	1	2	3	4	5
2.	Dislike myself.	1	2	3	4	5
3.	Am often down in the dumps.	1	2	3	4	5
4.	Have frequent mood swings.	1	2	3	4	5
5.	Panic easily.	1	2	3	4	5
6.	Am filled with doubts about things.	1	2	3	4	5
7.	Feel threatened easily.	1	2	3	4	5
8.	Get stressed out easily.	1	2	3	4	5
9.	Fear for the worst.	1	2	3	4	5
10.	Worry about things.	1	2	3	4	5

		Very Accurate	Moderately Accurate	Neither Inaccurate nor Accurate	Moderately Inaccurate	Very Inaccurate
1.	Seldom feel blue.	1	2	3	4	5
2.	Feel comfortable with myself.	1	2	3	4	5
3.	Rarely get irritated.	1	2	3	4	5
4.	Am not easily bothered by things.	1	2	3	4	5
5.	Am very pleased with myself.	1	2	3	4	5
6.	Am relaxed most of the time.	1	2	3	4	5
7.	Seldom get mad.	1	2	3	4	5
8.	Am not easily frustrated.	1	2	3	4	5
9.	Remain calm under pressure.	1	2	3	4	5
10.	Rarely lose my composure.	1	2	3	4	5

APPENDIX H
TABLES

Table 1. Descriptive details of sample

	Complete Cases (Time 1 and Time 2)		**Time 1 Only**		
Demographic Variables	(n)	Mean/ Frequency	(n)	Mean/ Frequency	Range
Gender					
Male	25	27.8%	22	29.7%	
Female	65	72.2%	52	70.3%	
Ethnicity					
White/European	75	83.3%	59	79.7%	
Black/African-American	8	8.9%	11	14.9%	
Other	7	7.7%	3	4.2%	
Spiritual Assessment Variables					
Religious Preference					
Catholic	41	45.6%	32	43.2%	
Other Christian	21	23.1%	15	20.3%	
Protestant	14	15.4%	14	18.9%	
Other (Jewish, Interfaith, etc)	4	4.4%	6	8.2%	
None	9	9.9%	7	9.5%	
Global Religious Variables					
Belief in God††	89	4.56 (.965)	74	4.49 (1.01)	1-5
Doubts or questions about God††	89	2.84 (1.25)	72	2.42 (1.27)	1-5
Literalness of Bible	89	2.79 (1.09)	74	2.86 (1.30)	1-5
Religousness Rating††	88	3.10 (1.07)	73	3.18 (1.21)	1-5
Spirituality Rating††	88	3.36 (1.11)	74	3.47 (1.96)	1-5
Frequency of church attendance ††					
Never/Less than once per year	15	16.5%	15	20.3%	
Once or twice per year	20	22.2%	12	16.2%	
Several times per year	11	12.2%	17	23.0%	
1-3 times per month	27	29.7%	15	20.3%	
Nearly every week	7	7.8%	7	9.5%	
Every week	8	8.9%	8	10.8%	
Several times a week	2	2.2%	0	0.0%	
Frequency of prayer outside of church††					
Never/Less than once per month	27	29.7%	23	21.1%	
1-3 times per month	17	18.9%	21	28.4%	
Once per week	7	7.8%	7	9.5%	

A few times per week	12	13.3%	12	16.2%	
Once per day	17	18.9%	12	16.2%	
More than once per day	10	11.1%	7	9.5%	
Predictor and Control Variables for Complete Cases (T1 and T2)	n	Mean/ Frequency (SD)	Range	T-Test	Cronbach's Alpha
Negative Religious Coping (NRCOPE)					
Time 1	90	29.8 (6.40)	23-92	-.109	.84
Time 2	90	29.9 (7.71)	23-92		.90
Neuroticism					
Time 1	90	50.1 (14.71)	20-100	2.713**	.92
Time 2	90	46.6 (17.49)	20-100		.96
Perceived Stress					
Time 1	90	29.8 (6.01)	12-60	-.782	.73
Time 2	90	30.3 (6.09)	12-60		.66
Spiritual Demographic Scale					
Time 1	90	23.3 (6.27)	6-37	-.183	
Time 2	90	23.6 (6.56)	6-37		
Addiction (Outcome) Variables	n	Mean/ Frequency (SD)	Range		
Internet Survey					
Time 1	90	35.6 (10.52)	20-100		.91
Time 2	90	33.7 (12.19)	20-100		.94
Video Game Survey					
Time 1	90	13.0 (1.91)	12-24		.84
Time 2	90	12.7 (1.62)	12-24		.85
SPQ – Overall (12 subscales)					
Time 1	90	184.2 (43.94)	120-720		.94
Time 2	90	173.2 (57.64)	120-720		.97
SPQ Subscales					
Alcohol					
Time 1	90	20.1 (10.45)	12-72		.89
Time 2	90	18.1 (10.76)	12-72		.92
Bingeing (food)					
Time 1	90	18.5 (8.38)	12-72		.83
Time 2	90	16.7 (8.06)	12-72		.86
Caffeine					
Time 1	90	10.8 (2.42)	12-72		.82
Time 2	90	11.3 (4.20)	12-72		.94
Exercise					

Time 1	90	20.8 (8.28)	12-72		.81
Time 2	90	18.3 (8.03)	12-72		.85
Gambling					
Time 1	90	11.2 (3.39)	12-72		.81
Time 2	90	11.5 (5.16)	12-72		.95
Shopping					
Time 1	90	19.2 (7.25)	12-72		.78
Time 2	90	17.3 (7.79)	12-72		.84
SPQ Subscales (con't)	n	Mean/ Frequency (SD)	Range		
Prescription Drugs					
Time 1	90	11.4 (3.22)	12-72		.79
Time 2	90	11.8 (5.03)	12-72		.93
Recreational Drugs					
Time 1	90	12.0 (5.80)	12-72		.92
Time 2	90	11.8 (5.00)	12-72		.93
Starving (food)					
Time 1	90	17.2 (8.37)	12-72		.86
Time 2	90	15.7 (7.26)	12-72		.83
Tobacco					
Time 1	90	11.8 (5.37)	12-72		.91
Time 2	90	12.0 (6.20)	12-72		.94
Work					
Time 1	90	19.5 (7.13)	12-72		.75
Time 2	90	16.7 (7.53)	12-72		.86
Sex					
Time 1	90	11.9 (4.33)	12-72		.86
Time 2	90	11.9 (5.40)	12-72		.94

*** *p<.001*; **p<.01*; *p<.05*

†† *Item used to compose the Global Religiousness Scale*

Table 2. Correlations of Addiction Measures with Spiritual Struggles and Control Variables at Time 1 and Time 2

		Predictor and Control Variables							
		Neg RCOPE		Neuroticism		Perceived Stress		Global Religiousness	
Addiction Variables		T1	T2	T1	T2	T1	T2	T1	T2
SPQ	T1	.330**	.467***	.261*	.250*	.289**	.262*	-.208*	-.205
	T2	.190	.571***	.158	.320**	.240*	.218*	-.155	-.168
Alcohol	T1	.153	.095	.074	.068	.134	.233*	-.251*	-.190
	T2	.049	.200	.080	.171	.205	.259*	-.179	-.167
Caffeine	T1	.132	.376***	.089	.143	.078	.055	-.019	-.081
	T2	.113	.479***	.009	.142	.049	.006	-.113	-.121
Exercise	T1	.224*	.292**	.172	.181	.250*	.088	-.024	-.080
	T2	.187	.399***	.225*	.343**	.279**	.147	-.005	-.067
Food Bingeing	T1	.332**	.425***	.333**	.211*	.183	.150	-.124	-.142
	T2	.244*	.442***	.274**	.369***	.198	.148	.015	-.059
Food Starving	T1	.186	.279**	.301**	.327**	.372***	.293**	-.069	-.089
	T2	.174	.451***	.260*	.375***	.348**	.249*	-.051	-.073
Gambling	T1	-.070	.217*	-.115	-.025	-.113	-.061	-.053	-.116
	T2	.031	.429***	-.106	.105	-.019	-.014	-.159	-.138
Prescrip. Drugs	T1	.226*	.400***	.114	.168	.178	.293**	-.274**	-.310**
	T2	.117	.538***	-.019	.124	.131	.156	-.281**	-.255*
Recreat. Drugs	T1	.198	.350**	.022	-.036	.115	.041	-.335**	-.302**
	T2	.021	.434***	-.140	-.021	-.002	.032	-.288**	-.288**
Sex	T1	.077	.301**	-.056	-.101	-.020	-.088	-.258*	-.279**
	T2	.051	.395***	-.057	.030	-.039	-.060	-.244*	-.221*
Shopping	T1	.173	.197	.234*	.226*	.125	.150	.115	.152
	T2	.162	.412***	.251*	.360**	.177	240*	.013	.046
Tobacco	T1	.181	.157	.001	-.007	.086	.244*	-.214*	-.172
	T2	.152	.337**	.073	.165	.141	.147	-.145	-.124
Work	T1	.307**	.369***	.310**	.357**	.317**	.217*	-.025	-.004
	T2	.251*	.533***	.207	.329**	.321**	.289**	-.048	-.096
Video-game	T1	.016	.186	-.095	-.113	-.031	-.109	-.269*	-.330**
	T2	-.077	.165	-.118	-.144	-.026	-.026	.072	-.265*
Internet	T1	.091	.337**	.172	.251*	-.027	-.017	.075	.050
	T2	.038	.287**	.175	.250*	-.002	.011	.072	-.032

*** *p<.001*; **p<.01*; *p<.05*

Table 3. Significant findings of hierarchical regression of addiction scales predicted by Time 2 negative religious coping (spiritual struggles)

Predictor and Control Variables	Adjusted R^2	R^2 Change	Beta
SPQ Overall Score Time 2			
Step 1			
SPQ T1			.630***
Neuroticism T2			.149
Stress T2	.469***		.042
Step 2			
Neg RCOPE T2	.535***	.069***	.304***
Alcohol Subscale Score Time 2			
Step 1			
SPQ T1			.763***
Stress T2			.117
Religious Attendance T2	.646		.067
Step 2			
Neg RCOPE T2	.651	.009	.104
Caffeine Subscale Score Time 2			
Step 1			
Caffeine T1	.557***		.750***
Step 2			
Neg RCOPE T2	.598**	.045**	.229**
Exercise Subscale Score Time 2			
Step 1			
Exercise T1			.755***
Neuroticism T2			.198**
Religious Preference	.655***		-.101
Step 2			
Neg RCOPE T2	.672*	.020*	.156*
Food Bingeing Subscale Score Time 2			
Step 1			
Food Bingeing T1			.680***
Neuroticism T2	.567		.225
Step 2			
Neg RCOPE T2	.572	.009	.110

Food Starving Subscale Score Time 2	**Adjusted R^2**	**R^2 Change**	**Beta**
Step 1			
Food Starving T1			.665***
Stress T2	.479***		.109
Step 2			
Neg RCOPE T2	.544***	.069***	.274***
Gambling Subscale Score Time 2			
Step 1			
Gambling T1			.533***
Gender	.263***		.017
Step 2			
Neg RCOPE T2	.362***	.103***	.331***
Prescription Drugs Subscale Score Time 2			
Step 1			
Prescription Drugs T1			.648***
Stress T2			.027
Religious Preference			-.007
Religious Attendance			.089
Private Prayer			.085
Global Religiousness	.441***		.112
Step 2			
Neg RCOPE T2	.523***	.082***	.330***
Recreational Drugs Subscale Score Time 2			
Step 1			
Recreational Drugs T1			.580***
Gender			.035
Religious Attendance T2			.073
Private Prayer T2			.184
Global Religiousness T2	.386***		.146
Step 2			
Neg RCOPE T2	.428**	.046**	.257**
Sex Subscale Score Time 2			
Step 1			
Sex T1			.804***
Gender			.063
Religious Attendance T2			.086
Private Prayer T2			-.013
Global Religiousness T2	.605***		.089
Step 2			
Neg RCOPE T2	.628*	.026*	.183*

Shopping Subscale Score Time 2	**Adjusted R^2**	**R^2 Change**	**Beta**
Step 1			
Shopping T1			.669***
Neuroticism T2			.182*
Stress T2			.062
Gender			.047
Private Prayer	.557***		.040
Step 2			
Neg RCOPE T2	.604**	.053**	.261**
Tobacco Subscale Score Time 2			
Step 1			
Tobacco T1			.736***
Stress T2	.539***		.030
Step 2			
Neg RCOPE T2	.584**	.049**	.245***
Work Subscale Score Time 2			
Step 1			
Work T1			.561***
Neuroticism T2			.094
Stress T2	.397***		.113
Step 2			
Neg RCOPE T2	.490***	.096***	.340***
PIUQ (Internet) Score Time 2			
Step 1			
Internet T1			.776***
Neuroticism T2	.618		.055
Step 2			
Neg RCOPE T2	.614	.000	.010
PVP (Video Game) Score Time 2			
Step 1			
Video Game T1			.766***
Gender			-.013
Private Prayer T2	.598		.025
Step 2			
Neg RCOPE T2	.593	.000	.017

**** p<.001; **p<.01; *p<.05*

Table 4. Hierarchical regression of the Overall SPQ scale predicted by Time 2 negative religious coping subscales (divine, intrapsychic, and interpersonal), controlling for neuroticism index and perceived stress scale.

Predictor and Control Variables	Adjusted R^2	R^2 Change	Beta
SPQ Overall Score Time 2			
Step 1			
SPQ T1 Neuroticism T2 Stress T2	.469***		.630*** .149 .042
Step 2			
Divine Spiritual Struggle T2	.520**	.055**	.264**
SPQ Overall Score Time 2			
Step 1			
SPQ T1 Neuroticism T2 Stress T2	.469***		.630*** .149 .042
Step 2			
Intrapsychic Spiritual Struggle T2	.490*	.026*	.175*
SPQ Overall Score Time 2			
Step 1			
SPQ T1 Neuroticism T2 Stress T2	.469***		.630*** .149 .042
Step 2			
Interpersonal Spiritual Struggle T2	.502*	.038*	.211*

*** *p<.001*; **p<.01*; *p<.05*

Table 5. Hierarchical regression of the Caffeine subscale predicted by Time 2 negative religious coping subscales (divine, intrapsychic, and interpersonal), controlling for neuroticism index and perceived stress scale.

Predictor and Control Variables	Adjusted R^2	R^2 Change	Beta
Caffeine Subscale Score Time 2			
Step 1			
Caffeine T1	.557***		.750***
Step 2			
Divine Spiritual Struggle T2	.595**	.043**	.231**
Caffeine Subscale Score Time 2			
Step 1			
Caffeine T1	.557***		.750***
Step 2			
Intrapsychic Spiritual Struggle T2	.564	.012	.113
Caffeine Subscale Score Time 2			
Step 1			
Caffeine T1	.557***		.750***
Step 2			
Interpersonal Spiritual Struggle T2	.588**	.035**	.191**

*** *p<.001*; **p<.01*; *p<.05*

Table 6. Hierarchical regression of the Exercise subscale predicted by Time 2 negative religious coping subscales (divine, intrapsychic, and interpersonal), controlling for neuroticism index and perceived stress scale.

Predictor and Control Variables	Adjusted R^2	R^2 Change	Beta
Exercise Subscale Score Time 2			
Step 1			
Exercise T1			.755***
Neuroticism T2			.198**
Religious Preference T2	.655***		-.101
Step 2			
Divine Spiritual Struggle T2	.662	.011	.114
Exercise Subscale Score Time 2			
Step 1			
Exercise T1			.755***
Neuroticism T2			.198**
Religious Preference T2	.655***		-.101
Step 2			
Intrapsychic Spiritual Struggle T2	.666	.014	.126
Exercise Subscale Score Time 2			
Step 1			
Exercise T1			.755***
Neuroticism T2			.198**
Religious Preference T2	.655***		-.101
Step 2			
Interpersonal Spiritual Struggle T2	.665	.014	.128

*** *p<.001*; **p<.01; *p<.05*

Table 7. Hierarchical regression of the Food Starving subscale predicted by Time 2 negative religious coping subscales (divine, intrapsychic, and interpersonal), controlling for neuroticism index and perceived stress scale.

Predictor and Control Variables	Adjusted R^2	R^2 Change	Beta
Food Starving Subscale Score Time 2			
Step 1			
Food Starving T1 Stress T2	.479***		.665*** .109
Step 2			
Divine Spiritual Struggle T2	.523**	.049**	.224**
Food Starving Subscale Score Time 2			
Step 1			
Food Starving T1 Stress T2	.479***		.665*** .109
Step 2			
Intrapsychic Spiritual Struggle T2	.504*	.031*	.183*
Food Starving Subscale Score Time 2			
Step 1			
Food Starving T1 Stress T2	.479***		.665*** .109
Step 2			
Interpersonal Spiritual Struggle T2	.529**	.055**	.244**

*** *p<.001*; **p<.01*; *p<.05*

Table 8. Hierarchical regression of the Gambling subscale predicted by Time 2 negative religious coping subscales (divine, intrapsychic, and interpersonal), controlling for neuroticism index and perceived stress scale.

Predictor and Control Variables	Adjusted R^2	R^2 Change	Beta
Gambling Subscale Score Time 2			
Step 1			
Gambling T1 Gender	.263***		.533*** .007
Step 2			
Divine Spiritual Struggle T2	.349**	.091**	.319**
Gambling Subscale Score Time 2			
Step 1			
Gambling T1 Gender	.263***		.533*** .007
Step 2			
Intrapsychic Spiritual Struggle T2	.286	.030	.175
Gambling Subscale Score Time 2			
Step 1			
Gambling T1 Gender	.263***		.533*** .007
Step 2			
Interpersonal Spiritual Struggle T2	.354***	.095***	.315***

*** *p<.001*; **p<.01*; *p<.05*

Table 9. Hierarchical regression of the Prescription Drugs subscale predicted by Time 2 negative religious coping subscales (divine, intrapsychic, and interpersonal), controlling for neuroticism index and perceived stress scale.

Predictor and Control Variables	Adjusted R^2	R^2 Change	Beta
Prescription Drugs Subscale Score Time 2			
Step 1			
Prescription Drug T1			.648***
Stress T2			.027
Religious Preference T2			-.007
Religious Attendance			.089
Private Prayer			.085
Global Religiousness	.441***		.112
Step 2			
Divine Spiritual Struggle T2	.498**	.058**	.273**
Prescription Drugs Subscale Score Time 2			
Step 1			
Prescription Drug T1			.648***
Stress T2			.027
Religious Preference T2			-.007
Religious Attendance			.089
Private Prayer			.085
Global Religiousness	.441***		.112
Step 2			
Intrapsychic Spiritual Struggle T2	.477*	.039*	.222*
Prescription Drugs Subscale Score Time 2			
Step 1			
Prescription Drug T1			.648***
Stress T2			.027
Religious Preference T2			-.007
Religious Attendance			.089
Private Prayer			.085
Global Religiousness	.441***		.112
Step 2			
Interpersonal Spiritual Struggle T2	.485**	.047**	.234**

*** *p<.001*; **p<.01*; *p<.05*

Table 10. Hierarchical regression of the Recreational Drugs subscale predicted by Time 2 negative religious coping subscales (divine, intrapsychic, and interpersonal), controlling for neuroticism index and perceived stress scale.

Predictor and Control Variables	Adjusted R^2	R^2 Change	Beta
Recreational Drugs Subscale Score Time 2			
Step 1			
Recreational Drugs T1			.580***
Gender			.035
Religious Attendance			.073
Private Prayer			.184
Global Religiousness	.386***		.146
Step 2			
Divine Spiritual Struggle T2	.408*	.027*	.177*
Recreational Drugs Subscale Score Time 2			
Step 1			
Recreational Drugs T1			.580***
Gender			.035
Religious Attendance			.073
Private Prayer			.184
Global Religiousness	.386***		.146
Step 2			
Intrapsychic Spiritual Struggle T2	.411*	.030*	.193*
Recreational Drugs Subscale Score Time 2			
Step 1			
Recreational Drugs T1			.580***
Gender			.035
Religious Attendance			.073
Private Prayer			.184
Global Religiousness	.386***		.146
Step 2			
Interpersonal Spiritual Struggle T2	.407*	.026*	.179*

*** *p<.001*; **p<.01*; *p<.05*

Table 11. Hierarchical regression of the Sex subscale predicted by Time 2 negative religious coping subscales (divine, intrapsychic, and interpersonal), controlling for neuroticism index and perceived stress scale.

Predictor and Control Variables	Adjusted R^2	R^2 Change	Beta
Sex Subscale Score Time 2			
Step 1			
Sex T1			.804***
Gender			.063
Religious Attendance			.086
Private Prayer			-.013
Global Religiousness	.605***		.089
Step 2			
Divine Spiritual Struggle T2	.622*	.021*	.158*
Sex Subscale Score Time 2			
Step 1			
Sex T1			.804***
Gender			.063
Religious Attendance			.086
Private Prayer			-.013
Global Religiousness	.605***		.089
Step 2			
Intrapsychic Spiritual Struggle T2	.612	.011	.118
Sex Subscale Score Time 2			
Step 1			
Sex T1			.804***
Gender			.063
Religious Attendance			.086
Private Prayer			-.013
Global Religiousness	.605***		.089
Step 2			
Interpersonal Spiritual Struggle T2	.617	.016	.137

*** *p<.001*; **p<.01*; *p<.05*

Table 12. Hierarchical regression of the Shopping subscale predicted by Time 2 negative religious coping subscales (divine, intrapsychic, and interpersonal), controlling for neuroticism index and perceived stress scale.

Predictor and Control Variables	Adjusted R^2	R^2 Change	Beta
Shopping Subscale Score Time 2			
Step 1			
Shopping T1			.669***
Neuroticism T2			.182*
Stress T2			.062
Gender			.047
Private Prayer	.552***		.040
Step 2			
Divine Spiritual Struggle T2	.590**	.040**	.217**
Shopping Subscale Score Time 2			
Step 1			
Shopping T1			.669***
Neuroticism T2			.182*
Stress T2			.062
Gender			.047
Private Prayer	.552***		.040
Step 2			
Intrapsychic Spiritual Struggle T2	.576*	.027*	.176*
Shopping Subscale Score Time 2			
Step 1			
Shopping T1			.669***
Neuroticism T2			.182*
Stress T2			.062
Gender			.047
Private Prayer	.552***		.040
Step 2			
Interpersonal Spiritual Struggle T2	.577*	.028*	.185*

*** *p<.001*; **p<.01*; *p<.05*

Table 13. Hierarchical regression of the Tobacco subscale predicted by Time 2 negative religious coping subscales (divine, intrapsychic, and interpersonal), controlling for neuroticism index and perceived stress scale.

Predictor and Control Variables	Adjusted R^2	R^2 Change	Beta
Tobacco Subscale Score Time 2			
Step 1			
Tobacco T1 Stress T2	 .539***		.736*** .030
Step 2			
Divine Spiritual Struggle T2	.583**	.048**	.223**
Tobacco Subscale Score Time 2			
Step 1			
Tobacco T1 Stress T2	 .539***		.736*** .030
Step 2			
Intrapsychic Spiritual Struggle T2	.553	.019	.140
Tobacco Subscale Score Time 2			
Step 1			
Tobacco T1 Stress T2	 .539***		.736*** .030
Step 2			
Interpersonal Spiritual Struggle T2	.560*	.026*	.163*

*** *p<.001*; **p<.01*; *p<.05*

Table 14. Hierarchical regression of the Work subscale predicted by Time 2 negative religious coping subscales (divine, intrapsychic, and interpersonal), controlling for neuroticism index and perceived stress scale.

Predictor and Control Variables	Adjusted R^2	R^2 Change	Beta
Work Subscale Score Time 2			
Step 1			
Work T1			.561***
Neuroticism T2			.094
Stress T2	.397***		.113
Step 2			
Divine Spiritual Struggle T2	.453**	.061**	.262**
Work Subscale Score Time 2			
Step 1			
Work T1			.561***
Neuroticism T2			.094
Stress T2	.397***		.113
Step 2			
Intrapsychic Spiritual Struggle T2	.459**	.067**	.280**
Work Subscale Score Time 2			
Step 1			
Work T1			.561***
Neuroticism T2			.094
Stress T2	.397***		.113
Step 2			
Interpersonal Spiritual Struggle T2	.440**	.048**	.229**

*** *p<.001*; **p<.01; *p<.05