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Forgiveness and Suicidal Behavior in College Students:

Cynicism and Psychache as Serial Mediators

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In partial fulfillment

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by

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December 2016

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Keywords: Forgiveness, Psychache, Cynicism, Suicidal Behavior, College Students

ABSTRACT

Forgiveness and Suicidal Behavior in College Students:

Cynicism and Psychache as Serial Mediators

by

Trever Dangel

Research has long documented beneficial associations between forgiveness and numerous health

outcomes; however, its relationship to suicidal behavior has been relatively neglected. Both

cynicism, and psychache, or agonizing psychological pain, have displayed deleterious

associations with suicidal behavior, but have rarely been incorporated into more comprehensive

models of suicidal behavior. Recent work has resulted in the development of a theoretical model

of the forgiveness-suicidal behavior association, which can incorporate several mediator

variables including cynicism and psychache. The present study used an undergraduate sample of

college students ($N = 312$) to test a serial mediation model of the cross-sectional associations

between forgiveness, cynicism, psychache, and suicidal behavior. Forgiveness of self and of

uncontrollable situations were indirectly associated with suicidal behavior via psychache, while

forgiveness of others was indirectly associated via cynicism and psychache in serial fashion.

Implications in the context of previous literature and treatment, particularly acceptance-based

interventions, are discussed.

TABLE OF CONTENTS

4

5

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1

INTRODUCTION

Suicide is a major public health concern, and is the tenth leading cause of death in the United States (Centers for Disease Control and Prevention [CDC], 2014). Moreover, rates of suicide have been consistently rising over the past ten years (Xu, Kochanek, Murphy, & Arias, 2014). Suicide is an even more impactful phenomenon in youth 18 to 24 years of age in comparison to the general population, as it is estimated to be the *second* leading cause of death among this age group, with only accidents resulting in more deaths among these individuals (CDC, 2014).

Although there are numerous causal perspectives for suicide (e.g., the interpersonal theory of suicide (IPT); Joiner, Van Orden, Witte, & Rudd, 2009), Edwin Shneidman's (1993) theory of suicide as psychache, described as an intense and unbearable, psychological pain, has recently been gaining the attention of scholars (e.g., Caceda et al., 2014; Pereira, Kroner, Holden, & Flamenbaum, 2010; Troister and Holden, 2012a). The literature generally supports psychache's predictive and causal role in suicidal ideation and behaviors (e.g., Holden & Kroner, 2003; Troister, Davis, Lowndes, & Holden, 2013). However, little attention has been given to investigating how psychache is associated with other predictors of suicidality, whether in the context of well-established theories such as IPT or more recent developments within the context of positive psychology (e.g., forgiveness; Nsamenang, Webb, Cukrowicz, & Hirsch, 2013; Webb, Hirsch, & Toussaint, 2015). Increased knowledge of how psychache is related to these variables can ultimately inform clinical practice through incorporation of this new information into evidence-based treatments.

Two such variables with empirical links to suicidal behavior that are likely associated with psychache are forgiveness (e.g., Nsamenang, Webb, Cukrowicz, & Hirsch, 2013; Sansone, Kelly, & Forbis, 2013) and social cynicism (e.g., Lam, Bond, Chen, & Wu, 2010; Nierenberg, Ghaemi, Clancy-Colecchi, Rosenbaum, & Fava, 1996). Regarding associations between forgiveness and suicidal behavior, Worthington and colleagues (e.g., Worthington, 1998, Worthington, Berry, & Parrot, 2001) have put forth a model that elucidates ways in which forgiveness may be associated both directly and indirectly with improved health outcomes, and various empirical studies have found support for this model (e.g., Webb & Brewer, 2010; Webb, Robinson, & Brower, 2009). Recent research by Webb and colleagues (e.g., Webb, Hirsch, & Toussaint, 2015; Webb & Jeter, 2015), in turn, has built upon this model to provide a framework for studying forgiveness and its relationship to psychological distress (a component of which is psychache) and mental health outcomes, particularly suicide and substance abuse. Social cynicism has also been found to have deleterious relationships with forgiveness and suicide outcomes (Kamat, Jones, & Row, 2006; Lam et al., 2010). Although cynicism is not explicitly specified in the model proposed by Webb et al. (2015), the myriad ways in which it can influence the forgiveness-suicidal behavior association, such as through direct associations with both forgiveness and suicidal behavior (e.g., Macaskill, 2007; Nierenberg et al., 1986), warrants its inclusion in the model.

The present study uses an undergraduate sample to examine associations between forgiveness of self, of others, and of uncontrollable situations, and the factors of social cynicism, psychache, and suicidal behavior within the context of the model put forth by Webb and colleagues (2015). Specifically, the mediating effects of psychache and cynicism on the association between forgiveness dimensions and suicidal behaviors are examined in a serial

mediation model. Although it is not inclusive of all variables specified within the aforementioned model, the present study aims to begin the process of examining the model empirically in an effort to gain a further understanding of suicidal behavior, and the relationships between the constructs associated with it.

<div align="center">**Forgiveness**</div>

Conceptualizing Forgiveness

Forgiveness is a construct of considerable interest in psychological research, particularly with respect to spirituality (Davis, Worthington, Hook, & Hill, 2013; Worthington et al., 2013) and addiction research (Webb & Jeter, 2015; Worthington, Mazzeo, & Kliewer, 2002). Despite the amount of empirical research on the topic, much of the research on forgiveness as a psychological construct has been conducted only within approximately the past twenty years (Fehr, Gelfand, & Nag, 2010). Forgiveness has also been discussed in philosophical, rather than explicitly spiritual terms, with scholars debating, for example, what specific elements comprise the forgiveness process (Human Development Study Group, 1991; McCullough & Worthington, 1994). Although it is not necessarily a religious principle, it can be found in some form in all major world religions (Webb, Toussaint, & Conway-Williams, 2012).

Although no current definition of forgiveness exists that has been explicitly agreed upon within the field of psychology, there are several key components of forgiveness that have been identified. For instance, forgiveness is often described in part as a "prosocial change" in response to one's transgressor or to a particular offense (Davis et al., 2013; Fehr et al., 2010; McCullough & Witvliet, 2002). This prosocial change can be characterized by a reduction in negative responses toward the offender (Gassin & Enright, 1995; Hargrave, 1994; Webb, Hirsch, & Toussaint, 2011). In line with this idea of reduction, or even absence, of negative responses,

some have defined forgiveness as "an absence of ill will" toward a particular offender or offense (Webb, Toussaint, & Conway-Williams; 2012, p. 60; Webb, Hirsch, & Toussaint, 2011, p. 247). Some have also discussed concepts that forgiveness does *not* necessarily entail, such as restitution (Wahking, 1992) or retribution (Rosenak & Harnden, 1992). This is not to say, however, that forgiveness is a passive or submissive action on the part of the victim. It is a voluntary and purposeful action that allows the victim to cope with the emotional ramifications of an offense while maintaining a sense of security and still holding the offender accountable (Enright, 2001; Enright, Freedman, & Rique, 1998).

Forgiveness is considered to be a distinct concept from unforgiveness (Wade & Worthington, 2003). Unforgiveness often counterintuitively involves the relinquishment of one's sense of security and control at the expense of frequent obsession or rumination over the offense that one has decided not to forgive (Coleman, 1998). Increases in forgiveness must be accompanied by reductions in unforgiveness, whereas the reverse is not necessarily true, and many predictors of one do not necessarily predict the other (Wade & Worthington, 2003). For example, in their study of differential predictors of forgiveness and unforgiveness toward a specific interpersonal offense, Wade and Worthington (2003) found that trait forgivingness (i.e., the tendency to consistently forgive across situations, or dispositional forgiveness) and level of attempted forgiveness of a specific offense were cross-sectionally associated with the actual act of forgiveness for the offense, but not with unforgiveness for the offense. In other words, one's tendency to forgive, and the amount of effort placed into forgiving a specific offense were associated with forgiveness of that offense, but not with unforgiveness of that offense. This difference is believed to be a result of the fact that there are many potential ways in which one

may reduce unforgiveness aside from increasing forgiveness, such as seeking some form of restitution for the offense (Wade & Worthington, 2003).

The elements of prosocial change inherent to forgiveness and its distinction apart from unforgiveness have been generally agreed upon, however, the inherent complexity of forgiveness as a construct has led to many different ways in which the elements that comprise it have been conceptualized. For instance, forgiveness has been described as both a situational construct (i.e., state forgiveness regarding a particular offense) and a dispositional construct (i.e., trait forgiveness or one's general tendency to forgive) (Thompson et al., 2005; Toussaint & Webb, 2005). Forgiveness has also been conceptualized as an emotionally-rooted response (Worthington & Wade, 1999), as well as a conscious and overt behavioral response (DiBlasio, 1998), labeled as emotional and decisional forgiveness, respectively. Finally, dimensions of forgiveness are often framed in light of the recipient of the forgiveness. For example, typical recipients include the self, others, and uncontrollable situations (Thompson et al., 2005). The present study uses this conceptualization of forgiveness, as these dimensions of forgiveness have been theoretically implicated as predictors of psychological distress and suicidal behavior (Hirsch, Webb, & Jeglic, 2011a; Webb & Jeter, 2015; Webb, Hirsch, & Toussaint, 2015). These forms of forgiveness in the present study are also conceptualized as dispositional characteristics which, over time, would exert greater influence over one's health in comparison to state-level forms of forgiveness (Worthington et al., 2001).

Forgiveness and Health

Theoretical support. Worthington and colleagues proposed a theoretical model positing that forgiveness may be both directly and indirectly associated with health outcomes (Worthington, 1998, Worthington et al., 2001, Worthington & Scherer, 2004). Concerning

12

forgiveness' direct relationship to health, Worthington and colleagues argue that the relation appears to be primarily based on the negative effects associated with the chronic stress, anger, hostility and rumination that often coincide with unforgiveness (Worthington et al., 2001; Worthington & Scherer, 2004). The negative consequences of these emotions and behaviors can then manifest themselves physically via cardiovascular problems, impaired immune functioning, and harmful hormonal imbalances (Worthington & Scherer, 2004). Concerning indirect associations, forgiveness is thought to influence health indirectly (i.e., the relationship is mediated) through social support, interpersonal functioning, and engagement in positive health behaviors, collectively referred to as Health-Related Functioning (Worthington et al., 2001; see also Webb et al., 2015).

In sum, those who are more forgiving typically tend to be at a lower risk of experiencing chronic health problems that result from a ruminative or otherwise maladaptive coping style. They also have more interpersonal and intrapersonal resources that enable them to cope with offenses and stressors in comparison to those who are unforgiving, which subsequently improves their overall health via decreased stress and increased engagement in positive health behaviors. Since the development of this model over a decade ago, empirical research on these links between forgiveness and health has flourished (see Webb, Toussaint, & Conway-Williams, 2012). Although the aforementioned model is not the only way in which forgiveness has been proposed to be related to health (e.g., Maltby, Day, & Barber, 2004), many studies have found support for this direct route of the association between forgiveness and health, with relatively fewer studies investigating the indirect associations (see also, Toussaint, Worthington, & Williams, 2015). While others have reviewed such literature (e.g., Webb, Hirsch, & Toussaint, 2011; Webb, Toussaint, & Conway-Williams, 2012; Worthington, Witvliet, Pietrini, & Miller,

2007), a brief discussion of the empirical support for the relationship between forgiveness and health is warranted.

Empirical support. Although more longitudinal, experimental, and intervention-based studies are needed, extant empirical, largely cross-sectional, findings indicate that higher levels of forgiveness are associated with better health-related outcomes, both physical and mental. For instance, regarding physical health, Lawler et al. (2003) found that students who were more forgiving exhibited lower blood pressure and heart rate compared to students who were less forgiving when asked to recall an experience in which they were hurt or betrayed by either a significant other or parent. Whited, Wheat, and Larkin (2010) also found that people who experienced a transgression during an experiment (i.e., verbal harassment) experienced faster returns to baseline heart rate if they were more forgiving, and also reported less symptoms of physical illness. These findings support the hypothesis that forgiveness plays a direct role in attenuating the physiological stress response via regulation of the sympathetic and parasympathetic nervous systems (Worthington & Scherer, 2004).

Regarding mental health, forgiveness appears to play a more indirect role than is the case with physical health outcomes. For instance, Webb, Hirsch, Visser, and Brewer (2013) investigated the association between forgiveness and health-related outcomes, such as psychological distress and mental health status, as mediated by Health-Related Functioning (health behavior, social support, and interpersonal functioning). The reader may refer to the article for the details of the 12 specific models tested, but it is noteworthy to mention here that the forgiveness-health association operated largely through the aforementioned mediator variables (i.e., in an indirect fashion) in these models. Other studies have also found support for this indirect route, with variables such as depression (Hirsch et al., 2011a) and mindfulness

14

(Webb, Phillips, Bumgarner, & Conway-Williams, 2013) functioning as mediators of the association between forgiveness and various mental health outcomes such as mental health status and psychological distress.

In addition to its indirect relation to mental health, and similar to studies on forgiveness and physical health (e.g., Svalina & Webb, 2012; Webb, Toussaint, Kalpakjian, & Tate, 2010), the relationship between forgiveness and mental health is dependent upon the specific dimension of forgiveness and/or the specific mental health outcome being investigated. In studies where multiple dimensions of forgiveness are examined in health-related research, greater forgiveness of self is consistently related to many beneficial mental health outcomes, such as fewer symptoms of post-traumatic stress and better mental health status, with forgiveness of others showing consistent, but less frequent outcomes in areas such as past history of suicide attempts (Bryan, Theriault, & Bryan, 2014; Sansone, Kelley, & Forbis, 2013; Toussaint, Williams, Musick, & Everson-Rose, 2008a; Watson et al., 2012; Webb et al., 2013a). Some research has found that high levels of forgiveness of others may even be deleterious to mental health outcomes, as these people may tend to allow others to mistreat them (Dangel, Proffitt, Morrissey, Brooks, & Webb, 2014).

Despite this complex relationship, the extant empirical literature generally shows consistent salutary relationships between forgiveness and several areas of mental health including depression and anxiety (Unterrainer, Schoeggl, Fink, Neuper, & Kapfhammer, 2012), anorexia and bulimia (Watson et al., 2012), substance abuse (Webb & Jeter, 2015), and suicide (Hirsch et al., 2011a). Individuals who are more forgiving have also demonstrated lower levels of shame (Webb, Colburn, Heisler, Call, & Chickering, 2008) and aggression (Webb, Dula, & Brewer, 2012), as well as greater levels of mindfulness (Webb et al., 2013b), social support and

15

positive health behaviors (Webb et al., 2013a). This literature on the forgiveness-mental health

association, in combination with the support found for Worthington's overall model of

forgiveness and health, has culminated into a newly developed theoretical model of the

association between forgiveness, substance abuse, and suicidal behavior.

Modeling the Forgiveness-Substance Abuse/Suicidal Behavior Association

Forgiveness, or the lack of it, has been identified as an influential variable contributing to

substance abuse (e.g., Deane, Wootton, Hsu, & Kelly, 2012; Ianni et al., 2010; Webb & Jeter,

2015), an important sub-area of mental health, and has also recently gained momentum in studies

of suicidal individuals (e.g., Bryan, Theriault, & Bryan, 2014; Hirsch et al., 2011a; Hirsch et al.,

2012; Liu, Lu, Zhou, & Su, 2013, Webb et al., 2015). Although both substance abuse and suicide

have recently been theoretically linked with forgiveness in a model proposed by Webb and

colleagues (2015), the present study will focus on the latter. The present study seeks to

empirically test this direct forgiveness-suicidal behavior relationship, in addition to other

relationships, such as potential mediating factors, specified within Webb's model.

Theoretical connections. Similar to the general model of forgiveness and health

proposed by Worthington, forgiveness is thought to operate through both direct and indirect

means to influence suicidal behavior in Webb's model, which can be seen in Figure 1 (Webb et

al., 2015). The direct association of forgiveness with suicidal behavior is thought to be a result

of a close link with the concept of resentment (see also Suicide Anonymous, 2010). This link can

be seen in a variety of treatments in which forgiveness is used, or in which it can be easily

incorporated, to address resentment. Indeed, Webb and colleagues (Webb & Jeter, 2015; Webb

& Trautman, 2010; see also, Webb, Hirsch, & Toussaint, 2011; Lyons, Deane, & Kelly, 2010)

have comprehensively discussed the role of forgiveness in Twelve-Step Facilitation Therapy and

the Twelve-Step Model (see Alcoholics Anonymous (AA), 2001; Nowinski, Baker, & Carroll, 1994), Motivational Enhancement Therapy (see Miller, Zweben, DiClemente, & Rychtarik, 1994), and Cognitive-Behavioral Coping Skills Therapy (see Kadden et al., 1994), as well as acceptance-based modalities, such as Acceptance and Commitment Therapy, Dialectical Behavior Therapy, and Mindfulness-Based Cognitive Therapy (Webb et al., 2015). Although there are several differences between each of these modalities, several themes can be detected across all of these treatments, many of which address the issue of resentment. These include 1) recognition and acceptance of negative emotions, behaviors or attitudes stemming from one's resentment towards the offense or offender, 2) making a commitment to take behavioral steps to resolve one's resentment (e.g., learning new positive coping strategies), and 3) altering one's style of interacting with others in an effort to prevent relapse (e.g., by "making amends" in the Twelve-Step Model, or developing social skills to combat high-risk situations in Cognitive-Behavioral Coping Skills Therapy).

Shame
Participant Variables
Treatment Variables

Health-Related Functioning
ExisTAngst[1]

b

Substance Abuse

⇕

Suicidal Behavior

Spirituality

Forgiveness
Meaning
Purpose

a

c
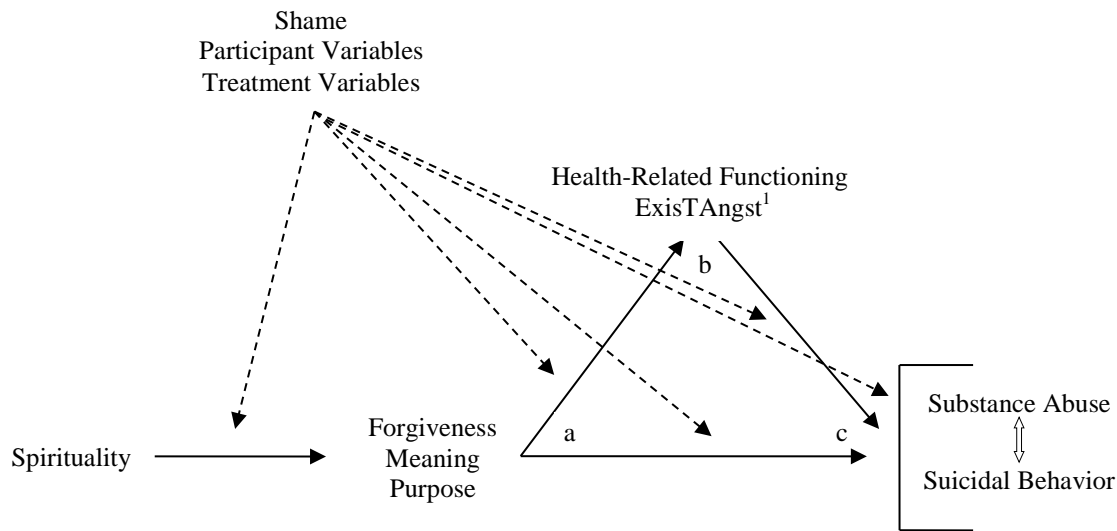
[1]Existential and Teleological Angst; Comprised of hopelessness, depression, anxiety, psychache, etc.

a→c   = direct effect of predictor variables on Substance Abuse and Suicidal Behavior
a→b   = direct effect of predictor variables on mediator variables
b→c   = direct effect of mediator variables on Substance Abuse and Suicidal Behavior
a→b→c   = indirect effect of predictor variables on Substance Abuse and Suicidal Behavior
                  through mediator variables
dotted →   = moderation effect
⇕   = bi-directional relationship

Figure reprinted with permission from lead author (Webb et al., 2015).

Figure 1. *The Association of Forgiveness with Suicidal Behavior and Substance Abuse*

Although used primarily in the context of substance use problems, many of the key elements of these treatments could easily be adapted to the treatment of suicidal behavior (Webb et al., 2015). For example, a key component of the 12-Step Model in treating substance abuse is targeting the resentments in one's life via the creation of a "grudge list" (AA, 2001, p. 65). With resentment frequently expressed among suicidal individuals (see Peck, 1990), it seems likely that

suicidal individuals could also benefit from addressing such resentment. Moreover, with themes and elements of forgiveness being reflected throughout all twelve steps (see Webb & Trautman, 2010), the 12-Step Model appears to be a readily applicable intervention for suicide prevention. Indeed, the 12-Step Model has been adapted and applied to suicidal behavior as evidenced by the development of Suicide Anonymous (SA), a grass-roots mutual-help community (SA, 2010; www.suicideanonymous.net).

The theorized indirect mechanisms of the forgiveness-suicidal behavior association in Webb's model involve the previously mentioned concept of Health-Related Functioning (Worthington et al., 2001; Webb et al., 2015). In addition, and of primary focus in the present study, this model also implicates Existangst, or existential and teleological angst as a new and separate mediator of the forgiveness–suicidal behavior association. This term is meant to capture the idea of "emotionally and philosophically driven psychological distress" that occurs when an individual struggles to find purpose and meaning in his/her life, and is characterized by "symptoms of depression, anxiety, hopelessness, and psychache," with psychache being a variable of considerable interest to the present study (Webb et al., 2015, p. 53-54). The forgiveness-suicidal behavior association can also be moderated by a host of other variables. These include shame, treatment characteristics (assuming one is in treatment), as well as participant-specific variables, which can include demographic, personality, or historical characteristics (e.g., trauma) that are specific to that individual which may influence their propensity for suicidal behavior (Webb et al., 2015). Having provided an overview of the conceptual model (and its origins) guiding the present study, the remainder of this chapter will discuss the study's main variables of interest within the context of this model, highlighting their empirical connections both with forgiveness and with each other.

Forgiveness and suicide. The empirical evidence linking forgiveness and suicide is more limited relative to evidence linking forgiveness and substance abuse. Despite this, a salutary relationship between forgiveness and suicidal behaviors has been consistently found. Webb, Hirsch, and Toussaint (2015) conducted a literature review which found 14 empirical studies examining the relationship between forgiveness and suicidal behavior and ideation, with 13 demonstrating salutary associations.

The relationship between forgiveness and suicide is not necessarily or only a direct one. Forgiveness has been found to play both a predictive (Hirsch et al., 2011a; Nsamenang et al., 2013) and moderating (Hirsch et al., 2012, Liu et al., 2013) role in its association with less suicidal behavior. Studies examining forgiveness as a predictor of suicidal behavior indicate that forgiveness may protect against suicidal behavior via its association with fewer depressive symptoms (Hirsch et al., 2011a; Nsamenang et al., 2013). This basic salutary forgiveness–depression link has received extensive support in forgiveness research (e.g., Hirsch et al., 2011a; Nsamenang et al., 2013; Toussaint et al., 2008a; Toussaint et al., 2008b).

While the power of forgiveness to predict suicidal behavior comes from its association with fewer depressive symptoms, its moderating role in relation to suicidal behavior is quite different. Specifically, forgiveness in this context appears to be inversely related to other feelings such as anger (Hirsch et al., 2012, Webb et al., 2012) and resentment or unforgiveness (Liu et al., 2013), which may allow the individual to focus cognitive-emotional and volitional energy on more adaptive behaviors, in turn reducing the likelihood of suicidal behavior. This general process by which forgiveness facilitates the allocation of psychological resources into more adaptive behaviors has been referred to as the (un)forgiveness-energy hypothesis (Webb et al., 2013b). Recent research has also begun to explore the protective effects of forgiveness against

20

suicide in a variety of populations besides college students, such as members of the military, those experiencing domestic violence, and economically disadvantaged primary care patients (Bryan et al., 2014; Chang, Kahle, Yu, & Hirsch, 2014; Sansone et al., 2013, respectively), providing more preliminary empirical support for the forgiveness-suicidal behavior linkage in the aforementioned model. More research is, however, clearly needed based on the relatively low number of studies conducted thus far, the majority of which are cross-sectional and involve the examination of a minimal number of risk factors in any given study. In sum, forgiveness may play a crucial role in protecting against suicide both indirectly via its association with depressive symptoms and as a protective factor by facilitating the coping process.

Forgiveness and college students. College students represent a very at-risk group for suicide-related behavior, displaying higher rates of ideation and attempts in comparison to the general population (Drum, Brownson, Denmark, & Smith, 2009). The novelty of the college environment presents many challenges for students, such as academic, family, and peer-related problems, which may lead to the development of negative affective states and emotional pain, and subsequent suicidal behavior (Drum et al., 2009). As such, instilling positive psychological characteristics, such as forgiveness, may provide a means of combatting the negative effects of such challenges. Indeed, the available, although limited, evidence supports the notion that forgiveness can serve as a protective factor against suicidal behavior within this vulnerable population. For example, Hirsch et al. (2011) found salutary associations between forgiveness and suicidal behavior as mediated by depression in a college student sample. Higher levels of forgiveness have also been associated with lower levels of suicidal behavior via its moderating effects on the anger-suicidal behavior association in a college student sample, such that the

effects of anger on suicidal behavior were attenuated in the presence of high levels of forgiveness (Hirsch et al., 2012).

One highly relevant risk factor in the context of college student suicide is substance use, particularly alcohol. It is estimated that twenty percent of all college students are dependent on or abuse alcohol, with only five percent of those students actually seeking treatment (NIAA, 2013). With ample research demonstrating the increased risk of suicide attributable to problematic substance use (See Wilcox, Connor, & Caine, 2004) the need to address suicide on college campuses becomes even more urgent in this context. In light of previously mentioned research demonstrating the salutary associations of forgiveness and suicide in college students, and with research showing similar associations for substance use (e.g., Webb and Brewer, 2010), the present study will study the forgiveness-suicidal behavior association using a college student sample in order to begin the process of addressing an arguably urgent need in this population.

Suicide

Suicide as a Continuum

With the variety of terminology that exists in discussing suicide and the actions and thoughts that accompany it, accurate and concise terminology is needed in order to prevent confusion and facilitate uniformity across studies. One area of confusion is the distinction between death by suicide and suicidal behavior, and revisions to the suicide nomenclature have been proposed in an effort to address this confusion (e.g., O'Carroll et al., 1996; Silverman, Berman, Sanddal, O'Carroll, & Joiner, 2007). In accordance with the Silverman et al. (2007) guidelines, the term suicidal behavior captures a variety of suicide-related actions ranging in severity from passive ideation or thoughts about suicide, to actively preparing for suicide, and

finally, attempting and dying by suicide. In other words, not at all suicidal behavior entails dying by suicide.

Although death by suicide is certainly the most tragic of these potential outcomes, attempting to predict and intervene at the more frequent but less severe forms of suicidal behavior offers a more precise and effective means of reducing the prevalence of death by suicide. Indeed, behaviors such as ideation and non-suicidal self-injury are among the greatest risk factors for death by suicide, with prior non-fatal attempts constituting the single greatest risk factor (Andover, Morris, Wren, & Bruzzese, 2012; Yoshimasu, Kiyohara, & Miyashita, 2008).

Epidemiology of Suicide

Suicide is the fifteenth leading cause of death worldwide resulting in approximately 800,000 deaths annually, and the second leading cause of death among adolescents and young adults between 18 and 24 years of age both globally and in the United States (CDC, 2014; World Health Organization [WHO], 2014). Moreover, it is estimated that there are 20 attempts per every death by suicide, although this number varies depending on the specific age group being examined (WHO, 2014).

Suicide rates vary significantly across demographic and sociocultural groups including age, gender, ethnicity, and population density. For instance, males display higher rates of completion regardless of ethnicity at nearly a 4:1 ratio to females (CDC, 2013). This is likely due, at least partially, to differences in methods used to perform the act. The most widely used method for males, who typically use more fatal methods, is firearms (56.3%), while females typically use methods (e.g., poisoning, 37.4%) with a greater potential for rescue (CDC, 2013). Older adults appear to be one of the most at-risk age groups for death by suicide, as they constitute 14.5% of the total U.S. population, but account for 17.5% of deaths by suicide, the

highest percentage of any age group (CDC, 2013). Suicide rates are also often greater in rural compared to urban areas, perhaps due to factors such as greater social isolation, lack of access to psychological treatment, and rural cultural views on mental illness (Hirsch, 2006; Hirsch & Cukrowicz, 2014).

Prevalence rates for less severe forms of suicidal behavior are, unsurprisingly, much greater than deaths by suicide. Approximately 4% of adults have *thought* about suicide within the past year, with this percentage being considerably higher in those aged 18-25 at 7.4% (CDC, 2015). Approximately 1.1% of adults (2.7 million people) made a *plan* for suicide within the past year, with 0.6% of people (1.1 million people) making a suicide *attempt*. Although college students represent the majority of young people (Bureau of Labor Statistics, 2015), data on deaths by suicide and suicidal behaviors in this subset of young people is sparse. However, available estimates suggest that 6% of undergraduates "seriously considered attempting suicide," while 0.85% attempted suicide, both of which are higher percentages in comparison to the general population (Drum et al., 2009, p. 216). Debate regarding the protective effects, or lack thereof, inherent to student status against death by suicide is still ongoing (see Stack, 2011).

Theories of Suicidal Behavior

Although the field of Suicidology was not officially created until the late 1950s/early 1960s, suicide has been empirically studied for more than a century, if one considers Emile Durkheim's *Le Suicide* (1897) to be the first true study of suicidal behaviors. Since then, the field has grown enormously, with a wide variety of frameworks from which suicide has been studied. These include biological, sociological/interpersonal, and intrapersonal/emotional perspectives, which are reviewed in the following sections. Shneidman's theory of suicide as psychache,

which falls into the intrapersonal/emotional category, will be discussed in relatively greater depth due to its central role in the present study.

      Biological perspectives. Biological factors that increase an individual's risk for suicide have been found at both the genetic level via genome-wide association studies (Menke et al., 2012; Schosser et al., 2011), and at the neuromolecular level within the serotonergic (Bach et al., 2013; Boldrini, Underwood, Mann, & Arango, 2008) and noradrenergic (Chandley & Ordway, 2012; Galfalvy et al., 2009) systems, as well as the HPA-axis (Arato, Banki, Nemeroff, & Bissette, 1989; Coryell & Schlesser, 2001). All of these play a role in predisposing individuals to suicidal behavior within the context of a diathesis-stress model, which posits that environmental influences can trigger suicidal behavior more easily in people who possess a greater disposition (i.e., these abnormalities) toward attempting suicide (for reviews of this model, see Mann, Waternaux, Haas, & Malone , 1999).

      Much of serotonin's role in suicidal behaviors involves the dorsal and medial raphe nuclei. Post-mortem examinations have revealed that people who die by suicide possess vastly greater amounts (four-fold increases) of serotonin at all points in the raphe nuclei than controls; this is thought to be due to abnormal serotonin autoreceptor activity (Bach et al., 2013). This result held even after accounting for known differences in serotonin synthesis within the raphe nuclei as found by Boldrini and colleagues (2008).

      Noradrenaline, also called norepinephrine, has been implicated in suicidal behaviors as a precipitant of depressive symptoms. Stressors which disrupt the noradrenergic system result in impaired concentration and memory, as well as increased impulsivity (Chandley & Ordway, 2012). All of these may lead to a greater risk of developing depression and subsequent suicidal ideation and behaviors (see Koslow et al., 2014). Additionally, Galfalvy and colleagues (2009)

found that patients who possessed small amounts of a particular norepinephrine metabolite

(MHPG) in their cerebrospinal fluid had a higher risk of, and more lethal, suicide attempts

compared to those with greater amounts.

In regards to the HPA-axis, the role of corticotropin releasing hormone (CRH) in suicidal

behavior has long been documented (Arato et al., 1986). Specifically, cerebrospinal fluid levels

of CRH are higher in suicidal individuals than non-suicidal individuals (Arato et al., 1986).

Coryell and Schlesser (2001) examined the stress response (via a dexamethasone injection) in 78

mood-disordered patients, 32 of whom displayed an abnormally large cortisol stress response. In

these 32 patients, 7 died by suicide over the course of the 15-year follow up, compared to only

one person that displayed a normal cortisol response. This stress response was a more accurate

predictor of suicide than all other variables (e.g., demographic variables) in the study, yet it

could also be stated that 25 patients with this abnormal stress response did not engage in suicidal

behaviors. In sum, while all of these previously mentioned biological correlates do possess some

power in predicting suicidal behaviors, like all predictors, they do not account for all of the

variance within these models. Thus, other perspectives with a more psychological or sociological

emphasis can help to further our understanding of suicide.

Psychopathology and personality. It is estimated that anywhere from 80 to 95 percent

of Americans who die by suicide have at least one diagnosable psychological disorder at the time

of their death (Cavanagh, Carson, Sharpe, & Lawrie, 2003; Cho, Na, Cho, Im, & Kang, 2015),

and as such, the treatment of these disorders is imperative in order to mitigate suicide risk as

much as possible. Myriad disorders certainly confer some degree of suicide risk, but those that

appear to confer the highest level of risk include depression (Hawton, Comabella, Haw, &

Saunders, 2013), anxiety disorders (Kanwar et al., 2013), and eating disorders (Preti, Rocchi, Sisti, Camboni, & Miotto, 2011).

Unsurprisingly, the nature of depression, which is characterized by feelings of sadness, anhedonia, and worthlessness, results in the greatest level of suicide risk among these disorders, with as many as two-thirds of those who die by suicide being diagnosed with depression (Harwood, Hawton, Hope, & Jacoby, 2001). Prevalence of suicide in those with anxiety disorders is also relatively high, with death by suicide being 3.3 times more likely in those with anxiety disorders compared to those without them (Kanwar et al., 2013). In these people, it is thought that the tendency to avoid and react extremely to fearful or otherwise aversive stimuli, as well as the isolation and poor functioning that often accompany anxiety disorders, is the driving factor for elevated suicide risk (Boergers, Spirito, & Donaldson, 1998; Schonfeld et al., 1997). Finally, a meta-analysis of death by suicide in those with anorexia or bulimia found that the prevalence of death by suicide ranged from 3-20% in those with anorexia, and 25-35% in those with bulimia (Franko & Keel, 2006), adding support to the assertion that suicide is one of the most common causes of death among those with eating disorders (Kostro, Lerman, & Attia, 2014).

In addition to these relatively more transient and treatable characteristics of psychopathology, trait-like features of temperament and personality also seem to be related to suicide risk. For instance, McCann (2010) found that higher levels of neuroticism and agreeableness were associated with higher rates of suicide at the state level. Findings are, however, quite mixed in that specific types of analyses and different indices of suicidal behavior (e.g., ideation versus attempts) yield differences in terms of the strength of these associations, as well as which specific personality traits are associated with each outcome.

Sociological/interpersonal perspectives. One of the earliest perspectives on suicide, Durkheim's *Le Suicide,* comes from a sociological viewpoint. Central to Durkheim's stance on suicide is the idea of social integration. In fact, Durkheim differentiates between four types of suicides in terms of the individual's level of integration and perceptions about the society in which he/she lives (Tierney, 2010). These include egoistic, anomic, altruistic, and fatalistic suicides (Tierney, 2010). While this integrationist perspective has generated an enormous amount of discussion and been reformulated several times to incorporate other sociological forces such as urbanization and acculturation (for a review, see Stack, 2000), this viewpoint has been generally well-supported. Aside from Durkheim's views regarding the role of social integration, the role of factors such as loneliness and social support in suicide has been frequently discussed since the early and middle 20th century (e.g., Dublin & Bunzel, 1933; Miller, 1980). Support for both Durkheim's views on integration and the general role of loneliness and social support comes from multiple outlets. For instance, and as mentioned previously, suicide rates are higher in rural areas, in which isolation and a lack of integration are quite frequent (Hirsch, 2006, Hirsch & Cukrowicz, 2014). Studies have also shown a consistent protective effect of religiousness against suicidal behavior, a key element of which is the social integration and support that comes from involvement within a religious community (see Caribe et al., 2012; Colucci & Martin, 2008).

Another theory which stresses the importance of the need for social integration, and has become quite popular, is the Interpersonal Theory of Suicide (Van Orden et al., 2010). This theory posits three critical factors which, if present within an individual, result in a very high risk for suicidal behavior: perceived burdensomeness, thwarted belongingness, and acquired capability for suicide. Perceived burdensomeness is the individual's perception that he/she is a

drain on others. Two key elements of this are the individual's beliefs that his/her death would be a relief to others (liability), as well as intense feelings of self-hatred (Van Orden et al., 2010). Thwarted belongingness refers to feelings of loneliness and lack of social support. In other words, the individual feels as though he/she is disconnected from others (either physically via isolation, or emotionally) and that he/she cannot turn to others for help. Important to note is that these two factors are the catalysts for the actual desire to attempt suicide, but are not enough to lead the individual to act on such desires (Van Orden et al., 2010). The final element, acquired capability, is necessary for this. One is said to have acquired the capability for suicide if he/she experiences a greatly diminished fear of dying, and heightened tolerance for pain. Attempting suicide can involve a great deal of pain, fear, and anxiety, and individuals who possess greater acquired capability (i.e., diminished fear of dying and heightened pain tolerance) are less likely to be deterred by such fear and pain, thus increasing the likelihood that they will follow through with the attempt, and/or use a more lethal method. These qualities are often seen in individuals who have made previous attempts, experienced childhood abuse, or have previously been exposed to suicide or suicide-related behaviors (e.g., family history, death of a friend by suicide, celebrities dying by suicide, history of non-suicidal self-injury). This three-part theory has gained a large amount of empirical support (Hawkins et al., 2014; Joiner et al., 2009; Van Orden, Witte, Gordon, Bender, & Joiner , 2008; Wilson, Kowal, Henderson, McWilliams, & Peloquin, 2013), although the support has not been unanimous (Pfeiffer et al., 2014). The former studies measured the constructs of thwarted belongingness and perceived burdensomeness using the Interpersonal Needs Questionnaire as developed by Van Orden and colleagues (2012), the latter study did not use this measure, which could explain the finding in this study that neither thwarted

belongingness nor perceived burdensomeness was associated with suicidal ideation in a sample of depressed veterans.

In addition to these theories regarding the role of interpersonal and extra-individual factors, the role of emotional and intra-individual factors in suicide and various psychiatric conditions have also been the subject of extensive research (see Tossani, 2012). One such factor is psychache.

Psychache

Themes of unbearable pain and suffering are highly prevalent in suicidal individuals, as evidenced by the notes that some of them leave behind, as well as testimonies from survivors (Shneidman 1996, 2004). This idea of unbearable, unending, and seemingly inescapable psychological pain, herein referred to as psychache, is central to the theory of suicide as psychache (Shneidman, 1993). The theory posits two key points: suicidal ideation develops in individuals who experience subjectively intense levels of psychache, and the risk of suicide attempt is highest in individuals who see no other alternative to ending their suffering besides suicide (Shneidman's concept of "constriction"), thus actively seeking to die in an effort to escape their pain, also referred to as "lethality" (Shneidman, 1993, p. 40, p. 24).

To elaborate on the concept of constriction, Shneidman describes it as "…a 'tunneling' or 'focusing' or 'narrowing' of the range of options usually available to that individual's consciousness when the mind is not panicked into dichotomous thinking: either some specific (almost magical) good solution or cessation [of consciousness]" (Shneidman, 1993, p. 40). In other words, the individual sees two and only two options: either continue to live with unbearable pain and agony, or end one's life in order to end that pain, indicating a very high risk of a suicide attempt. Without this extremely limited range of perception, the suicidal individual is

30

able to find reasons to live with or attempt to overcome his/her pain and, as such, Shneidman warns therapists to be aware of the use of the word "only" by patients when discussing suicide, as this may be indicative of constriction (Shneidman, 1993, p. 40).

Also critical to the theory is that psychache is said to arise from thwarted psychological needs within an individual, of which there are many (Shneidman, 1993). Specifically, the theory states that all people have certain needs (see Table 1 for a detailed description), such as affiliation with others or autonomy, without which that person feels they could not live, what Shneidman called "vital" needs (Shneidman, 1993, p. 53). Thus, everyone varies in terms of what needs are most vital to them, and the extent to which they can tolerate those needs being unmet. A closer inspection of these needs brings to light some striking similarities between Shneidman's theory and the Interpersonal Theory (Shneidman, 1993, Van Orden et al., 2007). With the needs of affiliation and succorance (Shneidman) describing the need to belong and to be loved, respectively, the two seem to share meaningful parallels with the concepts of thwarted belongingness and perceived burdensomeness (Interpersonal Theory). The concepts of affiliation and thwarted belongingness both capture the deep-seated need to fit in and feel a sense of community, whereas succorance and perceived burdensomeness encapsulate the idea that one needs to have a perceived sense of worth among those he/she cares about. The theories also, however, place a different emphasis on the critical force in driving suicidal behavior; for Shneidman it is constriction, for the Interpersonal Theory it is acquired capability.

As psychache relates to other suicide risk factors (e.g., depression), Shneidman believed that they are only relevant to suicide risk in that they worsen that person's level of psychache; as Shneidman put it, "No psychache, no suicide" (Shneidman, 1993, p. 56). Thus, the critical factor in treating suicidal individuals is to alleviate their psychological pain, increase their subjective

31

tolerance for that pain, and attempt to find ways to meet the client's specific psychological needs

(Shneidman, 1993). Shneidman believed that in addressing the client's pain or "perturbation,"

he/she would begin to experience a less constricted worldview, and subsequently be less likely to

engage in a suicide attempt. Psychache has received empirical support recently as a distinct

construct apart from other negative affective states, and as a highly potent risk factor for suicide

(e.g., Troister & Holden, 2012a; Troister et al., 2013; You, Song, Wu, Qin, & Zhou, 2014).

Table 1

Partial List of Psychological Needs and Their Definitions

Need	Definition
Achievement	To accomplish something difficult. To overcome obstacles and attain a high standard. To rival and surpass others.
Affiliation	To please and win affection of a respected person. To adhere and remain loyal to a friend.
Autonomy	To resist coercion and restriction. To be independent and free to act according to desires.
Counteraction	To master or make up for a failure by restriving. To overcome weakness; to repress fear.
Dominance	To control one's human environment. To dissuade, restrain, or prohibit [others].
Nurturance	To give sympathy and gratify the needs of another person. To feed, help, support, protect, comfort, nurse, heal.
Order	To achieve arrangement, organization, balance, tidiness, and precision among things in the inner world or ideas in the outer world.
Succorance	To have one's needs gratified by the sympathetic aid of another person.
Understanding	To ask and answer questions. To speculate, formulate, analyze, and generalize

Adapted from Shneidman (1993)

Empirical Support for Psychache

The definition of psychache is undoubtedly similar to that of depression or hopelessness, and one could argue whether or not psychache is truly its own separate concept apart from these two. In terms of statistical factor analysis, two studies have suggested that psychache is a unique construct. DeLisle and Holden (2009) found that psychache was a better predictor of depression and hopelessness, rather than the reverse being true, in an undergraduate sample. Additionally, all three were found to be distinct entities which all predicted indicators of suicide risk (e.g., past attempts), although psychache was the best predictor of the three. Troister and Holden (2012a) also found the three variables to be distinct yet related, again in a sample of undergraduates. Psychache emerged to be a powerful predictor of the act of preparing for suicide in particular in this study, whereas hopelessness predicted the motivation for it.

As mentioned previously, Shneidman's theory states that other suicide-related variables only contribute to suicide in that they increase psychache. Thus, when examining psychache in the context of other variables in predicting suicide, it should reduce all other variables to non-significance. The majority of the studies that have investigated this have found support for it (Berlim et al., 2003; Patterson & Holden, 2012; Pereira et al., 2010; Holden & Kroner, 2003; Troister & Holden, 2012b), although others have not (Troister & Holden, 2012a; Troister et al., 2013; You et al., 2014). This discrepancy appears to result from the use of different indices of suicidal behavior and ideation, with psychache's predictive power over depression and hopelessness depending on the particular suicide outcome being measured. For example, psychache's effects appear to be strongest in the context of predicting more severe forms of suicidal behavior such as attempts, (e.g., You et al., 2014), with hopelessness and depression exerting relatively greater influence over suicidal ideation. As such, it may be the case that

addressing psychache is most crucial in those with immediate and imminent risk of a suicide attempt.

Regardless of whether psychache is the quintessential element necessary for suicide, the extant literature suggests that psychache does possess a high degree of predictive power. This has been found in both cross-sectional study designs (Berlim et al., 2003; Flamenbaum & Holden, 2007; Pereira et al., 2010) and longitudinal designs (Troister et al., 2013; Troister & Holden, 2012b). The literature also indicates that the relationship between psychache and suicide is not population-specific. Studies of psychache in undergraduates (Troister et al., 2013), homeless people (Patterson & Holden, 2012), inmates (Holden & Kroner, 2003; Pereira et al., 2010), outpatients (Berlim et al., 2003), and holocaust survivors (Ohana, Goldander, & Barak, 2014) have all demonstrated that those with high levels of psychache are at an increased risk of engaging in suicidal behavior even after controlling for hopelessness and depression.

Psychache in the Context of Webb's Model

It is clear from the previous section that much research has examined psychache as it relates to predicting suicide specifically. Other research which examines psychache's relationship to other variables related to suicide (e.g., forgiveness) is much less abundant. In fact, no known published research exists which examines the link between psychache and forgiveness. Further research on psychache's associations with forgiveness and other variables could provide important information about the ways in which clinicians may reduce it (e.g., by fostering increased forgiveness in their patients), or about what other behaviors people may engage in to alleviate their psychological pain (e.g., substance abuse or other risky behaviors).

Despite this lack of research, the above-mentioned literature on forgiveness in general, and its specific relationship to suicidal behavior, provides several implications for the ways in

35

which psychache may be involved in the forgiveness–suicidal behavior association in the context of Webb's model. For example, research has been previously mentioned that links greater forgiveness to less rumination (Fehr et al., 2010), shame (Webb et al., 2008) and depression (Hirsch et al., 2011a), as well as its direct salutary associations with suicide outcomes (e.g., Bryan et al., 2014). As forgiveness is a unique coping mechanism which allows individuals to cope with all of these and other undesirable emotional states, which increase one's psychache according to Shneidman, it is likely that forgiveness can improve an individual's ability to cope with the psychache he/she is experiencing, as well as expend more energy on constructive coping mechanisms that reduce his/her levels of psychache. This decreased psychache would, in turn, lead to a decreased likelihood of suicidal behavior. Additionally, because different dimensions of forgiveness have had different relationships with suicidal behavior and other mental health outcomes across different studies [e.g., Hirsch et al. (2011a) versus Nsamenang et al. (2013)], it is also likely that the relationship between forgiveness and psychache would vary as a function of the specific dimension of forgiveness being examined.

In addition to the mediating role of psychache in the forgiveness-suicidal behavior association, Webb and colleagues (2015) also stated that many other variables could potentially mediate or moderate this association. One such variable is cynicism. Although not explicitly specified as a mediating variable in Webb's model, research has found cynicism to be related to general health, as well as forgiveness and suicide, and thus seems to warrant inclusion within the model (e.g., Kamat et al., 2006; Lisspers, Nygren, & Soderman, 1998; Nierenberg et al., 1996). Additionally, cynicism bears many similarities to Shneidman's concept of constriction, and psychache has been found to be correlated with cynicism (Lam et al., 2010). As such, the

following section provides a more in-depth discussion of cynicism, its associations with the aforementioned variables, and its proposed role as a mediating variable.

Cynicism

Previous research on cynicism has been primarily focused toward political (Shehata, 2014) and organizational realms (Lorinkova & Perry, 2014), and on topics such as occupational burnout (Simha, Elloy, & Huang, 2014). Thus, it should be noted that empirical research on cynicism as it relates to mental health outcomes is much more limited in comparison to the other variables being investigated in the present study.

Critical Elements of Cynicism

Leung et al. (2002) describe cynicism as "a negative view of human nature, a biased view against some groups of people, a mistrust of social institutions, and a disregard of ethical means for achieving an end" (p. 292). This mistrustful view then entails negative expectancies about one's interactions with others and society, particularly when one is in a position of vulnerability or otherwise diminished power (Leung & Bond, 2004). More generally, cynicism is but one of five factors, including Religiosity, Fate Control, Social Complexity, and Reward for Application, within Leung and Bond's (2002) model of social axioms, which they describe as "generalized beliefs about oneself, the social and physical environment, or the spiritual world, [that] are in the form of an assertion about the relationship between two entities or concepts" (p. 289). These social axioms then serve as a guiding framework for how people view the world, facilitating the acquisition of knowledge, decision making, and expression of values (Hui & Hui, 2009). This framework of social axioms, designed to study elements of worldview that transcend across cultures and societies, has gained extensive empirical support (see Leung & Bond, 2004; Leung & Bond, 2009). Although individuals often apply these worldviews in a global and consistent

fashion, they are not necessarily static or inherent traits (Hui & Hui, 2009). Rather, and similarly to forgiveness, these axioms can be considered dispositional in nature, while being susceptible to change based on life experiences or social context (Hui & Hui, 2009).

Regarding cynicism specifically, these mistrustful and negative views of others can be applied either toward specific individuals or toward society in general (Leung & Bond, 2004). For example, one may be mistrustful of a former romantic partner (individual), while also mistrusting one's government (societal). Such a worldview is thought to arise from a combination of societal-level factors (e.g., cultural views about trusting others, growing up in a war-torn country) and individual factors (e.g., being frequently deceived or abused throughout one's life) that shape one's view of the world over time (Leung & Bond, 2004). Cynicism even appears to result in a negative view of oneself, as people with high levels of cynicism tend to also display lower levels of self-esteem, hope, and life satisfaction (Bernardo, 2013; Lai, Bond, & Hui, 2007; Mak, Han, You, Jin, & Bond, 2011). As such, it appears that cynicism and its potential targets (the self, others, and society) seem to map well onto the targets of forgiveness being examined in the present study. Although forgiveness of uncontrollable situations is not a direct analog to that of societal cynicism, both individual people and society can exert forces on a cynical individual in the form of life events or situations (e.g., being robbed, being required to pay higher taxes). The inclusion of forgiveness of uncontrollable situations, therefore, is warranted to examine how such life events impact one's cynicism.

The negative view of the self, others, and society inherent in cynical individuals appears to represent a dark and hopeless view of humanity. Although cynicism and hopelessness are associated with similar outcomes, such as increased suicidal ideation (e.g., Chen, Wu, & Bond, 2009; Troister & Holden, 2012a), the two constructs are conceptually different. Specifically,

38

cynicism is concerned with "corrosiveness of power", distrust of authority, self-absorption, and

disregard for the well-being of others (Hui & Hui, 2009, p. 19; Leung & Bond, 2004).

Hopelessness, on the other hand, does not necessarily involve any of those elements, but rather,

entails negative beliefs about one's future, negative affect, and a lack of motivation (Beck,

Lester, Weissman, & Trexler, 1974). Similarly, cynicism also differs from the concept of

pessimism, which is also primarily concerned with negative expectation regarding future

outcomes. Due to the similarity in outcomes between cynicism and hopelessness, and in an effort

to differentiate the effects of cynicism from a general negative expectation about the future

inherent to either pessimism or hopelessness, hopelessness will be used as a control variable.

Cynicism and Health

Cynicism is associated with a variety of deleterious physical and mental health outcomes.

For instance, Lisspers, Nygren, and Soderman (1998) found that patients with coronary heart

disease displayed an overall profile of elevated cynicism and suppressed anger. This relationship

between cynicism and the "type A" personality has been consistently found throughout the

literature (Barefoot et al., 1987; Song, Terao, & Nakamura, 2007). People with these cynical and

angry worldviews tend to die at a younger age (Barefoot et al., 1987), are at increased risk for

coronary heart disease and dementia (Bokenberger, Pedersen, Gatz, & Dahl, 2013) and, in the

case of medical students, display lower levels of self-acceptance (Song et al., 2007). High levels

of cynicism also appear to be associated with a lower likelihood of exercising, with less cynical

individuals being more likely to engage in physical exercise and display greater psychological

well-being (Hassmen, Koivula, & Uutela, 2000; Taylor-Piliae et al., 2010).

In terms of mental health, cynicism again displays a deleterious association with many

mental health-related variables. A study by Singelis, Hubbard, Her, and An (2003) found

significant correlations between a measure of cynicism and several other mental-health related

measures. Specifically, higher levels of cynicism were cross-sectionally related to a higher

external locus of control (i.e., cynical individuals felt a lack of control over events that happened

to them), as well as lower levels of trust in others and cognitive flexibility. Studies have also

found that cynicism is associated with lower levels of mindfulness (Roche, Haar, & Luthans,

2014), (Brummett et al., 2000; Nabi et al., 2009). Cynical individuals are also less likely to

utilize the healthcare that is available to them, likely as a result of their distrust of others and

unwillingness to cooperate (Arbisi, Rusch, Polusny, Thuras, & Erbes, 2013, Kuo, Kwantes,

Towson, & Nanson, 2006).

Cynicism, Suicide, and Psychache

Although research explicitly and empirically examining cynicism and suicide is rather

limited, it has been shown to be a potent risk factor (Chen, Wu, & Bond, 2009; Lam et al., 2010;

Nierenberg et al., 1996). Both Chen et al. (2009) and Lam et al. (2010) found cynicism to be

associated with suicidal ideation in structural equation and multiple regression models,

respectively. Additionally, Nierenberg et al. (1996) found that cynicism differentiated depressed

inpatients who were suicidal from depressed inpatients who were not suicidal, with those

endorsing cynicism displaying greater amounts of suicidal ideation. It has thus been suggested

that individuals who possess this cynical worldview are more likely to engage in suicidal

behaviors as an attempt to remove themselves from their perceived negative life situation (Lam

et al., 2010). This interpretation fits well with Shneidman's theory of psychache, wherein suicide

is also viewed as an escape from unbearable pain, often resulting from negative life

circumstances. The extant literature also suggests other ways in which cynicism may be related

to psychache. Cynical individuals tend to exhibit less willingness to cooperate with others (Bond,

Leung, Au, Tong, & Chemonges-Nielson., 2004), increased risk of developing depression (Brummett et al., 2000; Nabi et al., 2009), greater feelings of loneliness (Neto, 2006), and increased use of ruminative, avoidant, or wishful-thinking strategies to resolve conflict or cope with stressors (Bond et al., 2004; Chen, Cheung, Bond, & Leung, 2005; Chen & Zhang, 2004). These ineffective coping styles, a distrustful and negative interpersonal style, in combination with the above-mentioned dissatisfaction with and perceived lack of control over one's life, seem to create a set of conditions wherein an individual would become isolated and left to cope with feelings of helplessness and depression using ineffective strategies. Such conditions would likely be associated with greater levels of psychache. Indeed, the one known study that has directly examined the relationship between psychache and cynicism has found such a positive relationship, with a significant correlation observed between the two (Lam et al., 2010).

Additionally, the static, distorted, negative, and non-flexible worldview that is present in many cynical individuals (Bond et al., 2004; Singelis et al., 2003) bears much resemblance to Shneidman's concept of constriction. Thus, the cynical person, similar to a constricted person, may experience greater difficulty in generating and implementing alternative and adaptive solutions to stressors, thereby increasing suicide risk, as evidenced by decreased cognitive flexibility in both types of people (Singelis et al., 2003, Shneidman, 1996). Finally, from an intuitive standpoint, people who distrust others and view the world as a cruel and uncaring place also are likely to believe that nobody cares for them, thereby increasing likelihood of psychache.

Cynicism and Forgiveness

Given that the association between forgiveness and suicide is essentially the opposite of the association between cynicism and suicide, it is not surprising that forgiveness and cynicism have been found to be inversely related to each other (Drinnon, 2000; Kamat et al., 2006;

Macaskill, 2007). Again, the research is limited, with the Macaskill (2007) study being the only known study to examine the self-others-situations conceptualization of forgiveness as it relates to cynicism, with only decreased forgiveness of others predicting increased cynicism in Christian clergy members, Christians from the general population, and those with no religious affiliation. Furthermore, the directionality of this relationship remains unclear, as studies examining the forgiveness-cynicism relationship have been cross-sectional or correlational in nature. Thus, it could be the case that individuals who learn to be less cynical are better able to forgive, as well as the reverse also being true.

As it pertains to the present study, it seems likely that cynicism's association with forgiveness would be the strongest in relation to forgiveness of others. Specifically, those who are less cynical would likely be more forgiving of others, as both forgiveness and (lack of) cynicism entail an increased willingness to trust and more positive view of human nature. It is possible that forgiveness of self could be related to cynicism as a function of the poor self-esteem and life satisfaction that coincides with cynicism, as individuals who think poorly of themselves and their lives tend to be less forgiving of themselves (e.g., Macaskill, 2012; Tian, Yang, & Yu, 2015). It has also been hypothesized that individuals who possess such a deprecating and unforgiving view of themselves may become cynical as they direct these views outward toward others, although this is in need of further research (Hui & Hui, 2009). As such, it is likely that higher levels of forgiveness of self will be associated with lower levels of cynicism, although this association will likely not be as strong as cynicism's association with forgiveness of others. Finally, forgiveness of uncontrollable situations will likely be associated with cynicism. As cynical individuals tend to be mistrusting of the people and societal forces that are often responsible for many of the uncontrollable situations in their lives, it is likely that they would

also not be forgiving when these situations occur. The cross-sectional nature of the data that will be collected for the present study, however, do not allow for any inferences regarding the temporal characteristics of these associations.

In sum, the extant literature on the benefits of forgiveness, and forgiveness's likely associations with cynicism, indicate that those who are more forgiving may possess healthier coping styles and means of interacting with others that are, in turn, associated with a healthier worldview that is antithetical to cynicism. The deleterious outcomes associated with a cynical worldview (e.g., loneliness, avoidant coping, dissatisfaction with life), in turn, seem to put one at risk of a greater likelihood of developing psychache, ultimately increasing risk of suicidal behavior. As such, it appears that cynicism is a likely mediator of the link between forgiveness and psychache, and that increasing one's level of forgiveness could likely prevent this chain of negative outcomes from occurring.

Statement of the Problem

While much is known about the individual focal variables (forgiveness, psychache, cynicism, suicidal behavior) of the present study, the relationship among some of these variables has been much more heavily researched than others. For example, much of the extant research on psychache has been exclusively done in the context of suicide, with much less known about its relationship to cynicism or forgiveness. Thus, research which examines all of these variables within an interactive framework is needed in order to further understand the complex psychological processes, and their associations with one another, which lead to suicidal behavior.

The present study aims to address these gaps by examining forgiveness, cynicism, and psychache as predictors of suicidal behavior within a serial mediation model as described by Hayes (2013). Specifically, the role of cynicism and psychache as mediators between multiple

dimensions of forgiveness and suicidal behaviors will be investigated. Other variables which may also have some predictive power in this model, such as depression and hopelessness, spritiuality, and demographic characteristics such as age, gender, and ethnicity, are included as control variables. As Shneidman states that psychache is *the* focal variable in suicidal behavior above and beyond the effects of other variables (Shneidman, 1993), it is important to test this assumption through the statistical control of depression and hopelessness, rather than excluding them from the model altogether. Moreover, there is an advantage to including these variables in that the effects of psychache will also be observable after accounting for depression and hopelessness' potentially confounding effects, thus gaining a clearer and less biased picture of psychache's association with suicidal behavior.

Hypotheses

Based on findings in the extant literature, and in concordance with the model proposed in Webb et al. (2015), the hypotheses of the present study are as follows:

Hypothesis 1: At the bivariate level, forgiveness of self, of others, and of uncontrollable situations will be inversely associated with cynicism, psychache, and suicidal behavior, with the latter three being positively associated with one another.

Hypothesis 2: At the multivariable level, forgiveness will be both directly and indirectly associated with suicidal behavior. Regarding indirect associations, it is hypothesized that higher levels of forgiveness will be associated with lower levels of cynicism, which will, in turn, be associated with lower levels of psychache. Lower levels of psychache will then, in turn, be associated with lower levels of suicidal behavior.

44

Hypothesis 3: The association of forgiveness with psychache, cynicism, and suicidal behavior will vary depending upon which specific forgiveness dimension is considered at both the bivariate and multivariable level.

CHAPTER 2

METHOD

Participants

Participants for this cross-sectional study were undergraduate students recruited from a regional university in southern Appalachia. Data were collected in the fall of 2015 as part of a larger project investigating suicide and psychological distress. Respondents were recruited from ETSU's Department of Psychology research participant pool, voluntarily completed all survey materials online using software on secure servers, and received course credit for their participation. Prior to data collection, this study was approved by the university's Institutional Review Board.

Measures

Estimates of internal consistency for each multi-item measure in the current study are included in Table 3. Cronbach's alpha (α) for each measure ranged from .75 to .95.

Forgiveness. Forgiveness was measured via the Heartland Forgiveness Scale (HFS; Thompson et al., 2005). This 18-item measure is comprised of three subscales: forgiveness of self, of others, and of uncontrollable situations. Each subscale is comprised of 6 questions which ask the respondent about the extent to which each forgiveness-related statement is true of them. For instance, a question pertaining to forgiveness of self asks "Although I feel bad at first when I mess up, over time I can give myself some slack." All questions follow a Likert scale format ranging from 1 (*Almost Always False of Me*) to 7 (*Almost Always True of Me*). The total possible score for *each* subscale ranges from 6-42, with higher scores indicating greater levels of each dimension of forgiveness. Analyses were conducted using the scores from each subscale in order to assess the effects of each dimension, rather than the general effect of all three together, which

46

could be calculated by summing the total scores for each dimension. Other studies have successfully utilized this method of examining each subscale in undergraduate samples (e.g., Feibelman & Turner, 2015) and samples of Christian and non-religious people (e.g., Macaskill, 2007). The HFS has shown satisfactory reliability in college student samples [α range = .72-.87; (Thompson et al, 2005)]. Thompson and colleagues (2005) found that the HFS was significantly and positively correlated with a variety of other measures of dispositional forgiveness, as well as demonstrating significant correlations in expected directions with other constructs that are thought to be associated with forgiveness such as rumination, cognitive flexibility, and positive affect. Additionally, although the HFS was significantly associated with some measures of situational (i.e. non-dispositional) forgiveness, these associations were much less frequent in comparison to the dispositional measures, suggesting that it is more closely related to the concept of dispositional forgiveness, rather than situational forgiveness.

Religiousness. As religiousness/spirituality are connected with both forgiveness (e.g., Worthington et al., 2001) and suicidal behavior (Caribe et al, 2012), it was incorporated into the present study as a control variable to eliminate any confounding effects on the relationship between forgiveness and suicidal behavior. The Religious Background and Behaviors Questionnaire (RBB; Connors, Tonigan, & Miller, 1996), specifically the Lifetime subscale, was used to assess participants' level of religiousness. Participants responded to six items concerning their lifetime religious practices (e.g., prayer, service attendance, etc.). Each item yields three possible responses, ranging from "Never" to "Yes, in the past but not now" to "Yes, and I still do," with each response being worth 1, 2, and 3 points, respectively, such that higher scores equate with higher levels of lifetime religiousness (range: 6 – 18). Adequate internal consistency (α = .62) has been demonstrated by this subscale in previous studies which utilized samples of

47

college students (e.g., Webb & Brewer, 2010; Webb, Hirsch, Conway-Williams, & Brewer, 2013). Connors et al. (1996) also found that the RBB was significantly correlated with other spirituality-related actions and constructs, such as self-reported church attendance within the past 90 days ($r = .50$), and having a sense of purpose in one's life as measured by the Purpose in Life Questionnaire (Crumbaugh & Maholic, 1976; $r = .14$).

Suicidal Behavior. Suicidal behavior was measured with the Suicidal Behaviors Questionnaire-Revised (Osman et al., 2001). This measure consists of four items which assess history of suicidal ideation and attempts, past-year suicidal ideation, frequency with which suicidal intent was communicated, and possibility of a future suicide attempt. The possible score range for each item varies, with the total score, to be used for all analyses, ranging from 3-18, with higher scores indicating greater levels of suicidal behavior. The SBQ-R has demonstrated satisfactory internal consistency in nonclinical samples of undergraduates (e.g., Osman et al., 2001; $\alpha = .76$). Additionally, in both clinical and nonclinical samples of adults and adolescents, highly satisfactory sensitivity (i.e., proportion of "true positives" detected; range = .80-.93) and specificity (i.e., proportion of "true negatives" detected; range = .91-.96) values based on participants' status of "attempter" or "non-attempter" were demonstrated (Osman et al, 2001). For non-clinical samples, the greatest combination of sensitivity and specificity was found using a cut-off score of 7 (Osman et al., 2001).

Psychache. The Psychache Scale (Holden, Mehta, Cunningham, & McLeod, 2001) is a 13-item measure used to assess psychological pain. For the first nine items, participants are asked to state how often each statement applies to them (e.g. "My soul aches") on a 1-5 Likert scale ranging from never to always, respectively. The last four items ask the participants about the extent to which they agree with each psychache-related statement (e.g. "I can't take my pain

48

anymore"), again on a 1-5 Likert scale ranging from strongly disagree to strongly agree, respectively. Total scores on the Psychache Scale can range from 13-65, with higher scores reflecting greater levels of psychache. Undergraduate samples from other studies typically display internal consistency coefficients above .90 (Pereira et al., 2010, Troister & Holden, 2010). Holden et al. (2001) also found that the Psychache Scale differentiated past suicide attempters from non-attempters, and that the scale was highly correlated with measures of suicidal ideation and likelihood of a future attempt in a college student sample. A recent study by Troister, D'Agata, and Holden (2015) found that the Psychache Scale was a more accurate predictor of past suicide attempts, and more accurately detected "cases with elevated risk" of a suicide attempt (based on sensitivity and specificity) in comparison to the Beck Depression Inventory-II and the Beck Hopelessness Scale, when using a cut-off score of 27, also in an undergraduate sample (p. 5).

Cynicism. Items from the Social Cynicism subscale of the Social Axioms Survey-II (Leung et al., 2012) were used to assess participants' levels of cynicism. This subscale is comprised of 20 questions that ask participants about their opinion on various statements (e.g. "Powerful people tend to exploit others," "It is rare to see a happy ending in real life"). Participants rate the extent to which they believe these statements on a Likert scale ranging from 1 (*strongly disbelieve)* to 5 (*strongly believe),* with higher scores indicating greater levels of cynicism. Each participant's score is calculated by taking the sum of his/her individual responses (possible range 20-100) and dividing it by the total number of subscale items, thus yielding a potential score of 1-5. This subscale of the survey has exhibited satisfactory reliability in a large and culturally diverse sample of college students ($\alpha = .79$). Findings from confirmatory factor analysis in a culturally diverse undergraduate sample (over 40 nations or cultural groups), as well

49

as several significant bivariate correlations between participants' levels of cynicism and the neuroticism, agreeableness, and extraversion traits of the Big-5 model of personality suggest that this survey is an acceptable measure of cynicism in college students of a variety of backgrounds (Leung et al., 2012).

Depression. As stated previously, depression and hopelessness are two variables that share many parallels with psychache. To control for any confounding effects due to these variables, both were measured in the present study, and subsequently included as covariates in the model. Depressive symptoms were assessed via the depression subscale of the Depression Anxiety Stress Scales-21 (DASS-21; Lovibond & Lovibond, 1995). Respondents read seven statements characteristic of depressive symptoms (e.g. "I felt that life was meaningless"), and subsequently rate how often each statement applied to them during the previous week on a Likert scale ranging from 0 (*Never*) to 3 (*Always*), yielding a possible score range of 0-21. Ratings from all seven items are then summed, with greater scores indicating higher levels of depressive symptoms. Past studies which have used the DASS-21 for the measurement of depression in college samples have found reliabilities for this scale in the good [Osman et al., 2012; $\omega = .88$ (for a discussion of ω as a measure of reliability, see Zinbarg, Revelle, Yovel, & Li, 2005)] to excellent range, with scores of 11 or greater being considered severe or extremely severe (Lovibond & Lovibond, 1995; $\alpha = .91$). Confirmatory factor analysis in an undergraduate sample supported the notion that depression was a separate construct apart from the anxiety and stress subscales, and the depression subscale was significantly correlated with the Beck Depression Inventory ($r = .74$). Of note, the DASS depression subscale was also found to display better discriminant validity in comparison to the BDI, as many of the physically-based symptoms (e.g.,

50

weight loss) displayed low factor loadings, and were found to be more closely related to the

stress subscale, rather than depression (Lovibond & Lovibond, 1995).

Hopelessness. Participants completed the Beck Hopelessness Scale (BHS; Beck, Lester,

Weissman, & Trexler, 1974). This is a 20-item true/false questionnaire (e.g., "I might as well

give up because there's nothing I can do to make things better for me"), and while it does not

contain explicit subscales, the overall scale captures three core components of hopelessness:

negative affect, negative beliefs about the future, and lack of motivation (Beck et al., 1974). As

each "true" response is worth one point, and "false" responses are worth zero points, scores

between 0-20 are possible, with higher scores reflecting more severe hopelessness. Studies of

undergraduates which utilized this scale have found satisfactory reliabilities (e.g., Troister,

D'Agata, & Holden, 2015; $\alpha = .80$). A study by Steed (2001) found that the BHS was

significantly correlated with a variety of measures designed to assess constructs similar to

hopelessness including the Life Orientation Test ($r = -.79$), the Hope Scale ($r = .74$), and the

"negative affect" items from the Positive and Negative Affect Scale ($r = .73$) in a nonclinical

undergraduate sample, indicating adequate construct validity.

Demographic Variables. A variety of participant-specific variables that could

potentially confound the associations among forgiveness, cynicism, psychache, and suicidal

behavior were also controlled for. For example, ethnicity was controlled for in the present study

due to documented differences in the relationship between forgiveness and health-related

outcomes among different ethnic groups (Smith & MacFarland, 2015), as well as general

differences in suicidal behavior across ethnic groups (CDC, 2015). Such differences in the

forgiveness-health association and general levels of suicidal behavior also exist across genders

and among different age groups (CDC, 2015; Miller, Worthington, & McDaniel, 2007;

Toussaint, Williams, Musick, & Everson, 2001). As such, the demographic variables of age, ethnicity, and gender were used as covariates. Finally, a history of previous non-fatal suicide attempts is one of the primary risk factors for future suicidal behavior, with previous attempters endorsing higher levels of psychache than non-attempters (Andover et al., 2012; Holden et al., 2001). Thus, previous attempt status represents a potential confound of the psychache-suicidal behavior relationship, and thus was controlled for in the present study.

Statistical Analysis

In order to examine the aforementioned hypothesized associations between forgiveness, psychache, cynicism, and suicidal behavior, two primary methods of statistical analyses were used. First, Pearson's product-moment correlations (*r*) were examined to determine zero-order associations among the variables of interest, as well as the covariates of depression, hopelessness, and all demographic variables. Second, a series of multivariable linear regression analyses in the form of serial mediation, as described by Hayes (2013), were performed. Importantly, in order to allow for statements of relative importance among the dimensions of forgiveness measured to be made, each dimension of forgiveness not being examined as an independent variable in the multivariable analyses was also included as a covariate for all such analyses (see Preacher & Hayes, 2008). For example, for all analyses in which forgiveness of self is the independent variable, forgiveness of others and of uncontrollable situations were used as covariates.

Serial mediation analysis (Hayes, 2013) was chosen for several reasons. First, tests of mediation utilizing the Hayes' method allow for more efficient detection of such effects and explicit testing of indirect-only effects (i.e. X is only related to Y via its association with the mediator(s)). Indeed, previous methods examined for mediating effects in a circuitous fashion

and also required a direct relationship between X and Y to be established before testing for

mediation (e.g., Baron & Kenny, 1986). The reduced number of hypothesis tests inherent to

Hayes' method, as well as the utilization of bootstrapping when testing the indirect effects, result

in increased power and reduced likelihood of a Type II error compared to other methods (see

Hayes, 2013, Chapter 6.1, for an in-depth discussion of these advantages). Because this form of

analysis allows for the input of only one independent variable in each model, a total of three

models will be analyzed, one for each dimension of forgiveness. Figure 1 depicts the overall

model proposed by Webb et al. (2015), with Figure 2 depicting the specific elements of that

model being tested in the present study, with descriptions of each specific path.
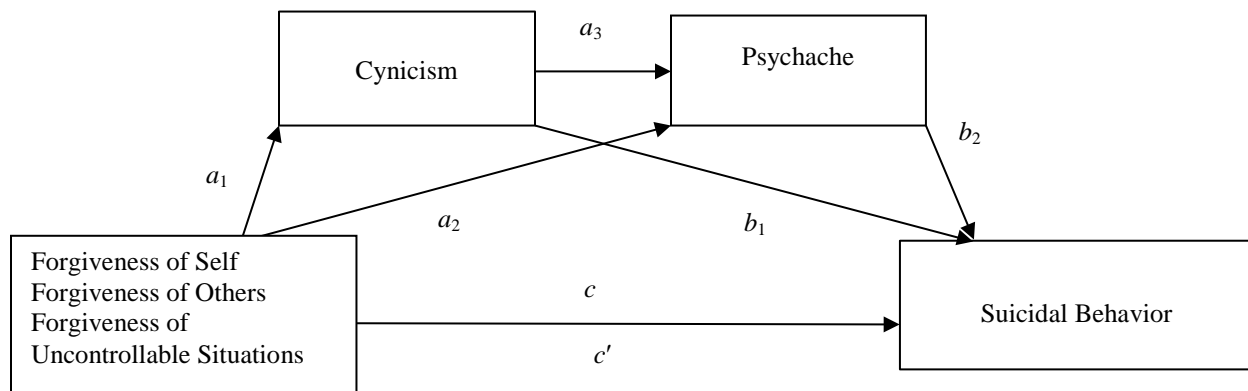
a_1 = Basic association of Forgiveness with Cynicism
a_2 = Basic association of Forgiveness with Psychache
a_3 = Basic association of Cynicism with Psychache
b_1 = Basic association of Cynicism with Suicidal Behavior
b_2 = Basic association of Psychache with Suicidal Behavior
a_1b_1 = Indirect effect of Forgiveness on Suicidal Behavior through Cynicism
a_2b_2 = Indirect effect of Forgiveness on Suicidal Behavior through Psychache
$a_1a_3b_2$ = Indirect effect of Forgiveness on Suicidal Behavior through Cynicism and Psychache

c = Total effect of Forgiveness on Suicidal Behavior, without accounting for Psychache
c' = Direct effect of Forgiveness on Suicidal Behavior after accounting for Psychache

Figure 2. *Hypothesized Serial Mediation Associations*

Concerning statistical power, it is theoretically possible to mathematically estimate the necessary sample size needed to detect a given effect size in this study's model via a Monte Carlo simulation. A variety of parameters, such as the size of the *a* and *b* coefficients, as well as their respective residual variances would need to be specified, in addition to other parameters. The simulation would then calculate the frequency with which the null hypothesis is rejected based on those estimations and a specified effect size, thus yielding a measurement of power. Specifying such parameters would, however, be very difficult, as they are inherently unknown, and would have to be based on findings in previous literature, which could vary greatly. As such, performing a power analysis via these methods becomes somewhat impractical and unnecessary due to their complexity and potential inaccuracy, especially when considering the size of the present study's sample, which was over 300 participants. Additionally, the bootstrapping method mentioned above provides an increase in power to relevant hypothesis tests as a result of continual resampling, somewhat negating the need for a formal a priori power analysis. This resampling was performed 10,000 times, resulting in an empirical estimation of the distribution of the parameters for the indirect effects in the model, as opposed to making assumptions about their shape (Hayes, 2013). This empirical estimation makes the measurement of these parameters (e.g., the size of *ab*) more accurate, therefore making any hypothesis tests involving these parameters more powerful in comparison to other methods such as Sobel's test (Hayes, 2013).

Despite the impracticality of conducting such a simulation, estimating a necessary minimum sample size was important when originally planning this study. There are many guidelines that have been proposed by various statisticians in an effort to provide "rules of thumb" for adequate sample sizes in regression analyses, such as the 15:1 participant-predictor ratio (e.g., Stevens, 2002), or setting a minimum sample size of 50, which increases by 8 with

each predictor (e.g. Green, 1991). Based on a total of 13 predictors in the present model (including covariates and the mediator variables of cynicism and psychache), sample size estimates using these guidelines range from 150 based on relatively liberal estimates (using the 50+8k rule by Green, 1991) to 390 (using a 30:1 participant predictor ratio) based on more conservative estimates (Cohen, 1992).

Hypothesis Testing

Hypothesis 1, which states that the variables of interest in this study (i.e., forgiveness, cynicism, psychache, and suicidal behavior) will be associated with each other at the bivariate level, was tested via the examination of Pearson's Product-moment correlations (r). In the context of each dimension of forgiveness measured, these correlations were all hypothesized to be negative, as higher levels of forgiveness were expected to be associated with lower levels of the other three variables. The correlations among cynicism, psychache, and suicidal behavior, however, were all expected to be positive.

Hypothesis 2, which states that forgiveness will be associated with suicidal behavior in both a direct and indirect fashion, was tested via the examination of a serial mediation model. A significant direct association between forgiveness and suicidal behavior would be evidenced by a significant *direct effect* (path c'), indicating that forgiveness is still significantly associated with suicidal behavior even after accounting for the mediating effects of cynicism and/or psychache. The indirect associations between forgiveness and suicidal behavior will be tested via examination of the significance of the *total indirect effect* (ab), which is a summation of the specific indirect effects ($a_1b_1 + a_2b_2 + a_1a_3b_2$). Each of these specific indirect effects are, in turn, defined as the particular product of each specific individual path leading from forgiveness to a mediator variable (a_1 or a_2), cynicism to psychache (a_3, in the case of serial mediation), and

55

a mediator variable to suicidal behavior (b_1 or b_2). Although it is possible that the effects of any one or more of these individual paths may be non-significant, a significant total indirect effect can still be observed and would indicate that one or more of the specific indirect effects were significant, or that there is no distinction between the specific indirect effects. Importantly, although the total indirect effect may be non-significant, one or more of the specific indirect effects may still be significant.

Hypothesis 3, which states that the specific association of forgiveness with cynicism, psychache, and/or suicidal behavior will vary as a function of the specific dimension of forgiveness being examined, was evaluated via the relative comparison of significant versus non-significant effects involving each dimension of forgiveness. For example, it may be that forgiveness of self is associated with the other variables of interest, but not forgiveness of others or forgiveness of uncontrollable situations. In sum, based on previous work (e.g., Webb et al., 2013a), not all dimensions of forgiveness are necessarily associated with all health-related outcomes.

CHAPTER 3

RESULTS

Sample Characteristics

A total of 312 participants completed the relevant survey materials for the present study (Table 2). The sample was mostly white (83%; n = 258) and female (64%; n = 201), having a mean age of 21.33 years (*SD* = 5.36; Range = 18 - 47). Additionally, 35 participants (11%) indicated having attempted suicide at least one time in their life. Most participants were in their first year of college (41%; n = 128).

Bivariate Associations

Correlations between all focal and control variables were examined via a correlation matrix (see Table 3). All correlations mentioned are statistically significant at *p* < .05, unless otherwise indicated.

Forgiveness of self, of others, and of uncontrollable situations were negatively associated with cynicism (*r*s = -.17, -.32, -.26, respectively). Furthermore, forgiveness of others displayed the strongest relationship to cynicism. All three forgiveness dimensions were also negatively associated with psychache (*r*s = -.40, -.22, -.42, respectively). Finally, all forgiveness dimensions were negatively associated with suicidal behavior (*r*s = -.27, -.13, -.25, respectively). The strength of these associations ranged from weak to moderate (Cohen, 1988).

Cynicism, psychache, and suicidal behavior were all positively associated with one another. The strength of these associations was relatively weak for cynicism with suicidal behavior (*r* = .20), and for cynicism with psychache (*r* = .23), but relatively strong for psychache with suicidal behavior (*r* = .63) (Cohen, 1988).

Table 2

Sample Characteristics (N = 312)

Characteristic/Variable	Mean/N	Standard Deviation/%
Gender		
Male	111	35.58%
Female	201	64.42%
Ethnicity		
American Indian	1	0.32%
Asian	5	1.60%
Black/African American	22	7.05%
White	258	82.69%
Hispanic	8	2.56%
Other	18	5.77%
Attempt History		
No	277	88.78%
Yes	35	11.22%
Year in College		
1st	128	41.03%
2nd	65	20.83%
3rd	56	17.95%
4th	59	18.91%
5th	1	0.32%
Age	21.33	5.36
Lifetime Religiousness	13.94	3.05
Forgiveness of Self	28.32	6.14
Forgiveness of Others	28.90	6.51
Forgiveness of Uncontrollable Situations	28.17	6.52
Cynicism	2.89	0.50
Psychache	23.93	10.13
Suicidal Behavior	5.46	3.05
Depression	4.58	4.79
Hopelessness	3.83	4.23

Table 3

Bivariate Associations (N = 312)

	1	2	3	4	5	6	7	8	9	10	11	12
1. Forgiveness of Self	(.75)[a]											
2. Forgiveness of Others	.31**	(.82)										
3. Forgiveness of Uncontrollable Situations	.63**	.50**	(.82)									
4. Cynicism	-.17**	-.32**	-.26**	(.84)								
5. Psychache	-.40**	-.22**	-.42**	.23**	(.95)							
6. Suicidal Behavior	-.27**	-.13*	-.25**	.20**	.63**	(.82)						
7. Depression	-.38**	-.24**	-.41**	.29**	.67**	.57**	(.92)					
8. Hopelessness	-.35**	-.23**	-.39**	.31**	.58**	.53**	.59**	(.89)				
9. Lifetime Religiousness	.06	.17**	.08	-.09	-.12*	-.11	-.14*	-.19**	(.79)			
10. Attempt History[b]	-.11*	-.10	-.16**	.16**	.35**	.53**	.28**	.37**	-.08			
11. Ethnicity[c]	.05	-.12*	-.02	.01	.09	.14*	.03	.09	-.05	-.00		
12. Age	.13*	-.03	.03	.00	.09	.03	-.02	-.01	-.09	.06	-.07	
13. Gender[d]	-.07	.08	-.01	-.12*	.13*	.07	-.00	-.06	.07	.03	-.09	.11

** Correlation is significant at the 0.01 level (2-tailed).
 * Correlation is significant at the 0.05 level (2-tailed).
[a]Numbers in parentheses are estimates of internal consistency (Cronbach's α)
[b]Attempt History: 0 = Never Attempted; 1 = At least one attempt
[c]Ethnicity: 0 = White; 1 = Non-white
[d]Gender: 0 = Male; 1 = Female

The variables of age, lifetime religiousness, depression, hopelessness, gender (dichotomized; 0 = male, 1 = female), ethnicity (dichotomized; 0 = white, 1 = non-white) and lifetime attempt status (dichotomized; 0 = never attempted, 1 = attempted) were included in all bivariate analyses. Depression was negatively associated with all forgiveness dimensions (r_{range} = -.24 to -.41), as was hopelessness (r_{range} = -.23 to -.39). Attempt status was associated with forgiveness of self (r = -.11) and forgiveness of uncontrollable situations (r = -.16), whereas age was only associated with forgiveness of self (r = .13), and lifetime religiousness was only associated with forgiveness of others (r = .17). Suicidal behavior was associated with all control variables (i.e., age, gender, ethnicity, lifetime suicide attempt history, lifetime religiousness, depression, and hopelessness) with the exception of age, gender and lifetime religiousness (r_{range} = .14 to .57).

Multivariable Associations

The overall model testing the association of all three forgiveness dimensions with suicidal behavior was significant (Table 4; $F(12,299) = 31.25$, $p < .0001$) and explained a significant proportion of variance in suicidal behavior scores ($R^2 = .56$). Across all models, cynicism was non-significantly associated with psychache ($a_3 = .11$), cynicism was non-significantly associated with suicidal behavior ($b_1 = .00$), and lower levels of psychache were associated with lower levels of suicidal behavior ($b_2 = .10$, $p < .0001$). Although no direct indications of effect size are available for serial mediation models in PROCESS, a qualitative examination of the difference in R^2 between c and c' shows that adding cynicism and psychache as mediators explained an additional 5 percent of variance in suicidal behavior scores. It is not possible to determine, however, if this increase is statistically significant.

Table 4

Multivariable Associations of Forgiveness and Suicidal Behavior

	Forgiveness of Self			Forgiveness of Others			Forgiveness of Uncontrollable Situations		
	(n = 312); R^2 = .56; $p < .0001$								
	Coefficient		*p* value	coefficient		*p* value	coefficient		*p* value
a_1	.0029		.6055	**-.0183**		.0001****	-.0037		.5213
a_2	**-.1885**		.0244	.0447		.5317	-.1182		.1670
a_3	.1061		.9013	.1061		.9013	.1061		.9013
b_1	.0006		.9918	.0006		.9918	.0006		.9918
b_2	**.0959**		**<.0001******	**.0959**		**<.0001******	**.0959**		**<.0001******
c	-.0412		.1233	.0182		.4144	.0287		.2935
c'	-.0231		.3695	.0141		.5191	.0401		.1273
	Effect	95CI		Effect	95CI		Effect	95CI	
ab	**-.0180**	**-.0437**	**-.0020**	.0041	-.0135	.0231	-.0114	-.0352	.0036
a_1b_1	<.0001	-.0031	.0029	<.0001	-.0098	.0083	<.0001	-.0031	.0030
a_2b_2	**-.0181**	**-.0436**	**-.0024**	.0043	-.0086	.0227	-.0113	-.0350	.0035
$a_1a_3b_2$	<.0001	-.0006	.0014	-.0002	-.0033	.0026	<.0001	-.0016	.0006

Note: Analyses controlled for age, gender, ethnicity, lifetime suicide attempt history, lifetime religiousness, depression, hopelessness, and non-focal forgiveness dimensions. 95CI = 95% bias-corrected confidence interval. * $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$; **** $p \leq .0001$; ns = non-significant

a_1 = basic association of Forgiveness with Cynicism; R^2 = .19, $p \leq .0001$
a_2 = basic association of Forgiveness with Psychache; R^2 = .57, $p \leq .0001$
a_3 = basic association of Cynicism with Psychache
b_1 = basic association of Cynicism with Suicidal Behavior
b_2 = basic association of Psychache with Suicidal Behavior

c = total effect of Forgiveness on Suicidal Behavior, without accounting for Cynicism and Psychache; R^2 = .51, $p \leq .0001$
c' = direct effect of Forgiveness on Suicidal Behavior, after accounting for Cynicism and Psychache
ab = total indirect effect of Forgiveness on Suicidal Behavior through Cynicism and/or Psychache
a_1b_1 = specific indirect effect of Forgiveness on Suicidal Behavior through Cynicism
a_2b_2 = specific indirect effect of Forgiveness on Suicidal Behavior through Psychache
$a_1a_3b_2$ = specific indirect effect of Forgiveness on Suicidal Behavior through Cynicism and Psychache, in serial

Concerning specific forgiveness dimensions, forgiveness of self did not display a significant total

(c = -.04) or direct (c' = -.02) effect on suicidal behavior, was non-significantly associated with

cynicism (a_1 = .00), and was significantly associated with psychache (a_2 = -.19, p < .05). The

total indirect effect (ab = -.0180) was, however, significant, as determined by the

95% confidence interval (95CI) not crossing zero. A specific indirect effect of forgiveness of

self on suicidal behavior via psychache was observed (a_2b_2 = -.0181), such that higher levels of

forgiveness of self were associated with lower levels of psychache and, in turn, to lower levels of

suicidal behavior. Given the non-significance of c and c′, this relationship is described as

indirect-only, rather than mediation. The specific indirect effects through 1) cynicism (a_1b_1 <

.0001) and 2) cynicism and psychache in serial ($a_1a_3b_2$ < .0001) were non-significant.

For both forgiveness of others and forgiveness of uncontrollable situations, the total

effect, direct effect, total indirect effect, and specific indirect effects on suicidal behavior were

all non-significant. Concerning specific individual paths, forgiveness of others and of

uncontrollable situations were non-significantly associated with psychache (a_2 = .04 and a_2 = -

.12, respectively). Forgiveness of others was, however, the only forgiveness dimension

significantly associated with cynicism, with this being an inverse association (a_1 = -.02, p < .001;

of self (a_1) = .00, ns; of uncontrollable situations (a_1) = -.00, ns).

In sum, these results suggest that neither forgiveness of others nor forgiveness of

uncontrollable situations were related to suicidal behavior. Forgiveness of self, however,

appeared to influence suicidal behavior via its influence on psychache. Upon observing the

nature of these multivariable analyses, which were generally non-significant and unsupportive of

the present study's hypotheses, it was determined that depression and hopelessness, which were

used as covariates in the above-mentioned analyses, could actually be performing a mediating role similar to that of psychache. Such a mediating role is supported by the literature discussed above (see Webb et al., 2015).

Erroneously specifying depression and hopelessness as covariates, rather than as mediators, could provide an inaccurate portrayal of the direct and indirect effects of forgiveness on the outcome of suicidal behavior, as well as an inaccurate portrayal of any other mediators already specified within the model. That is, mis-specifying a mediator variable as a covariate of the relationship between a predictor and an outcome results in the estimation of the direct effect, rather than the total effect, of the predictor on the outcome (Hayes, 2013), which in this case included cynicism, psychache, and suicidal behavior as outcomes of the forgiveness dimensions. For example, by setting all participants equal in their levels of depression, this results in the estimation of forgiveness' effect on suicidal behavior having statistically removed or neutralized the effect of depression from or in the model, and thus any variance that forgiveness may explain in suicidal behavior *via* depression (in depression's role as a mediator). In other words, this process could result in an artificial reduction of the size of the coefficients for the predictor (forgiveness) on the outcome (psychache, cynicism, suicidal behavior) (Hayes, 2013). As such, additional models were estimated and depression and hopelessness were not included in all subsequent analyses. These additional (albeit exploratory) results are now the main focus of the present study. Aside from not including depression and hopelessness in the overall model, all subsequent analyses were performed in an identical manner as before, testing the same models posited in Figure 2.

Excluding depression and hopelessness from all analyses, the direct and indirect effects of all three forgiveness dimensions on suicidal behavior are presented in Table 5, with

Table 5

Multivariable Associations of Forgiveness and Suicidal Behavior (Depression and Hopelessness

Removed)

	Forgiveness of Self		Forgiveness of Others		Forgiveness of Uncontrollable Situations	
	(n = 312); R^2 = .52; p < .0001					
	Coefficient	p value	Coefficient	p value	coefficient	p value
a_1	-.0013	.8180	**-.0186**	.0001****	-.0083	.1507
a_2	**-.3991**	.0001****	.0631	.4762	**-.3261**	.0018**
a_3	**2.3682**	.0226*	**2.3682**	.0226*	**2.3682**	.0226*
b_1	.2146	.4223	.2146	.4223	.2146	.4223
b_2	**.1481**	<.0001****	**.1481**	<.0001****	**.1481**	<.0001****
c	**-.0934**	.0020**	.0125	.6267	-.0269	.3816
c'	-.0336	.2077	.0137	.5472	.0261	.3342
	Effect	95CI	Effect	95CI	Effect	95CI
ab	**-.0598**	**-.0990**	**-.0285**	-.0012	-.0267	.0289	**-.0530**	**-.0954**	**-.0196**
a_1b_1	-.0003	-.0059	.0018	-.0040	-.0151	.0038	-.0018	-.0100	.0011
a_2b_2	**-.0591**	**-.0963**	**-.0288**	.0093	-.0129	.0396	**-.0483**	**-.0890**	**-.0169**
$a_1a_3b_2$	-.0005	-.0056	.0032	**-.0065**	**-.0154**	**-.0016**	-.0029	-.0103	.0000

Note: Analyses controlled for age, gender, ethnicity, lifetime suicide attempt history, lifetime religiousness, and non-focal forgiveness dimensions. 95CI = 95% bias-corrected confidence interval. * $p \leq$ .05; ** $p \leq$ .01; *** $p \leq$ .001; **** $p \leq$ .0001;

a_1 = basic association of Forgiveness with Cynicism; R^2 = .15, $p \leq$ .0001
a_2 = basic association of Forgiveness with Psychache; R^2 = .33, $p \leq$ .0001
a_3 = basic association of Cynicism with Psychache
b_1 = basic association of Cynicism with Suicidal Behavior
b_2 = basic association of Psychache with Suicidal Behavior

c = total effect of Forgiveness on Suicidal Behavior, without accounting for Cynicism and Psychache; R^2 = .35, $p \leq$ .0001
c' = direct effect of Forgiveness on Suicidal Behavior, after accounting for Cynicism and Psychache

ab = total indirect effect of Forgiveness on Suicidal Behavior through Cynicism and/or Psychache
a_1b_1 = specific indirect effect of Forgiveness on Suicidal Behavior through Cynicism
a_2b_2 = specific indirect effect of Forgiveness on Suicidal Behavior through Psychache
$a_1a_3b_2$ = specific indirect effect of Forgiveness on Suicidal Behavior through Cynicism and Psychache, in serial

noteworthy findings being reported in this section. The overall model was significant ($F(10, 301)$ = 32.56, $p < .0001$) and explained a large proportion of the variance in suicidal behavior scores ($R^2 = .52$). Without accounting for cynicism and psychache, the model explained 33% of variance in suicidal behavior scores, resulting in an R^2-change of .19. Across all dimensions of forgiveness, lower levels of cynicism were significantly associated with lower levels of psychache ($a_3 = 2.37$, $p < .05$) and lower levels of psychache were associated with lower levels of suicidal behavior ($b_2 = .15$, $p < .0001$). As such, these coefficients (i.e., a_3 and b_2) are reported only once in this section. Cynicism was non- significantly directly associated with suicidal behavior ($b_1 = .21$).

Concerning specific forgiveness dimensions, the total effect of forgiveness of self on suicidal behavior was significant ($c = -.09$, $p < .01$), whereas its direct effect on suicidal behavior was non-significant ($c' = -.03$), indicating mediation. Regarding specific individual paths, forgiveness of self was non-significantly associated with cynicism ($a_1 = -.00$), but was significantly and inversely associated with psychache ($a_2 = -.40$, $p < .001$). A significant total indirect effect of forgiveness of self on suicidal behavior was observed ($ab = -.0598$, 95CI = -.0990, -.0285), such that forgiveness of self was associated with suicidal behavior via psychache only ($a_2b_2 = -.0591$, 95CI = -.0963, -.0288). The specific indirect effects of forgiveness of self on suicidal behavior via cynicism only ($a_1b_1 = -.0003$) and through both cynicism and psychache in serial ($a_1a_3b_2 = -.0005$) were non-significant. In sum, forgiveness of self appears to influence suicidal behavior primarily via its association with psychache.

Forgiveness of others did not display a significant total ($c = .01$) or direct ($c' = .01$) effect in association with suicidal behavior. Regarding specific individual paths, forgiveness of others was significantly and inversely associated with cynicism ($a_1 = -.02$, $p < .001$), but was non-

65

significantly associated with psychache ($a_2 = .06$). The total indirect effect was non-significant, however, examination of specific indirect effects revealed that the specific path in which forgiveness of others affects suicidal behavior via cynicism and psychache in serial was significant ($a_1a_3b_2 = -.0065$, 95CI = -.0154, -.0016) and indirect-only (given the non-significance of c and c'). No other specific indirect effects were significant. As such, and differently than forgiveness of self, forgiveness of others appears to be associated with suicidal behavior via its influence on cynicism, which subsequently influences psychache, following a serial effect pattern.

Finally, forgiveness of uncontrollable situations displayed neither a significant total effect ($c = -.03$) nor direct effect ($c' = .03$) on suicidal behavior. Concerning specific individual paths, forgiveness of uncontrollable situations was identical to forgiveness of self in that it was non-significantly associated with cynicism, but significantly and inversely associated with psychache ($a_2 = -.33$, $p < .01$). The total indirect effect was also significant, indicating an indirect-only relationship ($ab = -.0530$, 95CI = -.0954, -.0196). Similarly to forgiveness of self, forgiveness of uncontrollable situations was significantly associated with suicidal behavior via psychache only ($a_2b_2 = -.0483$, 95CI = -.0890, -.0169), with no other specific indirect effects being significant. As was the case with forgiveness of self, the effects of forgiveness of uncontrollable situations on suicidal behavior appear to operate exclusively via psychache.

CHAPTER 4

DISCUSSION

Supporting the extant literature on forgiveness and health, and in support of the model posited by Webb and colleagues (2015), we found that cynicism and psychache mediated the association between multiple dimensions of forgiveness (of self, of others, and of uncontrollable situations) and suicidal behavior. The nature of the association of forgiveness with suicidal behavior, including in the context of the specific mediators, varied as a function of the specific dimension of forgiveness being examined.

Evaluation of Hypotheses

Hypothesis 1, which concerned the bivariate associations between forgiveness, cynicism, psychache, and suicidal behavior, was fully supported. Specifically, all dimensions of forgiveness were significantly and inversely associated with cynicism, psychache, and suicidal behavior, while psychache, cynicism, and suicidal behavior were significantly and positively associated with each other. Of note, these relationships largely remained consistent after controlling for various demographic and confounding variables in the context of mediation analyses.

Hypothesis 2, which stated that forgiveness would be associated with suicidal behavior both directly and indirectly, was partially supported. Although an initial total effect was observed for forgiveness of self in association with suicidal behavior, a significant direct effect of forgiveness of self on suicidal behavior was not observed after accounting for the effects of all mediators and covariates, suggesting mediation. Forgiveness of others and of uncontrollable situations were associated with suicidal behavior in an indirect-only fashion, displaying non-significant total and direct associations with suicidal behavior. Although these results were only

partially supportive of the present study's hypothesis, they are not inconsistent with findings in the extant literature (discussed in greater detail below).

Hypothesis 3, which stated that each forgiveness dimension would demonstrate differential associations with all variables of interest, was largely supported. Specifically, forgiveness of self was directly associated with psychache, but not with cynicism. Forgiveness of others was, on the other hand, only significantly associated with cynicism. Finally, forgiveness of uncontrollable situations was only associated with psychache. Moreover, forgiveness of self and of uncontrollable situations were associated indirectly with suicidal behavior via psychache, whereas forgiveness of others was associated with suicidal behavior via cynicism and psychache in serial fashion. Again, and as discussed in the following section, these results are consistent with findings in the extant literature demonstrating that specific types of forgiveness may differ in their associations with specific health outcomes.

Integration with Previous Findings

Total and indirect associations. One objective of the present study was to test the theoretical model posited by Webb and colleagues (2015) concerning the direct and indirect associations of forgiveness with suicidal behavior. With regard to direct associations, we did not find support for this aspect of the model, as no dimension of forgiveness maintained significant direct effects on suicidal behavior after incorporating mediator and control variables. Forgiveness of self was, however, the only forgiveness dimension to display a significant initial total association with suicidal behavior. In line with some previous research, this finding may be reflective of the apparent saliency of forgiveness of self in predicting health-related outcomes. Indeed, several studies have highlighted the key role that forgiveness of self often plays in predicting specific health outcomes that may not be associated with other dimensions of

68

forgiveness (e.g., of self, but not of others in the context of physical and mental health status in those receiving physical therapy, Svalina & Webb, 2012; of self, but not by God in the context of somatic symptoms and psychological distress, Webb et al., 2013a). In other words, such a finding may lend support to the notion that forgiveness of self may be the most crucial forgiveness dimension in the context of health-related outcomes (Svalina & Webb, 2012).

Within the context of the forgiveness-suicide literature, however, these associations do not seem to be as consistent. Specifically, the small number of mediation-based studies conducted thus far have displayed inconsistent findings concerning the relative importance of individual forgiveness dimensions in the context of suicidal behavior; forgiveness of self has typically demonstrated an indirect relationship with suicidal behavior, whereas forgiveness of others has demonstrated both direct and indirect associations, with no known studies examining the association between forgiveness of uncontrollable situations and suicidal behavior (Hirsch et al., 2011; Nsamenang et al., 2013). At present, and due to the limited number of studies conducted on this topic, it is not possible to discern if these differential findings across studies are reflective of sampling and/or measurement differences, or if the forgiveness dimensions in the present study do indeed affect suicidal behavior in a primarily indirect manner in relation to the present study's mediator variables. Further research on the relationship between multiple forgiveness dimensions and suicidal behavior is necessary to determine if forgiveness of self truly displays more consistent and/or more salient associations with suicide-related outcomes in comparison to other forgiveness dimensions.

Concerning the other forgiveness dimensions, indirect associations between those dimensions (e.g., of others) and health-related outcomes (e.g., of others with physical and mental health status, operating through social support, Webb et al., 2013) appear to be much more

69

common than direct associations, although direct associations have also been found (of others with suicidal behavior, Hirsch et al., 2011). This is especially true, as discussed above, when examining the association between forgiveness and mental health outcomes, which appears to operate largely through mediating mechanisms. For example, Webb, Robinson, and Brower (2011) examined the associations between forgiveness of self, forgiveness of others, and feeling forgiven by God and various alcohol-related outcomes (e.g., number of days without drinking) as mediated by mental health status. This forgiveness-alcohol relationship was such that mental health status performed a mediating role between forgiveness of self and forgiveness of others and several alcohol-related outcomes at baseline, with forgiveness of others also displaying an indirect-only relationship with alcohol related-problems (via mental health status) over the study's 6-month longitudinal period. Feeling forgiven by God did not display any significant associations with any of the alcohol-related outcomes. Moreover, although only two known studies have explicitly tested the indirect associations between forgiveness and suicide (i.e., mediation), those studies have also found the two to be associated, at least for some dimensions of forgiveness, in an indirect manner (e.g., of self operating through depressive symptoms, Hirsch et al., 2011; of self and of others operating through depressive symptoms, thwarted belongingness, and perceived burdensomeness in serial, Nsamenang et al., 2013).

At present, no predictions have been posited in the extant literature concerning how specific forgiveness dimensions may be related to specific health outcomes, especially in the context of the present study which utilized previously unexamined mediators. Because the study of the forgiveness-suicidal behavior association is still in its infancy, more research is needed before determining whether the pattern of associations for each specific forgiveness dimension in the present study is reflective of methodological and sampling differences from other studies, or

of a true pattern of associations between various forgiveness dimensions, cynicism, psychache, and suicidal behavior. In sum, and in line with previous findings, it appears that one of the primary mechanisms by which forgiveness influences suicidal behavior is via its association with negative affective states or world views, with specific forgiveness dimensions being more readily associated with specific mediators than others.

Cynicism as a mediator. At the multivariable level of analysis, the association of forgiveness of others with suicidal behavior was an indirect-only effect, operating through cynicism and psychache in sequence. Of note, this was the only multivariable association that cynicism played a role in. This pattern of associations is consistent with the pattern observed in the Macaskill (2007) study, which is the only known study to have examined cynicism's relationship to forgiveness in the context of self, of others, and of uncontrollable situations; that is, cynicism was only negatively associated with forgiveness of others. The other two known studies examining the forgiveness-cynicism link *only* analyzed forgiveness of others (Drinnon, 2000; Kamat et al., 2006), and thus, general statements regarding exclusive relationships between dimensions of forgiveness and cynicism cannot be made.

Although cynicism was related to all dimensions of forgiveness at the bivariate level, the associations were relatively weak for forgiveness of self and uncontrollable situations. It may be that the direct effects of these two dimensions of forgiveness on cynicism were diminished in the multivariable analyses as a result of controlling for forgiveness of others; this is not to say, however, that forgiveness of self, or of uncontrollable situations, is *not at all* related to cynicism, but rather may be related to cynicism in a more indirect manner that was not examined within the present study. For example, forgiveness (i.e., differing dimensions) is related to a host of other variables, such as anger (Witvliet et al., 2008), rumination (Berry, Worthington, O'Connor,

Parrott, & Wade, 2005), and locus of control (Conway-Williams, 2011), which are all also related to cynicism (Chen et al., 2005; Lisspers et al., 1998; Singelis et al., 2003). Based on the nature of these variables, it could be the case that other dimensions of forgiveness (i.e., of self and of uncontrollable situations) are related to cynicism in an indirect fashion via these or other variables (i.e., anger, rumination, locus of control). Such a hypothesis would, however, require explicit testing. As mentioned above, forgiveness of others' direct association with cynicism may be explained by the lack of trust, hostility towards others, and rumination over interpersonal transgressions that are inherent to both a lack of forgiveness and excessive cynicism. At present, the direction of this forgiveness-cynicism relationship, as well as the mediating or moderating role played by their shared associations with these other variables, remains unclear. Further exploring the temporal order of these associations may provide further insight into what elements are the most critical to address within an intervention context.

More generally, our study is the first to examine cynicism as a mediator in the context of forgiveness and suicidal behavior. An absence of studies on cynicism's mediating role in this relationship does not allow for a comparison between the present study and previous literature, but findings pertaining to specific individual linkages among forgiveness of others and cynicism, cynicism and psychache, and psychache and suicidal behavior provide useful information that, when taken together, are consistent with the serial mediation pattern found in the present study. Specifically, endorsing low levels of forgiveness of others may be associated with cynicism for the variety of reasons described immediately above. Such high levels of cynicism may then, in turn, be associated with more severe psychache due to the distrustful interpersonal style, loneliness and depressive symptoms, and poor coping strategies that are characteristic of cynical individuals, which may subsequently result in the experience of psychological pain (Chen et al.,

2005; Leung et al., 2004; Nabi et al., 2009; Neto, 2006). Indeed, the one known published study examining the association between psychache and cynicism found the two to be positively associated with one another (Lam et al., 2010). As feelings of psychological pain become more salient, the idea of ceasing consciousness in order to escape one's pain becomes more appealing, thus making the risk of suicidal behavior more immediate (Shneidman, 1993).

In sum, our findings suggest that the association between forgiveness of others and suicidal behavior can be partially explained by the maladaptive pattern of interpersonal characteristics inherent to unforgiving and cynical individuals, which ultimately places them at greater risk of developing psychological pain and subsequent suicidal behavior. In other words, those who are unforgiving of others may tend to view the world from a cynical standpoint, with such a view resulting in significant psychological pain and subsequently heightened suicide risk within those individuals. This hypothesis regarding the association between forgiveness of others, interpersonal problems, and subsequent suicidal behavior has been supported by the one known study examining such associations, wherein forgiveness of others was found to be indirectly associated with suicidal behavior via depression, thwarted belongingness, and perceived burdensomeness in a serial manner (Nsamenang et al., 2013).

Psychache as a mediator. Both forgiveness of self and of uncontrollable situations were directly associated with psychache, while forgiveness of others was indirectly associated with psychache via cynicism. More broadly, both forgiveness of self and of uncontrollable situations were associated with suicidal behavior in an indirect-only fashion via their associations with psychache. Such associations are consistent both with the theoretical associations between forgiveness, psychache, and suicidal behavior in Webb's model, as well as with the literature examining the association of forgiveness with other aversive negative affective states, such as

73

depression, hopelessness, and anxiety (Toussaint et al., 2008a, Toussaint et al., 2008b, Unterrainer et al., 2012).

There are two possible mechanisms by which forgiveness may have a salutary association with psychache. One mechanism involves the element of acceptance that is part of the forgiveness process (Enright & Fitzgibbons, 2015). In the face of interpersonal transgressions, shame, guilt, or other painful experiences, those who are more forgiving may have a greater ability to accept such experiences, and thus overcome any ruminative, avoidant, or otherwise maladaptive thoughts or behaviors which ultimately increase one's psychological pain. Indeed, such acceptance-based approaches have been applied with great success to depression and anxiety disorders (Eifert, Forsyth, & Hayes; 2005; Forman, Herbert, Moitra, Yeomans, & Geller, 2007).

Also, the theme of acceptance fits neatly into one of the key aspects of Shneidman's theory of suicide, which states that one of the primary objectives in alleviating suicide risk is to increase the individual's ability to tolerate their psychological pain (Shneidman, 1993). Moreover, the idea that forgiveness facilitates the use of alternative coping strategies appears to be analogous to the alleviation of constriction (i.e., the belief that suicide is the *only* viable option to alleviate one's pain) in Shneidman's theory. As it applies to Shneidman's theory, forgiveness may be an appropriate means through which to increase the client's psychological pain tolerance, facilitate the alleviation of constriction, and potentially help the client meet his/her psychological needs (Shneidman, 1993). Although conceptually consistent, such associations explicitly within the context of Shneidman's theory are in need of empirical support. Studies have suggested, however, that higher levels of interpersonal forgiveness are associated with lower levels of psychological distress (Carson et al., 2005), with multiple types of

forgiveness being associated with greater use of positive health behaviors and lower levels of perceived loneliness (Day & Maltby, 2005; Worthington & Scherer, 2004), providing indirect support for Shneidman's assumptions.

The second mechanism involves the (un)forgiveness-energy hypothesis, and the role of forgiveness in promoting the utilization of positive health behaviors (Webb et al., 2012, Webb et al., 2015). In this role, forgiveness is thought to facilitate the use of positive coping strategies, as those who are more forgiving spend less time and energy ruminating over specific offenses and, thus, have more energy available to engage in positive activities. This increased use of adaptive strategies or constructive healthy behaviors, such as exercising, then leads to improved health outcomes. In the context of psychache, it appears that both mechanisms are equally applicable. For instance, a person who is forgiving may be able to better accept experiences of psychological pain (e.g., a breakup), while simultaneously focusing their energy on positive coping strategies and healthy behaviors (e.g., exercise).

The extent to which either of these forgiveness-based mechanisms is more salient for reducing suicide risk is currently not possible to discern in the context of the present study's results. Despite this, psychache should be a primary target of intervention for suicidal individuals based on its strong relation to suicidal behavior, with fostering forgiveness being one potential means of combating the development and impact of psychache.

The present study is also the first to test the mediating effects of psychache in the context of the forgiveness-suicidal behavior association. Again, despite the lack of research on psychache in this context, findings from research pertaining to forgiveness and other negative affective states in relation to suicidal behavior are consistent with the present study's findings. For example, Hirsch et al. (2011) and Nsamenang et al. (2013) found that depression mediated

the forgiveness-suicidal behavior association in a sample of undergraduates and primary care patients, respectively. Again, despite the conceptual distinctions between depression (and hopelessness) and psychache, all three are thought to perform the same mediating function in the forgiveness-suicidal behavior association (Webb et al., 2015). Indeed, Hirsch et al. (2011) and Nsamenang et al. (2013) have found support for depression in this role, with the present study finding support for psychache in this role. No known studies have examined hopelessness as a mediator of the forgiveness-suicidal behavior association.

The importance of psychache. After controlling for depression, hopelessness, suicide attempt history, and a variety of demographic variables in the first, original set of analyses, and with the subsequent removal of depression and hopelessness in the second, now-focal analyses, psychache was the only focal variable to maintain significant direct associations with suicidal behavior. In other words, all dimensions of forgiveness and cynicism ultimately influenced suicidal behavior indirectly via psychache. This powerful influence of psychache on suicidal behavior has been well-documented in the literature, with psychache often demonstrating the most salient associations with suicidal behavior above and beyond that of other variables, including depression and hopelessness (Berlim et al., 2003; Patterson & Holden, 2012; Pereira et al., 2010; Holden & Kroner, 2003; Troister & Holden, 2012b). Such findings may also explain why cynicism did not display any significant direct associations with suicidal behavior at the multivariable level of analysis. That is, according to Shneidman's theory, while many variables may contribute to increased suicide risk, those variables are only relevant to the extent that they increase the individual's level of psychache. Indeed, higher levels of cynicism were associated with higher levels of psychache in the second and focal set of multivariable analyses, thus highlighting cynicism as yet another potential risk factor for psychological pain.

Implications for Treatment

The present study has several implications for interventions with suicidal individuals. These implications fall into three categories: 1) using forgiveness as a positive psychological intervention in an effort to attenuate or prevent the development of suicidal behavior, 2) addressing cynical worldviews in clients when appropriate, and 3) making psychache a primary target for intervention.

Forgiveness as positive psychological intervention. Despite the development of positive psychology as its own subfield of psychology over 15 years ago (Seligman & Csikszentmihaly, 2000), research into positive psychological characteristics that may protect against suicidal behavior, and based explicitly within the positive psychology framework, has only recently begun. Nevertheless, characteristics such as positive future thinking, gratitude, grit, and forgiveness have all been identified as protective factors in the context of suicidal behavior (Kleiman Adams, Kashdan & Riskind, 2013a; Kleiman, Adams, Kashdan, & Riskind, 2013b; O'Connor, Smyth, & Williams, 2015; Webb et al., 2015).

Webb et al. (2015) have discussed the various ways in which forgiveness can be, or already has been, incorporated into treatment for suicidal behavior (see also Webb & Jeter, 2015; Webb & Trautman, 2010). Specifically, they identified the utilization of stand-alone forgiveness-based interventions (Forgiveness Therapy, Enright & Fitzgibbons, 2015; forgiveness psychoeducation, Worthington & Sandage, 2016), as well as the incorporation of forgiveness into pre-existing treatments such as Twelve-Step Facilitation Therapy (TSF, Nowinski et al., 1994), Motivational Enhancement Therapy (MET, Miller et al., 1994), Acceptance and Commitment Therapy (ACT, Hayes & Lillis, 2012), Dialectical Behavior Therapy (DBT, Neacsiu, Ward-Ciesielski, & Linehan, 2012), and Mindfulness-based Cognitive Therapy

77

(MBCT, Felder, Dimidjian, & Segal, 2012) as potential routes by which forgiveness may be applied to suicidal behavior in a treatment context.

In regard to stand-alone forgiveness interventions, Enright and Fitzgibbons (2015) and Worthington and Sandage (2016), have developed models of forgiveness (UDWD$_2$ and REACH, respectively) whereby clinicians may facilitate the development of forgiveness in their clients. In Enright's model (UDWD$_2$), there are 20 steps involved in the forgiveness process, which fall into four general phases. Broadly, this model of forgiveness therapy involves the client first developing awareness and insight into the nature of the offense and their emotions surrounding it (Uncovering), making the conscious Decision to forgive, Working towards developing forgiveness via strategies such as empathy and acceptance, and developing one's sense of meaning in life and connectedness with others (D$_2$eepening). The process in Worthington's model (REACH) involves first Recalling and reimagining the offense, Empathizing with the offender (either the self or someone else), choosing to give the offender the Altruistic gift of forgiveness, making an explicit Commitment to act upon that choice, and Holding on to those feelings of forgiveness in the future.

The steps to forgiveness outlined in both of these models also appear readily adaptable for use in TSF and MET (Webb & Jeter, 2015). Specifically, the entirety of the Twelve Step Model can be said to first involve developing awareness of one's problem and the emotions surrounding it (Step 1), followed by a commitment to make legitimate change (Steps 2 and 3), acting on those changes (Steps 4-9), and, lastly, maintaining those changes (Steps 10-12). This process wherein awareness leads to a commitment to action, followed by behavior change and eventual maintenance is the same progression entailed in the Stages of Change model (Connors, DiClemente, Velasquez, & Donovan, 2013) which is employed in MET (Miller et al., 1994;

Webb & Jeter, 2015). Although the emphasis on particular behaviors and goals may differ within these treatments (e.g., focusing on a higher power), they all nevertheless incorporate elements and processes of awareness, acceptance, behavior change, and continued pursuit of a more fulfilling life, and therefore would likely be conducive to the incorporation of forgiveness and the relevant techniques of the stand-alone forgiveness interventions described above (Webb & Jeter, 2015).

Various components of ACT, DBT, and MBCT share significant philosophical overlap with the concept of forgiveness. A major tenant of both forgiveness theory and these acceptance-based treatment modalities is the idea that one can experience negative emotions or events without harboring any resentment or being otherwise attached to them (Worthington & Sandage, 2016; Felder et al., 2012; Hayes & Lillis, 2012; Neacsiu et al., 2012). Additionally, the concept of mindfulness, which plays a large part in these acceptance-based modalities, also appears to share conceptual overlap with forgiveness. Both mindfulness and forgiveness entail the relinquishment of control, and a willingness to be open to experience without any attempt to change or otherwise augment that experience (Brown, Ryan, & Creswell, 2007; Worthington, 2006). Indeed, forgiveness and mindfulness have been shown to be positively associated with one another, including in the context of health (Webb et al., 2013).

Although all of these treatments could incorporate forgiveness into the treatment of suicidal behavior, ACT and DBT appear to be particularly applicable to the treatment of suicidal individuals for several reasons. For example, recent research has documented successful treatment of suicidal individuals using ACT (Ducasse et al., 2014; Walser et al., 2015). In both studies, frequency and severity of suicidal ideation decreased significantly over the course of treatment, with the Ducasse et al. (2014) study also finding significant reductions in

psychological pain. In the case of DBT, reductions in suicide attempts and ideation have long been documented (see Kliem, Kroger, & Kosfelder, 2010). In light of the salutary association of forgiveness with suicidal behavior in the present study and previous studies (e.g., Hirsch et al., 2011; Nsamenang et al., 2013), its incorporation into these interventions may produce further additive effects. Specifically, the association of forgiveness with decreased rumination (Fehr et al., 2010) and shame (Webb et al., 2008) may facilitate the acceptance process, particularly when the acceptance pertains to a specific offense. For example, a client who is struggling to forgive themselves for a specific offense may benefit from utilizing the various forgiveness processes mentioned above to facilitate the "self as context" approach to life, rather than "self as story" within the ACT framework (Hayes & Lillis, 2012). In addition to the improvements associated with increased acceptance in and of itself, facilitating forgiveness within these interventions may also lead to increased use of healthy coping behaviors (see Worthington et al., 2001).

To the extent that forgiveness and the processes inherent to it are consistent with a client's values, the incorporation of forgiveness into the treatment of suicidal individuals, whether it be via stand-alone methods or through incorporation of those methods into other interventions, appears warranted for several reasons. For one, suicidal individuals often struggle with issues of guilt and shame (Bryan, Morrow, Etienne, & Ray-Sannerud, 2013), and interpersonal difficulties (Joiner et al., 2009), all of which are inversely associated with forgiveness (Kato, 2016; Riek, Luna, & Schnabelrauch, 2014; McGaffin, Lyons, & Deane, 2013) and, furthermore, also have a direct linkage to the mediator variables of psychache and cynicism, as identified in the present study.

In the case of forgiveness of self and of uncontrollable situations, fostering forgiveness within suicidal individuals may be beneficial due to the alleviation of guilty or shameful feelings

80

and/or an increased ability to tolerate those feelings, which ultimately reduces the saliency of psychache and suicide risk. Indeed, Shneidman identified guilt and shame as two key feelings that may cause psychache (1993). With cynicism being adversely associated with the quality of one's interpersonal relationships (Hui & Hui, 2008), it appears that fostering forgiveness of others in suicidal clients may allow them to develop a less cynical worldview, thereby potentially developing healthier relationships and a generally improved sense of life satisfaction. Such feelings would then, in turn, mitigate feelings of psychache, and attenuate risk for suicidal behavior. That is, it may not be appropriate to approach each specific forgiveness dimension in an identical manner within a treatment context, as they do not necessarily relate to suicidal behavior via identical mechanisms.

Lastly, and related to the aspect of psychological needs, the Interpersonal Theory of Suicide (IPT; Joiner et al., 2009) also seems to have some relevance to Shneidman's theory in the context of forgiveness. Specifically, to the extent that the needs of affiliation and succorance are analogous to the constructs of thwarted belongingness and perceived burdensomeness, respectively, forgiveness may also be an appropriate intervention through which to address those thwarted interpersonal needs. Indeed, the limited number of studies that have been done indeed show that forgiveness, particularly of self and of others, displays salutary associations with both thwarted belongingness and perceived burdensomeness (Cheavens, Cukrowicz, Hansen, & Mitchell, 2016; Nsamenang et al., 2013).

Addressing the effects of cynicism. As suggested by the results of the present study and extant literature on cynicism, it appears that cynicism often results in a variety of interpersonal problems such as feelings of loneliness (Neto, 2006), lack of social support (Hart, 1999), distrust of others (Arbisi et al., 2013), and an avoidant conflict resolution style (Chen & Zhang, 2004).

This combination of isolation, avoidance, and distrust of both close social supports and healthcare providers understandably confers a heightened level of risk for a variety of negative health-related outcomes, including suicidal behavior.

As such, addressing cynicism in a therapeutic context may allow individuals to improve their existing interpersonal relationships, or learn the skills necessary to form healthy new relationships. Sentiments reflective of cynicism have long been expressed by clients (e.g., "I can't trust anyone"), with a variety of strategies having been developed to facilitate interpersonal trust, a more optimistic worldview, and appropriate methods of conflict resolution and expression of affect. The most effective treatment approaches that are able to address all of these elements of the cynical worldview appear to be cognitive-based approaches (e.g., Cognitive Behavioral Therapy [CBT; Hollon & Beck, 1994], Rational Emotive Behavior Therapy [REBT; Ellis & Ellis, 2011]).

For example, a substantial number of studies have documented the efficacy of both CBT and REBT in the treatment of anger problems, which involves learning prosocial ways of interacting with others, reframing one's preconceptions of the self, others, and the world (i.e., schemas), and expressing one's emotions in less hostile ways, all of which helps to facilitate healthier relationships (see Beck & Fernandez, 1998; McCarthy & Seid, 2010). Additionally, some literature suggests that CBT is effective in helping clients develop more optimistic worldviews (Henriksson, Anclair, & Hiltunen, 2016), while a cynical worldview has been linked to Ellis' concept of irrational thinking and low frustration tolerance (Watson & Cuthane, 2005). Thus, it appears that cynical individuals whose worldviews are characterized by absolutistic thinking, poor affect expression and conflict resolution skills, and a generally negative outlook on life would likely benefit from such cognitive-based approaches, in addition to the

82

incorporation of the forgiveness-based approaches described above. It should be noted, however, that clients who experience psychological pain and subsequent suicidal behavior as a result of such cynicism may require therapists to use additional techniques within these cognitive-behavioral frameworks, or may require different therapeutic approaches altogether. Such approaches are described in the next section in the context of psychache.

Psychache as a primary intervention target. Although the fostering of positive psychological characteristics is a potential, and likely effective, means of attenuating or preventing suicidal behavior, such strategies may not be effective for individuals in extreme states of perturbation, or who are actively planning a suicide attempt (Huffman et al., 2014); that is, such strategies may not be effective for the immediate reduction of severe psychological distress due to the highly constricted viewpoint of the suicidal individual, who may not be readily able to wholly engage in the forgiveness process. In these instances, intervention strategies aimed at the immediate reduction of psychological distress, or coping with the distressing emotions that may exacerbate one's psychache, may be more clinically indicated.

At present, no interventions have been developed that are based *explicitly* on the alleviation of psychache as conceptualized by Shneidman, with the exception of Shneidman's own conceptualization of anodyne psychotherapy for suicide (see Shneidman, 2005). In this conceptualization of treatment, Shneidman states that the primary objective for alleviating the patient's psychache is to help the patient better meet their psychological needs. For example, a patient who is suicidal after grieving the loss of a child may be experiencing the thwarted needs of affiliation and nurturance, with the therapist's job being to help this person meet the need in some other way (e.g., finding support from others). If this need is impossible to meet either practically or subjectively from the patient's point of view, the therapist may also pursue the

alternative route of reconceptualizing the patient's understanding of his/her pain. Specifically,

Shneidman states "…the therapist will wish to redefine and fine-tune [the patient's]

understanding that, in actual practice, words like 'unbearable' and 'intolerable' really mean

barely bearable and somehow tolerable, and that these insights can be incorporated into a

scenario for long-term survival" (Shneidman, 2005, p. 11). This specific intervention has not,

however, been empirically evaluated to the author's knowledge.

Despite the lack of psychache-based interventions, many pre-existing interventions

already incorporate many of the key elements of what is necessary to alleviate a patient's

psychache and prevent subsequent suicidal behavior. As mentioned above, these interventions

include stand-alone forgiveness-based modalities (e.g., Forgiveness Therapy and forgiveness

psychoeducation), modalities conducive to the infusion of the process of forgiveness (e.g., TSF

and MET), and modalities sharing acceptance-based principles (e.g., ACT, DBT, and MBCT)

(see Webb et al., 2015). In the same way that these interventions may foster increased

forgiveness, improving the patient's ability to accept and be a mindful observer of his/her

distressing thoughts and emotions may increase one's ability to tolerate his/her psychache.

Although no known studies have experimentally assessed how acceptance-based approaches

directly improve one's ability to tolerate psychological pain, the use of acceptance facilitates

increased physical pain tolerance (Masedo & Esteve, 2007), with fMRI-based research

suggesting that the physical and "mental" pain systems share a large degree of anatomical

overlap (Eisenberger, 2015). Such similarities suggest that the salutary forgiveness-psychache

associations found in the present study may be a function of the pain-relieving effects of

increased acceptance. That is, it may be that higher levels of acceptance are associated with high

levels of forgiveness, which are in turn associated with lower levels of psychache, which are subsequently associated with lower levels of suicidal behavior.

In addition to increasing the client's subjective tolerance for psychache, these therapies may also provide the client with additional skills that may reduce his/her long-term frequency and severity of psychache. For example, the use of value-directed action via ACT may help to foster behaviors that help the client to live a life more consistent with his/her values, thereby reducing the likelihood of severe instances of psychache (Hayes & Lillis, 2012). In the case of DBT, the use of the skills group component, as well as the implementation of later stages of the individual component of therapy (e.g., resolving problems of living, increasing the client's sense of connectedness with others), may help foster healthier and more effective emotion regulation techniques that do not involve deliberate self-harm or maladaptive interpersonal styles (Linehan, 2014).

Whether it is through increased tolerance of psychological pain, or through the use of healthier coping behaviors, it appears that these modalities are readily adaptable to explicitly incorporate and address psychache, and may already serve a function of psychological pain relief, while simply using different language (e.g., dysregulation in DBT [Linehan, 2014]). Such inclusion may not even necessarily involve any direct changes to the way in which psychotherapy is conducted but, rather, may involve the therapist simply being increasingly mindful of the patient's psychological pain, particularly in instances where he/she reflects constricted thinking, as this is when clients are most at risk of engaging in suicidal behavior per Shneidman's theory (1993).

This is not to say, however, that acceptance-based approaches are the *only* appropriate treatments for addressing forgiveness, psychache, and cynicism. Cognitive approaches such as

Rational-Emotive Behavior Therapy (REBT; Ellis & Ellis, 2011), which are designed to facilitate the increased use of more flexible and less demanding thoughts, could also be appropriate to the extent that they allow the individual to abstain from absolutistic thinking (e.g., "Suicide is the only way to end my pain") and promote a more optimistic worldview. Approaches based in the psychodynamic tradition, such as Interpersonal Psychotherapy (IPT, Frank & Levenson, 2011) may also be appropriate to the extent that they allow the client to gain insight into the source of their psychological pain and improve their interpersonal relationships.

Limitations

Several limitations to the present study should be noted. In terms of sample characteristics, the sample consisted primarily of white college students, many of whom were from southern Appalachia. A noted emphasis on religion, specifically Christianity, in this region of the United States (Pew Research Center, 2016), may have influenced the degree to which the present sample found forgiveness to be important. Such a belief in the importance of forgiveness may not be as strong in those who practice other faiths, in secular individuals, and/or individuals from other geographic regions of the country or world. Moreover, the lack of age-related and ethnic diversity does not allow any inferences to be made regarding how our results may apply to older or younger individuals, or those from other ethnic backgrounds. The sample was also primarily female, and although gender was used as a control variable, the present study did not examine any specific gender differences in the forgiveness-suicidal behavior association. In addition, only two participants identified as transgender. With increased rates of suicidal behavior in transgender individuals in comparison to the general population (see Haas, Rogers, & Herman, 2014), the associations between forgiveness and suicidal behavior in the present

study should be investigated in this population to facilitate the treatment of individuals in another at-risk group.

An important statistical limitation of this study was that after conducting the originally proposed analyses for the study, depression and hopelessness were considered to be mis-specified as covariates in the model, with implications for Type II error. Alternatively, depression and hopelessness should be considered as parallel mediators with psychache when considering the indirect association of forgiveness with suicidal behavior (Webb et al., 2015). Additional analyses were conducted which did not include depression and hopelessness in the estimation of the models, as Hayes' methods do not formally allow for parallel mediators in the analysis of serial mediation. As such, the present study's results should be regarded as exploratory, rather than confirmatory, in nature, and could potentially have resulted in an increased prevalence of Type I error. More rigorous studies of a confirmatory nature should be conducted to replicate our results, and to determine the degree to which Type I error may have impacted this study. Also, the removal of depression and hopelessness does not allow for direct comparisons of their effects on suicidal behavior in relation to psychache. Future studies should investigate the role that these variables play in the context of Webb's model, perhaps via statistical modeling techniques, such as structural equation modeling, that can simultaneously incorporate serial and parallel mediators.

Finally, the correlational nature of the study prevents any direct inferences about causality and directionality among variables. While the hypothesized model in the present study was based on a theoretical model, supported by empirical literature (Webb et al., 2015), longitudinal and experimental designs are necessary to allow for inferences about the degree to which any of the focal variables may have caused another.

Summary, Conclusions, and Future Directions

Suicide is a major public health concern, and only relatively recently have scholars begun to investigate the role in which positive psychological characteristics, such as forgiveness, may play in suicide-related outcomes. Moreover, the present study is the first to investigate the ways in which cynicism and psychache affect the forgiveness-suicidal behavior association, and is the first study to empirically investigate the theoretical model proposed by Webb and colleagues (2015). In sum, we found that both forgiveness of self and of uncontrollable situations were indirectly associated with suicidal behavior via psychache, with forgiveness of self also exhibiting an initial basic multivariable association with suicidal behavior (i.e., controlling for demographics, but prior to accounting for the mediators of cynicism and psychache). Forgiveness of others, on the other hand, was indirectly associated with suicidal behavior via cynicism and psychache in serial fashion. Such results were largely supportive of Webb's model of the forgiveness-suicidal behavior association, as well as Shneidman's (1993) theory of suicide as psychache.

It should also be noted that the present study only tested a portion of the variables included in Webb's model. Other variables, such as meaning in life and health-related functioning should be incorporated into future studies to further test theoretical associations. Moreover, a host of new variables have been identified that may also play a role in the forgiveness-suicidal behavior association, particularly in the context of how forgiveness may be associated with psychache. These variables include cynicism and factors related to it, such as self-esteem and life satisfaction. Indeed, Webb and colleagues (2015, p. 54; emphasis in original) stated that they have "…*begun* to identify a variety of potential mediators" of the forgiveness-

suicidal behavior association, and the above-mentioned variables may be additional newly-identified mediators that warrant further testing.

All of these previously mentioned associations between forgiveness and the present study's focal variables should also be examined in the context of substance use, which is another crucial outcome in the context of Webb's model, particularly given its strong association to suicidal behavior. Other dimensions of forgiveness, such as feeling forgiven by God, may also be associated with suicidal behavior. In the long-term, and as more knowledge is gained regarding the relations between the variables of our study, research into the effectiveness of incorporating forgiveness, cynicism, and psychache into a treatment context should be conducted in order to determine their benefits. Ultimately, further progress in this line of research will contribute to the development and implementation of increasingly effective interventions, and may improve suicide-related outcomes for those suffering from pervasive psychological pain and suicidal thoughts.

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Appendix: Study Measures

Demographic Information

Please indicate the following:

   A. Gender: male   female   transgender

   B. Age: _____

   C. Year in College: 1   2   3   4   5   6   7+

   D. Race/Ethnicity: American Indian   Asian   Black/African American

                                  Native Hawaiian/Other   Pacific Islander   White

                                  Hispanic   Latino

   F. Marital Status: single (never married)   married separated   divorced

                                  other: _____

   G. Height: _____ feet   _____ inches

   H. Weight: _____ pounds

Heartland Forgiveness Scale

Directions: In the course of our lives negative things may occur because of our own actions, the actions of others, or circumstances beyond our control. For some time after these events, we may have negative thoughts or feelings about ourselves, others, or the situation. Think about how you typically respond to such negative events. Next to each of the following items write the number (from the 7-point scale below) that best describes how you typically respond to the type of negative situation described. There are no right or wrong answers. Please be as open as possible in your answers.

1	2	3	4	5	6	7
Almost Always False of Me		More Often False of Me		More Often True of Me		Almost Always True of Me

1. Although I feel badly at first when I mess up, over time I can give myself some slack. _____

2. I hold grudges against myself for negative things I've done. _____

3. Learning from bad things that I've done helps me get over them. _____

4. It is really hard for me to accept myself once I've messed up. _____

5. With time I am understanding of myself for mistakes I've made. _____

6. I don't stop criticizing myself for negative things I've felt, thought, said, or done. _____

7. I continue to punish a person who has done something that I think is wrong. _____

8. With time I am understanding of others for the mistakes they've made. _____

9. I continue to be hard on others who have hurt me. _____

10. Although others have hurt me in the past, I have eventually been able to see them as good people. _____

11. If others mistreat me, I continue to think badly of them. _____

12. When someone disappoints me, I can eventually move past it. _____

13. When things go wrong for reasons that can't be controlled, I get stuck in negative thoughts about it. _____

14. With time I can be understanding of bad circumstances in my life. _____

15. If I am disappointed by uncontrollable circumstances in my life, I continue to think negatively about them. _____

16. I eventually make peace with bad situations in my life. _____

17. It's really hard for me to accept negative situations that aren't anybody's fault. _____

18. Eventually I let go of negative thoughts about bad circumstances that are beyond anyone's control. _____

The Psychache Scale

The following statements refer to your psychological pain, NOT your physical pain. By circling the appropriate number, please indicate how frequently each of the following occur.

1 = Never   2 = Sometimes   3 = Often   4 = Very Often   5 = Always

	Never	Sometimes	Often	Very Often	Always
1. I feel psychological pain.	1	2	3	4	5
2. I seem to ache inside.	1	2	3	4	5
3. My psychological pain seems worse than any physical pain.	1	2	3	4	5
4. My pain makes me want to scream.	1	2	3	4	5
5. My pain makes my life seem dark.	1	2	3	4	5
6. I can't understand why I suffer.	1	2	3	4	5
7. Psychologically, I feel terrible.	1	2	3	4	5
8. I hurt because I feel empty.	1	2	3	4	5
9. My soul aches.	1	2	3	4	5

Please continue this inventory using the following scale:

1 = Strongly Disagree   2 = Disagree   3 = Unsure   4 = Agree   5 = Strongly Agree

	Strongly Disagree	Disagree	Unsure	Agree	Strongly Agree
10. I can't take my pain any more.	1	2	3	4	5
11. Because of my pain, my situation is impossible.	1	2	3	4	5
12. My pain is making me fall apart.	1	2	3	4	5
13. My psychological pain affects everything I do.	1	2	3	4	5

Suicidal Behaviors Questionnaire-Revised

Instructions: Please circle the number beside the statement or phrase that best applies to you.

1. Have you ever thought about or attempted to kill yourself? (Circle only one):

> 1 = Never
> 2 = It was just a brief passing thought
> 3a = I have had a plan at least once to kill myself but did not try to do it
> 3b = I have had a plan at least once to kill myself and really wanted to die
> 4a = I have attempted to kill myself, but did not want to die
> 4b = I have attempted to kill myself, and really hoped to die

2. How often have you thought about killing yourself in the past year? (Circle only one):

> 1 = Never
> 2 = Rarely (1 time)
> 3 = Sometimes (2 times)
> 4 = Often (3-4 times)
> 5 = Very Often (5 or more times)

3. Have you ever told someone that you were going to commit suicide, or that you might do it? (Circle only one):

> 1 = No
> 2a = Yes, at one time, but did not really want to die
> 2b = Yes, at one time, and really wanted to do it
> 3a = Yes, more than once, but did not want to do it
> 3b = Yes, more than once, and really wanted to do it

4. How likely is it that you will attempt suicide someday? (Circle only one):

> 0 = Never
> 1 = No chance at all
> 2 = Rather unlikely
> 3 = Unlikely
> 4 = Likely
> 5 = Rather likely
> 6 = Very likely

Social Axioms Survey (Note: Items for the Cynicism subscale are **bolded**)

We are conducting a survey on social beliefs and would like to seek your cooperation to answer some questions. There are no right or wrong answers. Please answer the questions according to your individual opinion. The results of the survey will only be used for the purpose of research, and we will keep the results strictly confidential.

Instructions:
The following sentences are statements related to beliefs. Please read each statement carefully, and check the box that most closely reflects your opinion.

Example:	Strongly disbelieve	Disbelieve	No opinion	Believe	Strongly believe
Going to bed early and getting up early make people healthy.	1	2	3	(4)	5

Please answer all the questions. Thank you for your co-operation!

		Strongly disbelieve	Disbelieve	No opinion	Believe	Strongly believe
1.	People will stop working hard after they secure a comfortable life.	1	2	3	4	5
2.	One will succeed if he/she really tries.	1	2	3	4	5
3.	People's behavior remains similar from situation to situation.	1	2	3	4	5
4.	Current losses are not necessarily bad for one's long-term future.	1	2	3	4	5
5.	Adversity can be overcome by effort.	1	2	3	4	5
6.	People's wealth is determined by fate.	1	2	3	4	5
7.	Belief in a religion helps one understand the meaning of life.	1	2	3	4	5
8.	One gets from life as much as one puts into it.	1	2	3	4	5
9.	People act more or less the same way regardless of the people they interact with.	1	2	3	4	5
10.	Major events in life have nothing to do with fate.	1	2	3	4	5
11.	Individual characteristics, such as appearance and birthday, affect one's fate.	1	2	3	4	5
12.	A situation can change drastically in an unexpected direction.	1	2	3	4	5
13.	Some people are born with bad luck as their destiny.	1	2	3	4	5
14.	Fate determines a person's success in life.	1	2	3	4	5
15.	There is usually only one way to solve a problem.	1	2	3	4	5
16.	People are very different from each other.	1	2	3	4	5
17.	Every problem has a solution.	1	2	3	4	5
18.	Success requires strong willpower.	1	2	3	4	5
19.	**People enjoy watching others fight among themselves.**	1	2	3	4	5
20.	Good luck follows if one survives a disaster.	1	2	3	4	5

		Strongly disbelieve	Disbelieve	No opinion	Believe	Strongly believe
21.	There are many ways for people to predict what will happen in the future.	1	2	3	4	5
22.	One's behaviors may be contrary to his or her true feelings.	1	2	3	4	5
23.	Human behavior changes with the social context.	1	2	3	4	5
24.	Matters of life and death are determined by fate.	1	2	3	4	5
25.	There are certain ways to help us improve our luck and avoid unlucky things.	1	2	3	4	5
26.	People may behave unpredictably.	1	2	3	4	5
27.	Religion makes people escape from reality.	1	2	3	4	5
28.	Good fortune or bad fortune are pre-ordained.	1	2	3	4	5
29.	Opportunities only present themselves to those who are seeking them.	1	2	3	4	5
30.	There are many equally good ways to deal with a problem.	1	2	3	4	5
31.	Failures can make people wiser.	1	2	3	4	5
32.	**Old people are usually stubborn and biased.**	1	2	3	4	5
33.	**People create hurdles to prevent others from succeeding.**	1	2	3	4	5
34.	Building the way step by step leads to success.	1	2	3	4	5
35.	People can suddenly lose everything they have.	1	2	3	4	5
36.	**People dislike others who succeed in life.**	1	2	3	4	5
37.	There are ways for people to find out about their fate.	1	2	3	4	5
38.	The use of a single set of rules to deal with most situations is effective.	1	2	3	4	5
39.	**To care about societal affairs only brings trouble for yourself.**	1	2	3	4	5
40.	Major events in people's life can be predicted.	1	2	3	4	5
41.	**Powerful people tend to exploit others.**	1	2	3	4	5
42.	There is usually more than one good way to handle a situation.	1	2	3	4	5
43.	Religious faith contributes to good mental health.	1	2	3	4	5
44.	It is impossible to read one's destiny.	1	2	3	4	5
45.	Knowledge is necessary for success.	1	2	3	4	5
46.	Religion contradicts science.	1	2	3	4	5
47.	A person's behavior is influenced by many factors.	1	2	3	4	5
48.	Different versions of the same reality can all be true.	1	2	3	4	5
49.	**People deeply in love are usually blind.**	1	2	3	4	5
50.	To deal with things in a flexible way leads to success.	1	2	3	4	5

		Strongly disbelieve	Disbelieve	No opinion	Believe	Strongly believe
51.	Ignorance leads people to believe in a supreme being.	1	2	3	4	5
52.	The people whom a person will love in his or her life is determined by fate.	1	2	3	4	5
53.	**The various social institutions in society are biased towards the rich.**	1	2	3	4	5
54.	Individual characteristics, such as appearance and birthday, can reveal one's fate.	1	2	3	4	5
55.	It is impossible for people to foresee what will happen to them.	1	2	3	4	5
56.	**It is rare to see a happy ending in real life.**	1	2	3	4	5
57.	There are certain ways for people to improve their destiny.	1	2	3	4	5
58.	Luck can be enhanced by certain tactics.	1	2	3	4	5
59.	Practicing a religion unites people with others.	1	2	3	4	5
60.	There are ways that people can follow to improve their fortune.	1	2	3	4	5
61.	Competition brings about progress.	1	2	3	4	5
62.	Unlucky events can be avoided.	1	2	3	4	5
63.	Religious people are more likely to maintain moral standards.	1	2	3	4	5
64.	Caution helps avoid mistakes.	1	2	3	4	5
65.	Every person is unique.	1	2	3	4	5
66.	Religious practice makes it harder for people to think independently.	1	2	3	4	5
67.	**Power and status make people arrogant.**	1	2	3	4	5
68.	Failure is the beginning of success.	1	2	3	4	5
69.	Fate can never be changed.	1	2	3	4	5
70.	Fate has nothing to do with the tragedies of life.	1	2	3	4	5
71.	Many issues appear far more complicated than they really are.	1	2	3	4	5
72.	People can improve their fate if they really want to.	1	2	3	4	5
73.	Most disasters can be predicted.	1	2	3	4	5
74.	Religion slows down human progress.	1	2	3	4	5
75.	Religion makes people healthier.	1	2	3	4	5
76.	There is a supreme being controlling the universe.	1	2	3	4	5
77.	**People who become rich and successful forget the people who helped them along the way.**	1	2	3	4	5
78.	Difficult problems can be overcome by hard work and persistence.	1	2	3	4	5
79.	A person changes little over the course of his or her life.	1	2	3	4	5
80.	**Kind-hearted people usually suffer losses.**	1	2	3	4	5

		Strongly disbelieve	Disbelieve	No opinion	Believe	Strongly believe
81.	**Opportunities for people to get wealthy promote dishonesty.**	1	2	3	4	5
82.	Flexibility has nothing to do with success.	1	2	3	4	5
83.	Only weak people need religion.	1	2	3	4	5
84.	Religion makes people happier.	1	2	3	4	5
85.	Unlucky people can improve their luck if they try.	1	2	3	4	5
86.	**Praise is just a sweet way for people to get what they want from others.**	1	2	3	4	5
87.	Hard working people will achieve more in the end.	1	2	3	4	5
88.	Belief in a religion makes people good citizens.	1	2	3	4	5
89.	People with different opinions can all be correct.	1	2	3	4	5
90.	Fate determines one's successes and failures.	1	2	3	4	5
91.	**Kind-hearted people are easily bullied.**	1	2	3	4	5
92.	Religious beliefs lead to unscientific thinking.	1	2	3	4	5
93.	One who does not know how to plan his or her future will eventually fail.	1	2	3	4	5
94.	People may have opposite behaviors on different occasions.	1	2	3	4	5
95.	Endurance and determination are key to achieving goals.	1	2	3	4	5
96.	Hard-working people are well rewarded.	1	2	3	4	5
97.	Religion helps people make good choices for their lives.	1	2	3	4	5
98.	**Good connections with people in power are more important than hard work.**	1	2	3	4	5
99.	A bad situation can suddenly change for the better.	1	2	3	4	5
100.	Fortune comes when you least expect it.	1	2	3	4	5
101.	Some people are born lucky.	1	2	3	4	5
102.	Being flexible in life is the key to happiness.	1	2	3	4	5
103.	**The only way to get ahead is to take advantage of others.**	1	2	3	4	5
104.	A person can change drastically in a short time.	1	2	3	4	5
105.	**People always expect something in return for a favor.**	1	2	3	4	5
106.	A person is either good or evil, and circumstances have nothing to do with it.	1	2	3	4	5
107.	Evidence of a supreme being is everywhere for those who seek its signs.	1	2	3	4	5
108.	**Young people are impulsive and unreliable.**	1	2	3	4	5
109.	One has to deal with matters according to the specific circumstances.	1	2	3	4	5

Beck Hopelessness Scale

Please answer the following questions by circling either true or false.

R   True / False 1. I look forward to the future with hope and enthusiasm.

True / False 2. I might as well give up because I can't make things better for myself.

R   True / False 3. When things go badly, I'm helped by knowing they can't stay that way forever.

True / False 4. I can't imagine what my life would be like in 10 years.

R   True / False 5. I have enough time to accomplish the things I most want to do.

R   True / False 6. In the future, I expect to succeed in what concerns me most.

True / False 7. My future seems dark to me.

R   True / False 8. I expect to get more of the good things in life than the average person.

True / False 9. I just don't get the breaks, and there's no reason to believe I will in the future.

R   True / False 10. My past experiences have prepared me well for the future.

True / False 11. All I can see ahead of me is unpleasantness rather than pleasantness.

True / False 12. I don't expect to get what I really want.

R   True / False 13. When I look ahead to the future, I expect I will be happier than I am now.

True / False 14. Things just won't work out the way I want them to.

R   True / False 15. I have great faith in the future.

True / False 16. I never get what I want so it's foolish to want anything.

True / False 17. It is very unlikely that I will get any real satisfaction in the future.

True / False 18. The future seems vague and uncertain to me.

R   True / False 19. I can look forward to more good times than bad times.

True / False 20. There's no use in really trying to get something I want because I probably won't get it.

R = REVERSE SCORE

The Religious Background and Behaviors Questionnaire

1. Which of the following best describes you at the present time? (Check one)

    _____ Atheist   - I do not believe in God.

    _____ Agnostic   - I believe we can't really know about God.

    _____ Unsure   - I don't know what to believe about God.

    _____ Spiritual   - I believe in God, but I'm not religious.

    _____ Religious   - I believe in God and practice religion.

2. For the past year, how often have you done the following? (Circle one number for each line.)

	Never	Rarely	Once a month	Twice a month	Once a Week	Twice a week	Almost Daily	More than once a day
a. Thought about God	1	2	3	4	5	6	7	8
b. Prayed	1	2	3	4	5	6	7	8
c. Meditated	1	2	3	4	5	6	7	8
d. Attended worship service	1	2	3	4	5	6	7	8
e. Read-studied scriptures, holy writings	1	2	3	4	5	6	7	8
f. Had direct experiences of God	1	2	3	4	5	6	7	8

3. Have you ever in your life:

	Never	Yes, in the past but not now	Yes, and I still do
a. Believed in God?	1	2	3
b. Prayed?	1	2	3
c. Meditated?	1	2	3
d. Attended worship services regularly?	1	2	3
e. Read scriptures or holy writings regularly?	1	2	3
f. Had direct experiences of God?	1	2	3

Depression, Anxiety, and Stress Scales

Please read each statement and circle a number 0, 1, 2 or 3 that indicates how much the statement applied to you *over the past week*. There are no right or wrong answers. Do not spend too much time on any statement.

The rating scale is as follows:

0 Did not apply to me at all
1 Applied to me to some degree, or some of the time
2 Applied to me to a considerable degree, or a good part of time
3 Applied to me very much, or most of the time

1	I found it hard to wind down	0	1	2	3
2	I was aware of dryness of my mouth	0	1	2	3
3	I couldn't seem to experience any positive feeling at all	0	1	2	3
4	I experienced breathing difficulty (e.g., excessively rapid breathing, breathlessness in the absence of physical exertion)	0	1	2	3
5	I found it difficult to work up the initiative to do things	0	1	2	3
6	I tended to over-react to situations	0	1	2	3
7	I experienced trembling (e.g., in the hands)	0	1	2	3
8	I felt that I was using a lot of nervous energy	0	1	2	3
9	I was worried about situations in which I might panic and make a fool of myself	0	1	2	3
10	I felt that I had nothing to look forward to	0	1	2	3
11	I found myself getting agitated	0	1	2	3
12	I found it difficult to relax	0	1	2	3
13	I felt down-hearted and blue	0	1	2	3
14	I was intolerant of anything that kept me from getting on with what I was doing	0	1	2	3
15	I felt I was close to panic	0	1	2	3
16	I was unable to become enthusiastic about anything	0	1	2	3
17	I felt I wasn't worth much as a person	0	1	2	3
18	I felt that I was rather touchy	0	1	2	3
19	I was aware of the action of my heart in the absence of physical exertion (e.g., sense of heart rate increase, heart missing a beat)	0	1	2	3
20	I felt scared without any good reason	0	1	2	3
21	I felt that life was meaningless	0	1	2	3

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