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Interpersonal Needs and Suicide Risk: Examining Indirect Effects of
Internal Hostility and Feeling Forgiven

A dissertation
presented to
the faculty of the Department of Psychology
East Tennessee State University

In partial fulfillment
of the requirements for the degree
Doctor of Philosophy in Psychology

by
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August 2021

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spirituality

ABSTRACT

Interpersonal Needs and Suicide Risk: Examining Indirect Effects of

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by

Kelley C. Berto

Suicide is a national public health concern, and unmet interpersonal needs (i.e., perceived burdensomeness, thwarted belongingness) may contribute to enhanced risk. However, mechanisms of action and certain protective variables are not well understood. The present study examined simple mediation models, with internal hostility as a mechanism of action between interpersonal needs and suicide risk. Additionally, our study examined the moderating role of various aspects of receiving forgiveness on the association between interpersonal needs and internal hostility in these simple mediation models. A community-based convenience sample was surveyed ($N=712$). Our findings indicated that internal hostility partially mediated the association between perceived burdensomeness/thwarted belongingness and suicide risk, such that higher levels of interpersonal needs variables were associated with higher levels of internal hostility, and in turn, higher levels of suicide risk. No evidence was found for a buffering effect of feeling forgiven on these statistical models. Our findings suggest that negative, internalized self-perception contributes to suicide risk above and beyond that of interpersonal needs alone. Implications are discussed for both theory and practice.

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Chapter 1. Introduction

Suicide, defined as the act of intentionally causing one's own death, is a global health concern, accounting for nearly 800,000 deaths every year and occurring at a global rate of 10.5 persons per 100,000 population (World Health Organization [WHO], 2019). In the United States, suicide accounts for upwards of 48,000 deaths every year (Center for Disease Control and Prevention [CDC], 2020; Sinyor et al., 2017), with most recent data indicating 48,344 deaths in the year of 2018. Risk for suicide is multi-factorial, encompassing biological, demographic, cognitive-emotional, and psychopathological elements (Batty et al., 2018; Hoertel et al., 2015; Liu et al., 2019). Further, a robust predictor of suicide is difficulties in interpersonal relationships, including conflict or loneliness (Bennardi et al., 2017; Kazan et al., 2016).

Specifically, unmet interpersonal needs have been established as robust predictors of suicidality. Thwarted belongingness, or perceiving a lack of close interpersonal relationships, and perceived burdensomeness, or feeling like one's presence presents challenge for others, have been linked to enhanced suicidal ideation and behaviors in a number of studies (Chu et al., 2017). A few mechanisms for how interpersonal needs are related to suicide risk have been identified, such as hopelessness, depression, and a lack of meaning in life (Barzilay et al., 2015; Kleiman & Beaver, 2013). Another understudied potential mechanism is the mediating variable of how one perceives him- or herself. Based on sociometer theory, which states that an evaluation of how one performs in social contexts directly influences how one evaluates themselves (Leary & Baumeister, 2000), it may be that dissatisfaction in interpersonal relationships could lead one to have a negative view of themselves, thus contributing to increased risk for suicide.

While some factors increase risk for suicide, other factors may be protective. Of interest in the present study, the experience of forgiveness (which can be defined as an intentional relinquishment of negative thoughts towards a perceived transgressor) has been linked to decreased risk for suicide (Worthington & Scherer, 2004). A large body of research exists on how extending forgiveness to others predicts lower levels of risk (Hirsch et al., 2011; Krause & Ellison, 2003; Tse & Yip, 2009), and a growing body of research is emerging on how receiving forgiveness is also inversely related to suicide risk (Worthington et al., 2007). Feeling forgiven by others has been demonstrated to be inversely predictive of suicide risk, as has forgiving oneself (Cheavens et al., 2016, Hirsch et al., 2011) and feeling forgiven by God (Pugh, 2019).

In the current study, we examine the notion that how one perceives their relationship with others (i.e., perceived burdensomeness, thwarted belongingness) is predictive of suicide risk, and further, that this association may be better explained by the mediating variable of how one perceives themselves (i.e., internal hostility). Further, we examine the potentially protective factors of receiving forgiveness in this model (i.e., feeling forgiven by others, forgiving oneself, feeling forgiven by God), as experiencing forgiveness may assuage the effect of thwarted interpersonal needs on one's self-perception, thus contributing to reduced risk for suicide. In the following sections, we discuss the theory of how interpersonal needs and self-perception may relate to suicide risk, as well as the potentially protective role of experiencing forgiveness in the association between interpersonal needs and suicide risk.

Suicide Risk

Epidemiology

Suicide is a significant public health concern, both nationally and globally (Mishara, 2006; Sinyor et al., 2017). Internationally, suicide is the fourteenth leading cause of death (Nock

et al., 2012), and in the United States, it is the tenth leading cause of death (CDC, 2020; Hedegaard et al., 2018; Xu et al., 2016). Of concern, U.S. suicide rates have steadily increased since 1999 (American Foundation for Suicide Prevention [AFSP], 2021; Hedegaard et al., 2018) and, currently, Americans die by suicide at a rate of 14.2 per 100,000 individuals, averaging 132 deaths by suicide per day (AFSP, 2021), or one every 11 minutes (CDC, 2020).

Despite the prevalence of suicide deaths, completed suicide is far less common than suicide attempts or suicidal ideation, both of which are significant risk factors for death by suicide (Kessler et al., 2005; Luca et al., 2016). At the most basic level, suicidal ideation, or thoughts of suicide, occurs most frequently. Internationally, the lifetime prevalence of suicidal ideation is 9.2%, with 3.1% of the population having made a suicide plan at some point during their lifetime (Nock et al., 2008). At the national level, 3.8% of adults have been reported to have endorsed suicidal ideation in a prior twelve-month period (Han et al., 2015). This finding was corroborated in another national sample of employed United States adults ($N= 184,300$), in which 3.1% reported suicide ideation during the prior twelve-months (Han et al., 2016). Although not all who contemplate suicide go on to attempt or die by suicide (Klonsky & May, 2014), previous research indicates that suicidal ideation is a robust predictor of a future suicide attempt (Burke et al., 2016; Rappaport et al., 2017).

Suicide attempts, another factor contributing to overall suicide risk, are presumed to be widely prevalent. In the United States, for every death by suicide, it is estimated that there are 25 or more suicide attempts; in 2018 in the United States, there was an estimated 1.4 million suicide attempts (AFSP, 2021). Parallel to the growing rates of deaths by suicide, the suicide attempt rate also seems to be growing. For example, in a nationally representative sample ($N= 69,341$), Olfson and colleagues (2017) discovered that 0.79% of adults in the United States had made a

suicide attempt during 2012-2013, which was a significant increase from a 0.62% attempt rate in 2004-2005.

Risk Factors for Suicide

Given the increasing prevalence of suicidal behavior, further investigation is warranted on risk factors contributing to suicide. Known risk factors for suicide encompass biological, sociodemographic, psychopathological factors, and social domains, which we will discuss in turn.

Evidence exists for a biological predisposition for suicide risk. Individuals are more likely to die by suicide if there was a family history of suicide, as evidenced in studies of primary care patients (Rihmer et al., 2013) and German adults ($N=7,177$; Sørensen et al., 2009).

Although the significant findings from these studies could be an artifact of environmental influence, twin and adoption studies suggest a genetic basis for suicide risk (Brent & Mann, 2005). As but one example, in a sample of Danish adoptees ($N=1,933$), biologically related siblings were more likely to demonstrate similar patterns of suicide risk to one another than biologically unrelated siblings (Petersen et al., 2014). Still yet, neurological differences are shown to exist between people who have died by suicide and otherwise mentally healthy individuals (Pandey, 2013; Pandey et al., 2014), further bolstering evidence for the biological basis of suicide risk.

Beyond purely biological or genetic factors, demographic variables such as age, sex, and race are associated with suicide risk. In general, there is a trend for suicide rates to increase with age, with the highest suicide rate being among adults aged 45-54 (19.7 deaths per 100,000), followed by those 85 and older (19.0 deaths per 100,000) (ASFP, 2017). However, when examining suicide attempts as opposed to deaths by suicide, one study found that young adults

aged 21 to 34 years old were more likely to attempt than any other age group (Olfson et al., 2017), suggesting that suicide risk may be prevalent in a wide variety of ages, but that lethality of attempts likely vary by age demographic.

Biological sex (i.e., either of the two main categories used to distinguish male and female based on reproductive function) is another established risk factor for suicide. Both internationally and nationally, males are consistently at greater risk for suicide than female counterparts, even when controlling for a variety of other factors, such as socioeconomic status or race (ASFP, 2017; Bertolote & Fleischmann, 2015; Crump et al., 2014; LeardMann et al., 2013). Indeed, the male rate of suicide is approximately 3.5 times the female rate in the United States (AFSP, 2021). Of note, however, females have been demonstrated to endorse higher levels of suicidal ideation and number of attempts than males in clinical samples, adolescent samples, and general population samples (AFSP, 2021; Olfson et al., 2017; Schaffer et al., 2015; Waldrop et al., 2007). This once again harkens to the variable of lethality of method; indeed, females are more likely to use less generally less lethal means than males (e.g., poisoning versus firearms) (Hedegaard et al., 2018). Of note, minority status of sexual orientation or gender-identity (i.e., an individual's perception of their masculine, feminine, or other-defined role within society) is another important factor that is predictive of increased suicide risk, as demonstrated in college samples (Silva et al., 2015), youth samples ($N=31,852$; Hatzenbuehler, 2011), and national samples (Haas et al., 2014).

Another factor predictive of risk includes race and ethnicity. In the United States, White individuals are most at risk for suicide, with a rate of 15.2 per 100,000 people (ASFP, 2017; Houle & Light, 2017). This rate was followed by American Indians and Alaskan Natives with a rate of 13.5 per 100,000, Asian Americans (6.7) and African Americans (6.1) (ASFP, 2017).

Most researchers attribute this difference to cultural factors that are sometimes associated with race; for example, African Americans, Asian Americans, and Hispanic/Latino Americans all may endorse higher levels of belongingness, which may protect against suicidality (Davidson et al., 2010; Hsieh, 2016).

Beyond demographic factors, individual-level differences in cognitive-emotional disposition also are associated with suicide risk. For example, poor problem-solving skills has been associated with increased risk in a variety of samples, including in college students, primary care patients, homeless individuals, adolescents, and veterans (Bozzay et al., 2016; Chu et al., 2017; Quiñones et al., 2015; Walker et al., 2017). Similarly, a sense of goal frustration, or inability to achieve desired outcomes, has been associated with suicidal behavior (Gooding et al., 2015; Hirsch, Cohn, et al., 2017; Klonsky & May, 2015). Another notable cognitive-emotional factor that is associated with increased risk is emotion dysregulation, or the inability to successfully control affective responses (Stanley et al., 2016). Emotion dysregulation has been strongly associated with suicide attempts in college students (Ammerman et al., 2015; Kranzler et al., 2016) and in clinical samples (Etain et al., 2017). Indeed, in one meta-analysis by Palmier-Claus and colleagues (2012), a significant association between unstable mood and suicide risk emerged.

Relatedly, a deficit in the ability to cope with stressful situations has also been associated with suicide risk. Negative styles of coping, such as self-blame or disengagement from the presenting problem, have been related to suicide behaviors in samples of inpatient adults (Horwitz et al., 2017) and LGBT women (Rabinovitch et al., 2015). Similar findings have been observed in other samples, such as in community samples of Portuguese women (Campos, Holden, Costa, et al., 2017), prisoners (Gooding et al., 2015), adolescents hospitalized for a

suicide attempt (Mirkovic et al., 2015), and Chinese college students ($N= 5,972$; Tang & Qin, 2015). The relationship between coping and suicide risk can be partially explained by Baumeister's escape theory of suicide (1990), which posits that individuals are at-risk for suicide if they perceive that a stressful situation exceeds personal coping capabilities, as these individuals might perceive death as a means of escaping from a stressful situation. Zhang and colleagues' Strain Theory of Suicide also partially explains this association, such that as stress or conflict increases, one's ability to cope may decrease and, further, persons who are unable to cope effectively (e.g., passive coping style; avoidance) are more likely to continue perceiving stressors, resulting in a feedback cycle of strain that contributes to suicide risk (Zhang et al., 2011).

Many of these cognitive-emotional factors exist in tandem with mental illness, which is one of the most robust predictors of suicidal ideation and behavior (Liu et al., 2019). In one nationally representative survey ($N= 34,653$), psychopathology significantly and longitudinally predicted a future suicide attempt ($b= .38, p < .005$), even when controlling for the effects of other factors including race or socioeconomic status (Hoertel et al., 2015). Of note, certain mental illnesses are highly correlated with suicide risk. For example, up to 75% of individuals with borderline personality disorder report a lifetime history of a suicide attempt (Goodman et al., 2017). Schizophrenia and bipolar disorder both present strong risk for suicide, with the former experiencing suicide at a rate of 867 per 100,000 (Kredentser et al., 2014), and the latter being 20-30 times more likely to die by suicide than the general population (Pompili et al., 2013). Finally, substance misuse is another strong correlate of suicide risk (Bagge et al., 2013; Hallgren et al., 2017), with those who most frequently attempt suicide also being most likely to suffer from a substance use disorder (Icick et al., 2017).

Still yet, psychopathology classified as “more common” can also be predictive of suicide risk. For example, individuals experiencing depression (7% twelve-month prevalence; American Psychiatric Association [APA], 2013) are more likely to experience suicidal ideation, as evidenced in nonclinical samples of college students (Campos et al., 2016; Wilcox et al., 2010). Depression contributes to suicide deaths as well. For example, Zhang and Li (2013) gathered information from proxy informants for people who had died by suicide ($N=392$) and from living controls ($N=416$), discovering a strong association between depression and suicide. Anxiety disorders, which are other common mental illnesses in the United States (7% twelve-month prevalence rate for social anxiety disorder; 2.9% for generalized anxiety disorder; APA, 2013), have been established as independent predictors of suicidal ideation (Baldessarini et al., 2016; Hill et al., 2011) and attempts or death by suicide (Conner et al., 2012; Sareen et al., 2005). As an example of the impact of anxiety on suicide risk, in one large longitudinal study conducted in Sweden ($N= 3,563$), people with anxiety disorders had a 3.3% risk for suicide, which was significantly higher than the general population sample, at 0.3% risk (Anderberg et al., 2016). Numerous potential mechanisms between psychopathology and suicide risk exist, including the presence of melancholic features (Brådvik et al., 2010), hopelessness (Zhang & Li, 2013), sleep disturbances (Bernert & Nadorff, 2015), irritability (Balázs et al., 2006), rumination, and intolerance of uncertainty (Kerkhof & van Spijker, 2011).

Interpersonal Risk Factors for Suicide

Whereas the aforementioned risk factors occur primarily at the intrapersonal level, of importance, and of relevance to the present study, interpersonal risk factors are also known to contribute to suicide risk. Deficits in interpersonal functioning can be evaluated in a number of different ways. First, an individual may perceive that they have few or no social relationships at

all. This may translate to experiencing feelings of loneliness, which has been related to suicide risk in a variety of samples, such as Latino college students (Chang, Díaz, et al., 2017), ethnically diverse college students (Hirsch, Webb, & Jeglic, 2011), and in a longitudinal, nationally representative sample of Spanish adults ($N=2,392$; Bennardi et al., 2017). Similarly, although some individuals may not feel lonely, they may feel a lack of social support from others in their networks (e.g., friends, family, school, work). Lack of social support has been linked to both suicidal ideation and attempts, including in adolescents admitted to a hospital following suicidal behavior (Miller et al., 2015), and in university students in Portugal (Gonçalves et al., 2014).

Other individuals may not feel lonely, but may experience other interpersonal situations that lead to suicide risk. Namely, being in relationships that are prone to conflict or strain is related to increased risk. As an example, in a sample of French adolescents ($N=39,542$), a strained relationship with one or both parents was significantly predicative of suicide attempts (Du Roscoät et al., 2016). Kazan and colleagues (2016) also identified in their systematic review of intimate partner relationships that relationship separation and poor-quality relationships were related to suicidal thoughts and behaviors. Further, poor relational interactions could also serve as a triggering event for a suicide attempt.

The Interpersonal Theory of Suicide

The interpersonal theory of suicide (IPTs), of importance in the present study, posits that specifically defined aspects of unmet social needs serve as risk factors for suicidal ideation and behaviors. The IPTs was developed by Thomas Joiner in the early 2000s, and has since been widely validated both in terms of its theory (Chu et al., 2017; Joiner, 2005; Van Orden et al., 2010) and in its psychometric measurement (Van Orden et al., 2012). In addition to acquired

capability for completing suicide (e.g., lacking fear of pain or dying), Joiner's theory states that two interpersonal states are among the greatest risks for suicidal behavior (Rogers & Joiner, 2019). Namely, perceived burdensomeness, or the perception that one's presence is a nuisance or presents hardship for others, and thwarted belongingness, which can be conceptualized as the unmet need for social connectedness, or the perceived absence of relational care, are known contributors to suicide risk.

The IPTS has been broadly examined in a number of studies. In a sample of U.S. undergraduates, Van Orden and colleagues (2008) found that the joint effects of perceived burdensomeness and thwarted belongingness were predictive of the expression of a desire for suicide and having heightened suicidal ideation ($N=309$). This finding was corroborated across international samples, such as in a study of Chinese college students aged 17 to 24 ($N=439$; Zhang, Lester, et al., 2013) and in Korean college students ($N=554$; Suh et al., 2017). The effects of IPTS variables on suicide risk has been tested in more targeted samples, with significant findings having been observed in samples of chronic pain patients ($N=303$, Wilson et al., 2013), veterans being admitted into psychiatric inpatient treatment ($N=185$; Monteith et al., 2013), transgender youth ($N=129$; Grossman et al., 2016), and Israeli and Arab adolescents ($N=1,196$; Barzilay et al., 2015). Finally, population studies have demonstrated the effects of interpersonal needs on suicide risk. In one community-based sample of adults ($N=6,133$), IPTS variables were predictive of suicidal ideation (Christensen et al., 2013). In a representative sample of the German population ($N=2,513$), the two-way interaction between perceived burdensomeness and thwarted belongingness was significantly predictive of increased suicidal behavior ($\beta=.211$, $p<.001$) (Glaesmer et al., 2017).

In one notable systematic review and meta-analysis by Chu and colleagues (2017), 122 distinct samples were coded and evaluated, and an overall significant moderate effect was found between the interpersonal theory variables and suicidal thoughts and behaviors ($r=.57, p<.001, k=97, N=44,484$). Of significance, this meta-analysis also studied the independent effect of these variables on suicide risk, with both thwarted belongingness ($r=.33, p<.001, k=24, N=9,108$), and perceived burdensomeness ($r=.42, p<.001, k=23, N=9,002$) yielding moderate relations to suicide risk.

Thwarted Belongingness

Indeed, the effects of the IPTS variables can be studied independently. Thwarted belongingness, a related but separate aspect of interpersonal functioning from perceived burdensomeness, is thought to be related to suicide risk based on the idea that the need to belong is a fundamental human need (Baumeister & Leary, 1995; Baumeister et al., 2007). When belongingness is perceived to be absent, individuals may perceive that life is not worth living, or that there is not enough support to overcome life's obstacles, thus contributing to increased suicide risk (Trout, 1980; Tucker & Wingate, 2014). Aspects of loneliness and a lack of social cohesion are embedded within this construct (Chu et al., 2017; Hawkley & Cacioppo, 2010). Theoretically, one may possess strong feelings of self-efficacy or effectiveness while simultaneously experiencing a lack of interpersonal care.

Thwarted belongingness has been related to suicide risk independent of perceived burdensomeness in a number of studies. For instance, in a study by Van Orden and colleagues (2008), perceived proximity and emotional closeness to peers was inversely related to suicidal ideation in college students, and, in another collegiate study ($N=249$), family belongingness contributed significant variance to statistical models predicting suicidal ideation (Ploskonka &

Servaty-Seib, 2015), such that a lower level of belongingness was associated with higher severity of ideation. In another study of individuals with substance use disorders, a lack of belongingness was a significant predictor of suicide attempts ($N=814$, You et al., 2011). Thwarted belongingness was demonstrated to be a significant mediating variable explaining the relation between insomnia and suicide risk across three samples of veterans ($N_1=937$, $N_2=3,386$, $N_3=417$), as the lack of sleep was predictive of one's ability to be able to relate to others (Hom et al., 2017). Finally, in one study of inpatient adolescents, the relationship between maternal attachment insecurity and suicide risk was mediated by feelings of thwarted belongingness ($N=124$; Venta et al., 2014). In sum, feeling relationally distant from potential systems of support has been shown to be associated with and predictive of suicide risk across a number of samples.

Perceived Burdensomeness

Perceived burdensomeness is a related but separate construct from thwarted belongingness (Van Orden et al., 2010). Perceived burdensomeness is thought to be related to increased suicidal ideation through the belief that one's death may have more value to others' than one's life (Chu et al., 2017). Theoretically, the construct of burdensomeness is separate from that of thwarted belongingness in that one can experience extensive networks of support, while still being at risk for suicide if one believes their presence confers liability on these systems (Rogers & Joiner, 2019). Indeed, the experience of burdensomeness actually often occurs within the context of close, supportive interpersonal relationships (McPherson et al., 2007; Rakic et al., 2018).

Several studies have demonstrated the link of perceived burdensomeness to suicidal ideation, including in collegiate samples (Gautam & Nagle, 2016), adult outpatients being treated

for an anxiety disorder (Teismann et al., 2016), and in a sample of American Indians (O’Keefe et al., 2014). In one national sample, an unexpected finding was revealed when it was observed that of those in their 40s, perceived burdensomeness was a significant predictor of suicide risk, whereas thwarted belongingness was not, perhaps due to higher levels of belongingness in this sample subset (e.g., being married, having a family; Christensen et al., 2013).

Other specific populations may be particularly susceptible to effects of perceived burdensomeness. For example, in a sample of American Indian participants, perceived burdensomeness was found to be predictive of suicidal ideation whereas thwarted belongingness was not (Cole et al., 2013), perhaps because of the high levels of community connectedness these individuals may feel (LaFrombroise et al., 2006). A similar finding was observed in a sample of Mexican American women, where perceived burdensomeness was specifically predictive of increased risk (Garza & Pettit, 2010). Older adults, who may be more likely to be dependent on family members to take care of them, may be more prone to endorse feelings of burdensomeness; indeed, the effect of perceived burdensomeness on suicide risk has been observed in a sample of individuals aged 65 and older ($N=70$; Jahn & Cukrowicz, 2011). Further, individuals who are chronically ill or in palliative care have been observed to be at heightened risk for suicide or wishing to die, likely due to perceptions of burdensomeness on loved ones. This was evidenced in case reviews of Huntington’s disease patients who had attempted suicide (Roman et al., 2018), as well as in a qualitative study of individuals with advanced cancer, organ failure, or degenerative neurological disease ($N=62$, Gudat et al., 2019).

Limitations of IPTS

Of note, not all studies have found convincing evidence for the IPTS, with one review of 66 studies finding mixed results of these variables on suicide-related outcomes (Ma et al., 2016).

As examples of inconclusive studies, in one study of U.S. veterans who endorsed symptoms of depression, the interacting effect of burdensomeness and thwarted belongingness was not predictive of suicide risk, although the IPTS variables did demonstrate a correlation with suicidal ideation (Pfeiffer et al., 2014). This study did not utilize a specified IPTS scale, but rather, an interpersonal support evaluation list, which may have contributed to nonsignificant findings. In another sample of active duty U.S. Air Force members, only partial support was found for the IPTS constructs, with perceived burdensomeness being predictive of risk, whereas thwarted belongingness was not (Bryan et al., 2010). Partial support was also found in a sample of U.S. firefighters ($N=863$), where the interaction of thwarted belongingness and perceived burdensomeness was not predictive of enhanced suicidal ideation without the added component of capability for suicide (Chu et al., 2016). Still, most evidence for the IPTS is robust (Chu et al., 2017), and further investigation is warranted to examine pathways of action between perceived burdensomeness and thwarted belongingness, and increased risk of suicide.

Mechanisms of IPTS

In multivariate modeling studies examining IPTS variables, most studies have observed IPTS variables as mediators, as opposed to being the initial independent variable of interest. As but a few examples, perceived burdensomeness was a significant mediator explaining the association between perfectionism and suicide risk in a sample of undergraduates ($N=214$; Rasmussen et al., 2012). Perceived burdensomeness and thwarted belongingness served as mediating variables between minority stress and suicide risk in a convenience sample of gender nonconforming individuals (Testa et al., 2017). In samples of outpatients at community health clinics, IPTS variables significantly mediated associations between anger and suicide risk ($N=215$; Hawkins et al., 2014) and between behavioral dysregulation and suicidal ideation

($N=168$, Rogers & Joiner, 2016). Finally, the psychological need of self-competence has been related to suicide risk via the mediating pathways of IPTS variables (Tucker & Wingate, 2014), such that the more one feels competent, the less likely they are to experience perceived burdensomeness or thwarted belongingness, leading to a reduced risk for suicidal ideation and behaviors.

Somewhat surprisingly, given the extensive study of Joiner's theory, there is a considerable lack of studies that examine mechanisms of action between IPTS variables and suicide risk. One study was identified in which depression was observed as a significant mediator between IPTS variables and suicide risk in a sample of adolescents ($N=1,196$; Barzilay et al., 2015). The presence of meaning in life was identified as a mediating variable between IPTS factors and suicidal ideation (Kleiman & Beaver, 2013). Beyond this, there is some evidence that hopelessness, or the belief that one's social standing or life circumstances would not improve in the future, would serve as a linking mechanism for IPTS variables and risk. Hopelessness has been theorized to be an important factor that must be present for perceived burdensomeness and thwarted belongingness to actually confer risk for suicide (Chu et al., 2017; Rogers & Joiner, 2019). Despite this theory, few studies were identified that considered hope in the IPTS context. One study was identified where hopelessness served as a significant moderator in the relation between IPTS factors and suicide risk in both clinical ($n=760$) and non-clinical samples ($n=189$), such that those with low levels of hopelessness (i.e., more likely to endorse high levels of hopefulness), were not at increased risk for suicide, despite the presence of IPTS factors (Hagan et al., 2015). In other words, low levels of hopelessness buffered against the effect of IPTS variables on suicide risk. Another study examining undergraduate students

identified trait hope as significantly predictive of IPTS factors, thus suggesting potential beneficial effects on suicide outcomes (Anestis et al., 2014).

The common use of IPTS variables as mediators, as opposed to being used as initial independent variables in multivariate modeling is likely due to a few different reasons. First, a wealth of predictor variables can be conceptualized as leading to unmet interpersonal needs. Indeed, many of the studies identified give sound theoretical reasoning for how independent variables in turn influence levels of perceived burdensomeness and thwarted belongingness. As just two examples, thwarted belongingness has been thought to follow insomnia, under the reasoning that sleeping irregular schedules is naturally related to fewer typical social interactions (Hom et al., 2017), and perceived burdensomeness has been thought to follow perceived self-competency, under the reasoning that the more one feels competent the less they will perceive they are a burden to others (Tucker & Wingate, 2014). A second reason why there are few studies reporting mediating mechanisms between IPTS and suicide risk could be due to the file-drawer effect, in which non-significant findings are less likely to be published, and thus are inaccessible for general knowledge (Rosenthal, 1979). Although not addressing other mediating variables, in Chu and colleagues meta-analytic review of IPTS studies (2017), using Egger's test values, a publication bias was detected in certain aspects of studies, such as in the bivariate association between perceived burdensomeness and thwarted belongingness ($ET=4.17, p<.001$). Of importance, however, overall models of IPTS did not detect publication bias, such as in models of the effect of perceived burdensomeness and thwarted belongingness on the prediction of suicidal ideation ($ET=3.36, p=.101$). A third reason as to why few studies may examine mediating variables could be a dearth of measurements that are powerful enough to accurately capture mechanisms between IPTS factors and suicide risk. Given the relatively strong

associations between IPTS variables and suicide risk, it may be that most studies simply do not have enough power to differentiate between predictor and mediator variance in multivariate modeling.

Recently, the IPTS has come under scrutiny from some authors, positing the IPTS is too parsimonious to explain a complex phenomenon like that of suicide; in other words, solely looking at IPTS variables cannot always accurately predict on an individual level who will or will not die by suicide (Hjelmeland & Knizek, 2019). Importantly, these authors also consider that suicide should be studied with a contextual perspective, noting how one interprets themselves may contribute to risk, which is a factor largely ignored in the IPTS (Hjelmeland & Knizek, 2016). While these authors' claims possess some merit, and their focus on self-interpretation is important, parsimonious theory can be considered both useful and important in the scientific pursuit of understanding human behavior (Klonsky, 2019; Smith et al., 2019). Thus, considering the scope and relevance of the interpersonal theory of suicide, more study is warranted on potential mediating variables that can aid in better evaluating how one's perception of interpersonal standing is related to the intrapersonal variable of suicide risk.

Internal Hostility

One such potential mediating factor between unmet interpersonal needs and suicide risk is internal hostility, which is a variable of focus for the present study. Internal hostility can be defined as feelings of anger, contempt, or disgust directed towards oneself (McKinney et al., 2017). Internal hostility represents a complex emotional experience, and may be characterized by a variety of different presentations (e.g., more aggressive, more despondent) depending on the individual (Gilbert, 2015). Still, it can be effectively conceptualized as feelings of self-loathing or self-hatred, and considered a unitary construct (Turnell et al., 2019).

Broadly, negative internalized feelings directed towards oneself have been related to poorer outcomes in a variety of samples. For example, in one meta-analytic review of studies examining patients with an anxiety disorder ($N=2,169$), anger suppressed inwardly, both towards others and towards oneself, was related to the development of PTSD (Olatunji et al., 2010). Self-disgust has been demonstrated to occur at higher levels in individuals with mental illnesses as opposed to healthy controls, with the highest levels of self-disgust being observed in individuals with eating disorders and borderline personality disorder (Ille et al., 2014), both of which can be considered severe mental illnesses as they possess high correlations to negative life outcomes. In one study that is conceptually similar to our own, Simpson and colleagues (2010) found that dysfunctional cognitions about oneself and the world (i.e., unhelpful patterns of thinking) were related to depression through the mediating variables of self-esteem and self-disgust.

Varying degrees of self-concept may affect levels of suicidality, as positive self-perception has been shown to serve as a buffering factor in the development of suicidality in adolescents (Au et al., 2009), whereas a negative self-perception has been shown to be predictive of increased suicidal ideation in another sample of adolescents (Dave & Rashad, 2009). Internalized homophobia, or internal conflict between same-sex attraction and perceiving a need to be heterosexual, has shown to be a significant mediator explaining associations between conflict and suicidal ideation in LGBT young adults ($N=2,949$; Gibbs & Goldbach, 2016). Similarly, internalized transphobia, another conflict internalized within oneself, was related to increased suicide risk in transgender individuals ($N=818$; Testa et al., 2017). In one content analysis of posts made on a popular social media website, those who created posts with self-loathing content were more likely to also create posts expressing suicidal ideation or intent (Cavazohs-Rehg et al., 2016). Self-disgust has been identified as a linking mechanism between

PTSD symptoms and suicide risk in a sample of trauma-exposed undergraduates ($N=347$; Brake et al., 2017). Of note, in one sample of United States veterans, internal hostility (measured with the same instrument used in the present study) was positively related to and predictive of suicide risk ($N=545$; McKinney et al., 2017), and served as an important mediating factor between symptoms of post-traumatic stress disorder and suicide risk. In other words, symptoms of PTSD in turn led to feelings of contempt towards the self, which in turn led to increased risk.

Not only have internalized negative feelings been studied in the context of suicide, but they have also been examined in the context of IPTS. For example, transphobia has been related to suicide risk through the mediating factors of perceived burdensomeness and thwarted belongingness (Testa et al., 2017). Perceptions of self-autonomy and self-competency have been related to suicide risk via indirect pathways of thwarted belongingness and perceived burdensomeness, in studies of ethnically diverse college students ($N=449$; Hill & Pettit, 2013) and another sample of college students at a large state university ($N=336$; Tucker & Wingate, 2014). In other words, perceiving the self in such a way that does not meet desired expectations contributes to an increase of IPTS factors, and sequentially predicts an increased risk of suicidal behaviors.

To our knowledge, just one study has specifically examined internal hostility as we define it in the context of interpersonal needs and suicide risk. Using a sample of military veterans ($N=541$), one group of researchers developed a model examining how the association between internal hostility and suicide risk was explained by the mediating variables of perceived burdensomeness and thwarted belongingness, such that higher levels of inner-directed anger in turn led to perceptions of burdensomeness of lack of belonging, which in turn increased suicide risk (Rogers et al., 2017).

Harkening back to prior discussion, the ordering of these variables is not surprising, with internal hostility predicting levels of IPTS factors, instead of vice versa. However, we believe that the ordering of these variables is likely somewhat bidirectional (Tucker & Wingate, 2014), with how an individual feels about oneself being closely related to how an individual thinks others perceive them to be. In other words, it may be that one's own feelings of self-hatred may be generalized to presuming the evaluations of others. However, conversely, it may be that perceptions of burdensomeness or lack of belonging may be the initiating components leading one to experience emotions of feeling unimportant or unlovable, which then contributes to suicide risk.

Sociometer Theory

Indeed, based on social theory, the latter conceptualization may better reflect the psychological literature. Specifically, the sociometer theory of self-evaluation may give guidance to the appropriate theoretical ordering of variables in our models (Leary & Baumeister, 2000), supporting the idea that unmet interpersonal needs (i.e., perceived burdensomeness and thwarted belongingness) precedes self-evaluation.

The development of how one perceives oneself dates back to the work of Festinger (1954), who introduced the idea that social comparison, or how one is perceived in interpersonal relationships, influences one's self-evaluation. Since, numerous theories have arisen, one of which is self-consistency theory, in which one assumes a stable, predictable view of one's worth and effectiveness, leading in turn to evaluation of others based on the evaluation of the self (e.g., "I am good, and they think I am bad, therefore they are bad," or "I am bad, and they think I am good, so they must be wrong") (Swann et al., 1987). A competing theory, self-esteem theory, proposes that "the self-esteem system evolved as a monitor of social acceptance" (Leary, 1999,

p. 32), or in other words, that self-esteem is an indicator of how one perceives themselves to be valued in interpersonal situations. Self-esteem theory assumes that an individual derives their own sense of worth and effectiveness from the evaluations of others, and indeed, this theory appears to have an empirical edge over self-consistency theory (Jones, 1973).

Sociometer theory is directly built upon self-esteem theory, and is essentially another way of saying that self-esteem is simply a meter directly influenced by one's social standing (Leary & Baumeister, 2000). Greenberg and colleagues concisely write that "self-esteem consists of the perception that one is a valuable member of the meaningful universe" (1997, p. 66). Conversely, a poor self-perception would be founded in the belief that one does not measure up relationally to societal or interpersonal expectations, or does not add value to others' experiences.

Many social theorists claim that cultivating, and maintaining, a favorable view of oneself in social contexts is an integral part of the human experience for which individuals will naturally strive (Schmitt et al., 2000). This relates to the IPTS in that one's perceptions of feeling like a burden, or that one does not belong to an in-group, will naturally create feelings of inner strife for the individual. Indeed, Rogers and Joiner have noted that perceived burdensomeness "is affectively laden with self-hatred" (2019, p. 57).

Thus, based on theory of how one derives self-evaluation in terms of how they relate to others interpersonally, it may be that IPTS variables are related to suicide risk through the mediating mechanism of internal hostility. In other words, if one perceives that they are a burden or that they lack social belongingness, this may in turn influence one to develop a self-perception associated with feelings of hatred or disgust towards the self (Hjelmeland & Knizek, 2016; Joiner, 2005). It may be that this aspect of self-loathing or self-anger may add variance to models

of IPTS factors and suicide risk, accounting for a mechanism of action between these variables, and thus adding insight to the existing literature of how perceived burdensomeness and thwarted belongingness influence suicide risk.

In sum, the risk factors for suicide encompass biological, demographic, and social domains. A great deal of evidence supports the interpersonal theory of suicide (Chu et al., 2017; Joiner, 2005; Van Orden, 2010), which asserts that perceived burdensomeness and thwarted belongingness are two interpersonal states of being that are robust predictors of suicide risk. Mechanisms between IPTS factors and suicide risk are understudied, however, and represent an important area of investigation. Based on sociometer theory (Leary & Baumeister, 2000), it may be that internal hostility, or feelings of self-contempt or self-disgust, may help to explain how IPTS factors influence suicide risk. Importantly, while numerous risk factors exist for suicidal ideation and behavior, protective factors also exist and are important to consider in understanding resilience models of suicide.

Protective Factors Against Suicide

Indeed, not everyone who experiences perceived burdensomeness or thwarted belongingness will go on to engage in suicidal ideation or behaviors. While the IPTS accounts for this in the variable of acquired capability for suicide (e.g., no fear of death) (Rogers & Joiner, 2019), other important factors confer buffering effects to suicide risk. We discuss such variables here, followed by a discussion as to how these variables may influence a model where internal hostility mediates the relation between IPTS factors and suicide risk.

One of the strongest predictors of low suicide risk is social support. In adolescents, family support strengthened the negative relationship between self-esteem and suicide risk ($N=849$; Sharaf et al., 2009). More frequent social interaction was related to lower suicidal

ideation in samples of adolescent boys, a finding positively moderated by social support (Babiss & Gangwisch, 2009). In two national samples, one a U.S. sample and another an English sample, social support was associated with decreased odds of having a lifetime history of a suicide attempt (Kleiman & Liu, 2013). However, given that the two predictor variables of interest in our study are related to having low levels of perceived support, other potentially protective factors are important to consider.

Aspects of psychological resilience are other important components of protecting against suicide risk. Two examples, hope (i.e., the belief that one can obtain desired outcomes for the self) and optimism (i.e., a generally stable positive outlook and attitude on future events) (Kelberer et al., 2018), have been shown to be inversely related to reduced suicide risk in a number of samples (Chang et al., 2017; Davidson et al., 2010; Huffman et al., 2016). Specifically, in the context of the IPTS, hope and optimism have been shown to be negatively predictive of thwarted belongingness, perceived burdensomeness, and suicidal ideation (O’Keefe & Wingate, 2013), and optimism has served as a significant moderator that buffered the effects of thwarted belongingness and perceived burdensomeness on suicidal ideation (Rasmussen & Wingate, 2011). As another example of psychological resilience, meaning or purpose in life has also been related to lower suicide risk (Edwards & Holden, 2001; Heisel & Flett, 2004; Heisel et al., 2016). Endorsing meaning in life has been longitudinally related to decreased suicidal ideation (Kleiman & Beaver, 2013), and reasons for living may be a distinguishing factor between those who consider suicide and those who do not (Teismann et al., 2019).

Components of religiosity and spirituality may also bolster psychological resilience, which in turn may protect against suicide risk. Indeed, both spiritual and religious constructs have frequently shown to be related to a variety of positive mental health outcomes, including

reduced suicide risk. Involvement in religious or spiritual services or practices has been shown to be inversely related to suicide risk in nationally representative samples ($N=30,560$; Kleiman & Liu, 2018), and in specific samples as well, such as Latinos in the United States (Barranco, 2016), lesbian, gay, and bisexual Austrians (Kralovec et al., 2014), U.S. veterans (Sharma et al., 2017), and people diagnosed with bipolar disorder ($N=164$; Caribé et al., 2015).

Spirituality and religiosity have been suggested to protect against suicide risk for a number of reasons, including religious commitment to teachings against taking one's life (Pugh, 2019) and social support garnered from being in faith communities (Clary, 2015; Durkheim, 1915; Hovey et al., 2014). Further, religious and spiritual forms of coping, such as praying or ascribing to religiously-based meaning-making, may also confer benefit in protecting against suicidal ideation and behavior (Bjorck & Thurman, 2007). Feeling close with the divine and trusting God for outcomes has also been related to reduced suicide risk (Fadardi & Azadi, 2017; Sansone et al., 2013). Another construct distally related to spirituality, which may also serve as a protective factor for suicide risk, is forgiveness (Griffin et al., 2015; Webb et al., 2015).

Forgiveness

Forgiveness blends religious and interpersonal constructs, as it is often associated with spiritual-level functioning (Fox & Thomas, 2008), but can also be understood as the relinquishment of negative thoughts and emotions regarding an offense, and thus, by nature, is a relational construct (Worthington & Scherer, 2004). Although there are nuances to the definition of forgiveness (usually depending on to whom the forgiveness is being bestowed; Strelan & Covic, 2006), most conceptualizations agree that forgiveness is “an emotion-focused coping strategy” that involves the purposeful renunciation of negative thoughts and emotions toward a perceived transgressor (e.g., self, other, God) or transgression (e.g., an experience) (Worthington

& Scherer, 2004, p. 385). It is thought to relate to better outcomes via its physiological soothing effects, its secondary positive outcomes (e.g., enhanced social support), as well as through the reduction of stress, with unforgiveness being conceptualized as a stress response (Berry et al., 2001; Flanagan et al., 2012; Toussaint & Webb, 2005; Webb et al., 2013; Worthington & Scherer, 2004).

Although there is some qualitative evidence that could indicate preoccupation with forgiveness could be indicative of suicide risk (i.e., themes of forgiveness and desiring forgiveness found in suicide notes; Ho et al., 1998), forgiveness is generally regarded as a protective factor in psychological literature. Extending forgiveness is beneficially related to mental health outcomes for both religious and non-religious people (e.g., Cheadle & Toussaint, 2015; Sheldon et al., 2014; Toussaint, Shields, et al., 2016), and has been shown to protect against negative mental health outcomes and suicide risk in a number of samples (Toussaint & Webb, 2005; Webb et al., 2013). For instance, in one longitudinal study of community-based adults ($N=332$), higher levels of forgiveness were associated with lower levels of stress and on a measure of psychological distress (Toussaint, Shields, & Slavich, 2016). Forgiveness has predicted low levels of depression in one nationally representative sample of women (Toussaint, et al., 2008), and low levels of anxiety in cardiac patients (Friedberg et al., 2009).

Importantly, evidence also exists for a salubrious relation between forgiveness and suicide. As one example, in a study of racially diverse college students who endorsed symptoms of depression, extending forgiveness towards others demonstrated a direct, beneficial association with suicide risk (Hirsch et al., 2011). Another sample of adolescents demonstrated how forgiveness moderated effects of depressive symptoms on suicide risk in boys ($N=572$; Quintana-Orts & Rey, 2018). Conversely, problems with forgiveness have been associated with

enhanced suicidal ideation and a history of attempts in a sample of military service members ($N=472$; Kopacz et al., 2016).

Of note, most empirical literature on forgiveness has been devoted to the study of the extension of forgiveness towards another, with considerably less attention given to the process of receiving forgiveness, whether it be receiving self-forgiveness, accepting forgiveness from others, or feeling forgiven by a divine being (Hall & Fincham, 2005; McCullough & Witvliet, 2002). However, psychological investigation on these concepts is blossoming, and preliminary evidence suggests that receiving forgiveness may also play an important role in protecting against suicide risk (Worthington et al., 2007).

We note here that aspects of receiving forgiveness may be particularly salient in the interpersonal theory of suicide. First, as previously stated, forgiveness is by nature a relational construct. Even if communication between two parties has ceased, in order to forgive, some aspect of a relationship must be present, in the minimal sense that there are two parties involved (i.e., the transgressor and the transgressed). Beyond this, a common component of forgiveness is an attempt to restore or sooth an interpersonal relationship that was somehow damaged; in other words, it is a process of overcoming an interpersonal transgression, and changing emotive valence from negative, to neutral or even positive (McCullough et al., 2000; Toussaint et al., 2012; Wohl et al., 2008). Another reason why forgiveness is salient to our study is that it may serve as an important buffer for those who are suffering from “emotionally and philosophically derived distress”, which is commonly experienced in those who are at risk for suicide (Webb et al., 2015, p. 48). Theoretically, extending forgiveness to others is linked to the establishment of personal control in one’s life, by allowing an autonomous response toward a perceived slight that may otherwise be out of an individual’s control (Benson, 1992; McCullough & Worthington,

1994; Toussaint & Webb, 2005). On the other hand, the process of seeking forgiveness places one in the position of the transgressor. In other words, one may still feel like a burden, or feel as if they do not belong, but simultaneously experience less risk for suicidal ideation and behaviors if they also receive forgiveness. Feeling forgiven may protect against the development of suicide risk in that it serves to soothe interpersonal relationships; in other words, burdensomeness and lack of belonging may not be generalized to the self (i.e., through the cultivation of self-hatred or self-disgust, internal hostility), if forgiveness is present.

As an example of how this process may work, in one study of undergraduate students ($N=215$) a significant inverse relationship between forgiveness and anger existed, such that those who exercised higher levels of self-forgiveness and forgiveness towards others were less likely to engage in angry, ruminative thoughts after a perceived transgression (Barber et al., 2005). In a similar way, we propose that those who perceive receiving forgiveness may in turn be less likely to engage in angry, ruminative thoughts towards the self – or in other words, be less likely to endorse feelings of internal hostility. Three dimensions of receiving forgiveness are explored below and serve as variables to be examined in the present study.

Self-Forgiveness

Self-forgiveness, or experiencing a positive attitudinal shift, characterized by generosity and kindness, towards oneself following a self-perceived inappropriate action (Wohl et al., 2008), is a largely intrapersonal construct, in that it is less related to interpersonal functioning than other domains of forgiveness. Still, self-forgiveness has been shown to predict important aspects of interpersonal functioning, as evidenced in one study of romantic couples experiencing strain on their relationship (Pelucchi et al., 2013), and in studies of undergraduates who had committed an interpersonal transgression in the last 72 hours ($N=73$), or who were asked to recall

an interpersonal offense from the last week ($N=208$; Woodyatt & Wenzel, 2013a). The relationship between self-forgiveness and restoration of a relationship is thought to operate through mechanisms of empathy, taking responsibility for transgression, and genuinely working through the transgression that occurred.

Self-forgiveness has demonstrated beneficial buffering effects in a variety of populations. In a sample of college students, self-forgiveness buffered against depressive symptoms in those who had anxious or avoidant attachment styles (Liao & Wei, 2015) and, in another sample, college students with greater self-forgiveness reported lower levels of anxiety ($N=233$; Macaskill, 2012). Self-forgiveness may be of particular importance for individuals who are likely to experience “moral injury,” or a violation of a personal moral standard, such as military veterans who have engaged in combat (Griffin et al., 2017).

Self-forgiveness may also protect against suicide risk. In a previously mentioned study, self-forgiveness weakened the relationship between depression and suicide risk in a sample of college students (Hirsch et al., 2011), and a similar finding was observed in which self-forgiveness significantly weakened the association between anger expression and suicide risk ($N=372$, Hirsch et al., 2012). In one study of military veterans ($N=476$), self-forgiveness was not only found to be predictive of less severe PTSD symptoms, but was also found to be the lowest among the individuals who had made a suicide attempt, suggesting a lack of self-forgiveness may contribute to risk, whereas the presence of it may confer benefit to psychological wellbeing (Bryan et al., 2015). Similarly, primary care outpatients who experienced domestic abuse were more likely to be at risk for suicide, an association which was accounted for by the mediating variable of self-forgiveness ($N=101$; Chang et al., 2014), such that domestic abuse predicted

lower levels of one's forgiveness towards the self, in turn predicting higher suicidal ideation and behaviors.

Specific to IPTS theory, in one sample of older adults, self-forgiveness was negatively related to perceived burdensomeness and suicidal ideation ($N=91$; Cheavens et al., 2016). Similarly, in a sample of primary care patients ($N=101$, Nsamenang et al., 2013), self-forgiveness was inversely related to suicide risk, and exerted an indirect effect on suicidal behavior via the mediating pathways of perceived burdensomeness and thwarted belongingness. Self-forgiveness has also demonstrated beneficial moderating effects on the relationship between perceived burdensomeness and suicide risk (Hansen, 2013). Taken together, these results suggest that self-forgiveness is an important buffering mechanism in the development of suicide risk, in that it may be associated with cultivating kinder and more accepting feelings towards the self, even during difficult circumstances (Hirsch et al., 2017; Neff, 2011).

Accepting Forgiveness from Others

Feeling forgiven by others, or experiencing a reconciled relationship with others following a transgression, is theorized to be an important contributor to psychological wellbeing (Enright, 1996) and has also been associated with better overall mental health outcomes and interpersonal functioning outcomes (Wallace et al., 2008), although empirical evidence on this construct is limited and represents a gap in psychological literature.

In one study of spiritual concerns of advanced cancer patients ($N=69$) who were tasked to think about aspects of forgiveness, feeling forgiven by others was endorsed by approximately half of participants, and preliminary evidence suggests its positive relationship to higher quality of life (Winkelman et al., 2011). In another sample of individuals engaged in addiction recovery ($N=277$), feeling forgiven by others explained the relationship between daily spiritual

experiences and purpose in life (Lyons et al., 2011). In a study in which participants were asked to ruminate about a real-life transgression, and then asked to imagine receiving forgiveness from the offended party, the imagery of merciful responses resulted in participants experiencing improved basic (e.g., sadness) and moral emotions (e.g., shame), as well as reduced physiological stress responses (e.g., furrowed brow) (vanOyen-Witvliet et al., 2002). Conversely, inability to seek forgiveness from others is associated with paranoid cognitive tendencies (Chiaramello et al., 2008).

Some evidence exists that individuals at risk for suicide may feel a lack of forgiveness from others or may be searching for reconciliation in interpersonal relationships. In one poignant qualitative study examining suicide notes from individuals who completed suicide, a significant theme that emerged was an attempt to reconcile with those the victim had “left behind,” by asking for forgiveness or hoping for their understanding (Sanger & Veach, 2008). This suggests that those who go on to complete suicide may be more likely to being unable to accept and believe the forgiveness of others.

Feeling Forgiven by God

Another understudied construct, feeling forgiven by God, or perceiving that one has been absolved of a transgression by a divine being or higher power, is another component of global forgiveness (Torges et al., 2013), and may be an important protective factor against negative mental health outcomes (Griffin et al., 2015; Toussaint & Webb, 2005).

As examples, in several national samples of adults, feeling forgiven by God was associated with fewer psychiatric symptoms, including symptoms of depression and anxiety (Toussaint et al., 2008; Uecker et al., 2016), and with less depression and greater life satisfaction in a national survey of older adults ($N=1,187$; Krause & Ellison, 2003). Belief in a loving,

forgiving God was associated with lower levels of anxiety in a national sample of U.S. adults ($N=1,306$; Flannelly et al., 2010) and, similarly, belief in divine forgiveness was related to less anxiety about death in U.S. adult samples (Krause & Hayward, 2015).

Although not specific to suicide, perceiving unconditional forgiveness by God was significantly inversely predictive of mortality risk in a nationally representative sample of U.S. older adults ($N=1,232$; Toussaint et al., 2012). Concerning suicidal ideation and behaviors, in one study of racially diverse college students ($N=372$), feeling forgiven by God weakened the linear relationship between anger expression and suicide risk (Hirsch et al., 2012), and in another study of college students feeling forgiven by God was inversely associated with suicidal behavior ($N=158$; Hirsch et al., 2011). Feeling forgiven by God has also emerged as an important mediating variable between the association of religious attendance and decreased suicide risk in a sample of college students (Pugh, 2019).

Interpersonally, feeling forgiven by God has been associated with greater perceptions of social support and feeling forgiven by others in a sample of college students ($N=129$; Brodar et al., 2015). Of note, however, to our knowledge no studies have examined the effects of feeling forgiven by God in the context of the IPTS. The present study seeks to address this gap, theorizing that feeling forgiven by God may protect against internal hostility and suicide risk in individuals who experience perceived burdensomeness and thwarted belongingness.

In sum, aspects of receiving forgiveness (i.e., self-forgiveness, accepting forgiveness from others, and feeling forgiven by God) may be an important buffering mechanism in our model of interest. Specifically, feeling forgiven may protect against the development of internal hostility and subsequent suicide risk, despite the presence of IPTS factors (i.e., perceived burdensomeness and thwarted belongingness). Theoretically, one may still endorse experiencing

interpersonal deficits, but if one were to accept forgiveness or acceptance for perceived shortcomings (i.e., perceived burdensomeness, thwarted belongingness), this level of acceptance may buffer against the further development of negative internalized thoughts towards the self. However, receiving forgiveness has been generally understudied in the literature (McCullough & Witvliet, 2002), and is even more lacking when examined in the context of the interpersonal theory of suicide.

Statement of the Problem

Suicidal behaviors and ideation are a growing concern in the United States. Currently, more than 48,000 Americans die every year by suicide, and there are far more frequent attempts and endorsement of suicidal ideation (CDC, 2020; Nock et al., 2008; Sinyor et al., 2017). When considering how to best prevent suicide, it is important to consider relevant risk factors, which encompass biological, cognitive-emotional, demographic, and relational domains (Batty et al., 2018; Gooding et al., 2015; Kazan et al., 2016). Specifically, the interpersonal theory of suicide states that when an individual has the capability for suicide (e.g., low fear of death or tolerance of pain), and they also experience perceived burdensomeness or thwarted belongingness, they are at increased risk for completion of suicide (Joiner, 2005; Van Orden et al., 2010).

While this theory is well-established in the literature, a dearth of evidence exists on mediating mechanisms between unmet interpersonal needs (i.e., perceived burdensomeness and thwarted belongingness) and suicide risk. To better understand how interpersonal needs are related to risk, further investigation is warranted. Informed by Leary and Baumeister's sociometer theory (2000), we believe that self-evaluations, and specifically, enhanced internal hostility, may explain the association between unmet interpersonal needs and suicide risk. An

enhanced understanding of who is likely to develop risk, and the mechanisms by which these work, are important for prevention efforts.

In addition to understanding risk, understanding resilience is another important factor when examining suicidality. Preliminary evidence suggests that feeling forgiven by oneself, by others, and by God may protect against negative mental health outcomes, including suicide risk (Krause & Ellison, 2003; Pugh, 2019). Specifically, feeling forgiven may assuage the effects of perceived burdensomeness and thwarted belongingness on negative self-evaluations. However, there is a shortage of research regarding how accepting forgiveness may protect against the deleterious effects of unmet interpersonal needs.

The present study aims to address gaps in the psychological literature (i.e., mechanisms of interpersonal needs, the role of feeling forgiven), to contribute to understanding of how suicide risk is enhanced and protected against. To our knowledge, no previous research has examined the role of internal hostility as a mediating mechanism for interpersonal needs and suicide risk, or the potential buffering effects of self-forgiveness, feeling forgiven by others, and feeling forgiven by God on these associations.

Hypotheses

In the current study, in addition to descriptive analyses, we examined the mediating role of internal hostility on the relationship between interpersonal needs and suicide risk. Specifically, we examined two separate mediation models with two predictor variables (i.e., perceived burdensomeness, thwarted belongingness). Further, we investigated the moderating effect of three dimensions of feeling forgiven on these mediation models.

1. At the bivariate level, we hypothesized that perceived burdensomeness, thwarted belongingness, internal hostility, and suicide risk would be positively related to one

another. We hypothesized that self-forgiveness, accepting forgiveness from others, and feeling forgiven by God would be positively related to each other. Finally, we hypothesized that the former set of factors would be inversely related to the latter set of factors.

2. At the multivariate level, we hypothesized that internal hostility would mediate the relation between perceived burdensomeness/thwarted belongingness and suicide risk, such that higher levels of unmet interpersonal needs (i.e., perceived burdensomeness, thwarted belongingness) would be associated with greater levels of internal hostility, and subsequently relate to a higher degree of suicide risk. Further, we hypothesized that feeling forgiven variables (i.e., self-forgiveness, accepting forgiveness from others, and feeling forgiven by God), would moderate the association between the independent variable and the mediator in the aforementioned mediation models, such that the presence of these factors would weaken this association.

Chapter 2. Methods

Participants

Participants were a convenience sample of adults in the United States ($N=712$). The mean age was 31.92 ($SD=16.104$), with a minority-majority of participants indicating their age as 18 years old ($n=129$, 18.1%). A majority of participants identified as female ($n=450$, 63.2%). Following this, our sample was comprised of 32.7% male ($n=233$), 1.1% non-binary or gender nonconforming ($n=8$), 0.3% transgender male ($n=2$), 0.3% agender ($n=2$), 0.1% transgender female ($n=1$), and 0.1% demi-female ($n=1$). Our sample was 86.5% White ($n=616$), 5.2% Black or African American ($n=37$), 2.7% Asian ($n=19$), 2.2% Multiracial ($n=16$), 2.2% Other ($n=16$), 0.4% American Indian or Alaskan Native ($n=3$), and 0.3% Native Hawaiian or Pacific Islander.

Our participants were varied in terms of religious affiliation. 496 described themselves as being religiously affiliated (69.66%). Our sample was 45.4% Christian Protestant ($n=323$), followed by 8.7% Christian Catholic ($n=62$), 6.3% Other ($n=45$), 2.0% Episcopalian/Anglican ($n=14$), 1.5% Unitarian/Universalist ($n=11$), 1.4% Buddhist ($n=10$), 1.3% Muslim ($n=9$), 1.0% Wiccan ($n=7$), 0.8% Hindu ($n=6$), 0.4% Jehovah's Witness ($n=3$), 0.4% Mormon ($n=3$), 0.3% Jewish ($n=2$), and 0.1% Sikh ($n=1$). 199 of our participants identified as having no religious affiliation (27.95%). Of these, 9.8% reported as Agnostic ($n=70$), 9.1% identified as having No religious affiliation – not specified ($n=65$), 6.9% reported as Atheist ($n=49$), and 2.1% identified as Humanistic ($n=15$).

Procedure

In this IRB-approved study, participants were a convenience sample of adults in the U.S., obtained through the use of social media platforms (e.g., Reddit, Facebook) and informal requests for snowballing recruitment (Elfil & Negida, 2017). As this was a part of a larger study

examining variables related to religiosity and health disparities, initial efforts were made to recruit for people who identify with various types of spirituality and religiosity, and people who identify as both chronically ill and healthy, and thus, our sample may be reflective of these efforts and thus not representative of the larger population. The estimated survey completion time was 30-45 minutes and all participants were provided informed consent and given the opportunity to enter into random drawing to win one of sixteen \$50 Amazon gift cards.

Data was collected through Research Electronic Data Capture (REDCap), which is a secure web-based application. Data was cleaned and analyzed using SPSS Statistical Software (version 25.0), excluding participants who discontinued the survey prematurely (DeSimone & Harms, 2017; Revilla & Ochoa, 2015). Missing data was coded with a numerical value that would not otherwise occur in the data set (i.e., -999).

Measures

Interpersonal Needs Questionnaire

A 10-item version of the Interpersonal Needs Questionnaire (INQ) assessed perceived burdensomeness and thwarted belongingness (Bryan, 2011). Each item is measured on a seven-point Likert scale ranging from 1 (*not true at all for me*) to 7 (*very true for me*), with higher scores indicating higher levels of the construct. Five items assess for perceived burdensomeness, with one example being “These days, the people in my life would be happier without me.” Five items assess for thwarted belongingness, with one example being “These days, I feel disconnected from other people.”

There are multiple versions of the INQ, all with the same constructs being measured, but with differing lengths (i.e., 10-, 12-, 15-, 18-, and 25-items). Versions of the INQ have been validated across a variety of samples, including undergraduates (Freedenthal et al., 2011; Van

Orden, Cukrowicz, Witte, & Joiner, 2012) and community-dwelling older adults (Marty et al., 2012). When considering which version to employ, we considered both brevity as well as psychometric properties. In one recent study evaluating the factor structure of these versions across three samples (undergraduates and psychiatric inpatients; $N_{\text{total}}=781$), the 10-item version and 15-item version emerged as the superior versions in terms of model fit, and the 10-item version was the only to consistently predicted concurrent suicidal ideation (Hill et al., 2015).

In one study, the 10-item version of the INQ demonstrated strong psychometric properties (Bryan, 2011), with a moderate correlation between perceived burdensomeness and thwarted belongingness ($r=.525$), suggesting the relatedness but independence of these constructs. Further, the five items assessing perceived burdensomeness ($\alpha=.806$) and the five items assessing thwarted belongingness ($\alpha=.855$) both demonstrated acceptable internal consistency.

Differential Emotions Scale – IV

Internal hostility was assessed using components of the Differential Emotions Scale – IV (DES-IV). The DES-IV is based on the idea that basic emotions have distinct motivational properties, and that individuals are characteristically stable in these emotions over time (Izard et al., 1993; Izard et al., 1979). Although the DES-IV measures twelve distinct emotions, there are three items that measure internal hostility, or “hostility inward” that are of interest in the present study. Each item is scored on a Likert scale of how frequently an individual experiences a given emotion, ranging from 1 (*rarely or never*) to 5 (*very often*). Total scores for the internal hostility subscale range from 3-15, with higher scores representing higher internal hostility. An example of an item used to measure internal hostility is “In your daily life, how often do you feel you can’t stand yourself?”

Psychometric properties of the DES-IV internal hostility scale are acceptable. Internal consistency has been supported in a sample of women who were also mothers ($N=88$; $\alpha=.75$; Izard et al., 1993) and in a more recent sample of veterans ($\alpha=.91$; McKinney et al., 2017). Further, scores were consistent across time (Akande, 2002), even up to three-years (Izard et al., 1993). McKinney and colleagues (2017) also found that internal hostility on the DES-IV was related to increased suicide risk, supporting validity of this measure for the current study.

Suicide Behaviors Questionnaire – Revised

We measured suicide risk using the Suicide Behaviors Questionnaire – Revised (SBQR), which consists of four items that measure ideation, intent, history of attempts, and likelihood of future attempts (Osman et al., 2001). Each item is measured on a different scale, but together produces a total summed score. Item 1 assesses lifetime ideation and attempts, and participants select one of six responses, placing them in one of four subgroups with corresponding scores: a non-suicidal subgroup (1), suicide risk ideation subgroup (2), suicide plan subgroup (3), and suicide attempt subgroup (4). Item 2 assesses the frequency of ideation over the past 12 months, on a five-point scale ranging from 1 (*never*) to 5 (*very often*). Item 3 assesses the communication of considering a suicide attempt, and participants select from one of 5 responses assessing for the frequency of threats and the desirability of suicide, yielding a score ranging from 1-3. Item 4 assesses likelihood of future attempts on a seven-point Likert scale from 0 (*never*) to 6 (*very likely*). Item scores are summed, and total scores range from 3-18, with higher scores indicating greater suicide risk.

The SBQR is recognized as one of the more valid and useful measures of suicide risk (Batterham et al., 2015). It is recommended for use in both clinical and nonclinical settings for its ability to differentiate between at-risk and non-suicidal participants, with sensitivity of .87

and specificity of .93 (Osman et al., 2001). The SBQR has demonstrated adequate internal consistency in a sample of American college students ($\alpha=.78$; Hirsch & Barton, 2011), as well as in a sample of Nigerian college students ($\alpha=.80$; Aloba et al., 2017).

Brief Multidimensional Measure of Religiousness and Spirituality

Three aspects of feeling forgiven (i.e., self-forgiveness, accepting forgiveness from others, and feeling forgiven by God) were single-item measures extracted from the Fetzer Brief Multidimensional Measure of Religiousness and Spirituality (BMMRS; Fetzer Institute, 1999) forgiveness subscale. Participants rated the statements “I have forgiven myself for the things I have done wrong,” “I believe that when people say they forgive me for something I did they really mean it” and “I know that God forgives me” on a scale from 1 (*always or almost always*) to 4 (*never*). For our study, items were reverse-scored so that higher scores indicated greater forgiveness. In previous research, these single-item measures have been used to represent dispositional states of feeling forgiven by others, God, and oneself (Johnstone et al., 2009; Kioulos et al., 2015; Webb et al., 2011; Webb et al., 2013).

Among adolescents, college students, and both chronically ill and healthy adults, all domains of the BMMRS have been regarded as reliable and valid measures of religiosity (Harris et al., 2008; Johnstone et al., 2012; Vespa et al., 2017). The strong psychometric properties of the BMMRS include the embedded forgiveness constructs, although the forgiveness scale demonstrates only moderate internal consistency ($\alpha=.68$), perhaps due to its brevity or the differential constructs assessed by the three forgiveness items (e.g., accepting forgiveness from others, self-forgiveness, feeling forgiven by God; Harris et al., 2008).

Statistical Analyses

Covariates

In previous research, sex, age, and racial/ethnic differences have been identified in levels of suicidal ideation and behavior (AFSP, 2021; Houle & Light, 2017; Olfson et al., 2017; Saleh, 2015). Thus, these demographic variables were used as covariates in multivariate analyses to eliminate potentially confounding effects, and to determine the potential effects that these variables may have on the relations between unmet interpersonal needs, internal hostility, suicide risk, and elements of feeling forgiven.

Similarly, we used religious affiliation as a fixed variable, as this factor has been related to varying levels of suicide risk across samples (Kaplan et al., 2007; Krause, 2017; Torges et al., 2013). We utilized demographic items to assess for *religious affiliation*, which is a question that prompts individuals to select an affiliation that most applies to them. Possible options include: “Buddhist,” “Christian – Catholic,” “Christian – Protestant,” “Episcopalian/Anglican,” “Jehovah’s Witness,” “Jewish,” “Hindu,” “Mormon,” “Muslim,” “Sikh,” “Unitarian/Universalist,” “Wiccan,” “No religious affiliation – Atheist,” “No religious affiliation – Agnostic,” “No religious affiliation – Humanistic,” “No religious affiliation – not specified,” and “Other.”

Bivariate Analyses

In order to examine the independence of, and associations between, all study variables, we used Pearson’s product-moment correlations with a 95% confidence interval to determine statistical significance. To determine multicollinearity, or overlap between study variables that would confound findings, we will use a recommended cutoff score of $r > .80$ (Katz, 2011).

Multivariate Analyses

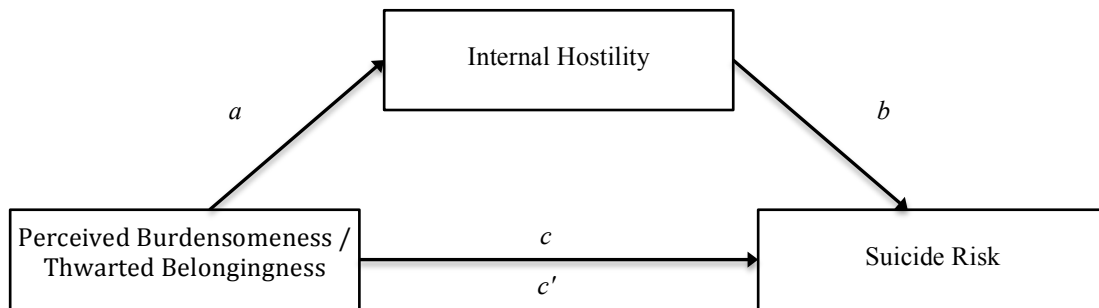
Six separate moderated-mediation models were tested, utilizing Hayes' PROCESS Macro for SPSS (Hayes, 2013). Hayes' mediation and moderation techniques provide certain advantages over other regression analyses, one of which is the utilization of bootstrapping, which is a process involving the extraction, resampling, and replacement of cases within a given data set. This technique generates point values and a confidence interval useful in determining significance and reducing the likelihood of a Type I error (Preacher & Hayes, 2008). In the current study, we used a bootstrapping frequency of 10,000 samples across all models. For percentile-bootstrapped tests, the sample size needed for detecting small effects at .8 power is 558 (Fritz & MacKinnon, 2007).

First, we tested two simple mediation models to examine the relation between unmet interpersonal needs (i.e., perceived burdensomeness in one model and thwarted belongingness in one model) and suicide risk, and the potential mediating effect of internal hostility, in order to ensure the integrity of these models before examining moderating variables (Figure 1). These analyses will be conducted using Hayes' Model 4, covarying age, race, and sex. Mediation models assume that the independent variable influences the subsequent mediator and dependent variable in a serial fashion, and further, that each variable has a direct effect on other variables. Thus, mediation models yield several different kinds of results, including both direct and indirect effects. The *direct effect*, represented by c' , is the relation between the independent variable and the dependent variable, while controlling, or holding constant, mediating factors. The *total effect*, represented by c , is the relation between the independent variable (perceived burdensomeness or thwarted belongingness) and the dependent variable (suicide risk), without controlling for the mediating factors (internal hostility). The *indirect effect* refers to the relation that occurs between

the independent variable and dependent variable when operating through the mediating variable. Mediation exists when the direct effect falls out of, or reduces in significance when mediating variables are accounted for.

Figure 1

Simple Mediation Models



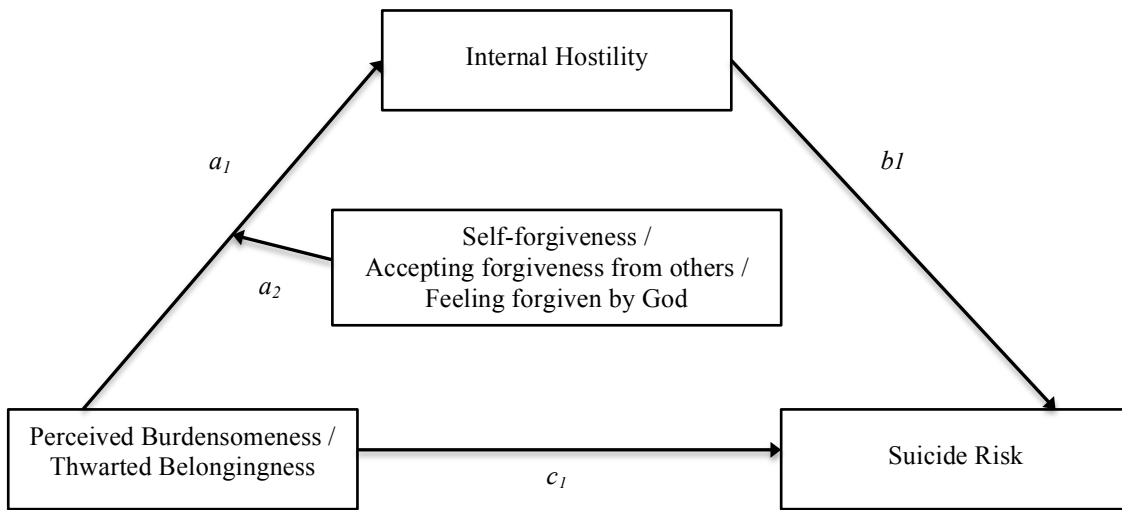
Note: Two separate mediation models, with perceived burdensomeness (PB) and thwarted belongingness (TB) as the dependent variables. a =direct effect of PB and TB on internal hostility; b =direct effect of internal hostility on suicide risk; c =total effect of PB and TB on suicide risk; c' =direct effect of PB and TB on suicide risk.

Next, in order to examine at what levels forgiveness factors may influence risk, we tested six separate moderated-mediation models using Hayes' Model 8, covarying age, race, sex, and religious affiliation. Specifically, the moderating variables of self-forgiveness, accepting forgiveness from others, and feeling forgiven by God were incorporated into the existing two simple mediation models in separate analyses (Figure 2), examined on the "a" pathway. The moderated mediation analyses yielded conditional indirect effects on the associations between perceived burdensomeness/thwarted belongingness and internal hostility. For example, we examined the moderating effect of self-forgiveness on the association between unmet personal

needs (i.e., thwarted belongingness or perceived burdensomeness) and internal hostility (a path). Similar analyses were conducted testing accepting forgiveness from others and feeling forgiven by God as moderators.

Figure 2

Moderated Mediated Models



Note: Six separate moderated mediation models, with perceived burdensomeness (PB) and thwarted belongingness and independent variables, and self-forgiveness (SF), accepting forgiveness from others (OF), and feeling forgiven by God (GF) as moderators. a_1 =indirect effect of PB and TB on internal hostility; b_1 =indirect effect of internal hostility on suicide risk; c_1 =direct effect of PB and TB on suicide risk; a_2 =conditional effect of SF, OF, and GF on the relation between PB and TB.

Chapter 3. Results

Descriptive Statistics

Descriptive statistics were calculated for each measure. Participants' mean response score was 8.551 ($SD=6.239$) on the *Perceived Burdensomeness Scale*. This variable was skewed right, with a majority of individuals reporting the lowest level of perceived burdensomeness possible (lowest possible score=5; $n=416$, 58.4%). Participants reported a relatively higher mean response on the *Thwarted Belongingness Scale*, with an average response of 16.083 ($SD=8.268$). The mode response on this scale was also the lowest possible score (lowest possible score=5; $n=80$, 11.3%), also skewing the data right. Of note, while skewed data may influence results (Osborne & Waters, 2002), skewed data of predictor variables in regression models do not violate assumptions (Ernst & Albers, 2017). Participants reported an average score of 7.162 ($SD=3.333$) on internal hostility. Participants reported an average score of 4.291 ($SD=1.614$) on levels of suicide risk, which corresponds to a classification of low to no risk (Osman et al., 2001).

Participants in the study reported generally positive responses to the forgiveness items. The item measuring the extension of self-forgiveness yielded a mean score of 2.99 ($SD=.813$), with the most frequent response being the second highest response of "often" ($n=317$, 44.5%). The item measuring accepting forgiveness from others yielded a mean score of 2.91 ($SD=.793$), with the most frequent response being the second highest response of "often" ($n=354$, 49.7%). Finally, the item measuring feeling forgiven by God yielded a mean score of 3.05 ($SD=1.191$), with the most frequent response being the highest possible response of "always or almost always" ($n=374$, 52.5%), but followed by the lowest possible response of "never" ($n=140$, 19.7%), suggesting a polarized response to this item measure.

Bivariate Results

At the bivariate level, all hypotheses were supported (Table 1). Perceived burdensomeness was positively, significantly associated with thwarted belongingness ($r=.595$, $p<.001$), internal hostility ($r=.628$, $p<.001$), and suicide risk ($r=.292$, $p<.001$). Further, as hypothesized, perceived burdensomeness was inversely related to the variables of self-forgiveness ($r=-.386$, $p<.001$), accepting forgiveness from others ($r=-.348$, $p<.001$), and feeling forgiven by God ($r=-.235$, $p<.001$).

A similar pattern existed for thwarted belongingness, as it was positively correlated with internal hostility ($r=.603$, $p<.001$) and suicide risk ($r=.490$, $p<.001$). Thwarted belongingness was inversely correlated with self-forgiveness ($r=-.451$, $p<.001$), accepting forgiveness from others ($r=-.412$, $p<.001$), and feeling forgiven by God ($r=-.326$, $p<.001$). Internal hostility was positively associated with suicide risk ($r=.349$, $p<.001$), and inversely associated with self-forgiveness ($r=-.481$, $p<.001$), accepting forgiveness from others ($r=-.349$, $p<.001$), and feeling forgiven by God ($r=-.258$, $p<.001$). Following suit, suicide risk was also inversely associated with all forgiveness variables: self-forgiveness ($r=-.248$, $p<.001$), accepting forgiveness from others ($r=-.125$, $p=.011$), and feeling forgiven by God ($r=-.318$, $p<.001$).

Last, all forgiveness variables were positively related. Self-forgiveness was positively associated with accepting forgiveness from others ($r=.360$, $p<.001$) and feeling forgiven by God ($r=.245$, $p<.001$). Accepting forgiveness from others was positively associated with feeling forgiven by God ($r=.260$, $p<.001$). Importantly, no correlation coefficient exceeded the recommended cut-off value of .80 (Katz, 2011), so all proposed variables were retained for multivariate analyses.

Table 1*Bivariate Correlations and Descriptive Statistics of Study Variables*

	PB	TB	IH	Suicide	SF	OF	GF
TB	.595***						
IH	.628***	.603***					
Suicide	.292***	.490***	.349***				
SF	-.386***	-.451***	-.481***	-.248***			
OF	-.348***	-.412***	-.349***	-.125*	.360***		
GF	-.235***	-.326***	-.258***	-.318***	.245***	.260***	
Sex	.042	.045	.063	.020	-.032	.013	.094*
Age	-.136***	-.139***	-.291***	-.029	.113**	.144***	.095*
Race	-.056	-.022	.014	-.038	.004	.095*	-.037
<i>Mean</i>	8.551	16.083	7.162	4.291	2.99	2.91	3.05
<i>Std. Dev.</i>	6.329	8.268	3.333	1.614	.813	.793	1.191

Note. PB = Perceived Burdensomeness (Interpersonal Needs Questionnaire [INQ]); TB = Thwarted Belongingness (INQ); IH = Internal Hostility (Differential Emotions Scale – IV); Suicide = Suicide Risk (Suicide Behaviors Questionnaire – Revised); SF = Self-forgiveness (Fetzer’s Brief Multidimensional Measure of Religiousness and Spirituality [BMMRS]); OF = Accepting Forgiveness from Others (BMMRS); GF = Feeling Forgiven by God (BMMRS); Sex = self-reported current identified sex; Std. Dev. = Standard Deviation. Pearson product-moment correlations are reported.

* $p < .05$, ** $p < .01$., *** $p < .001$

Multivariate Results

As proposed, we examined six separate moderated mediation models. We first analyzed simple mediation models before analyzing moderating effects. On the whole, our simple mediation analyses supported our hypotheses, while our moderated mediation models did not support our hypotheses. Details are explored below.

Simple Mediation Models

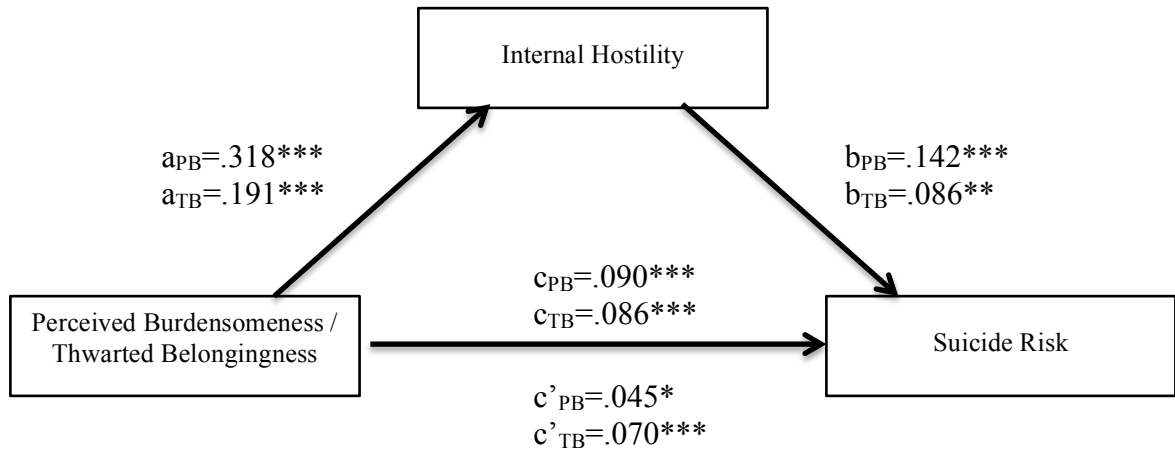
We examined two independent simple mediation models before examining potentially moderating effects (Figure 3). In our first model, we examined internal hostility as a mediator of the relation between perceived burdensomeness and suicide risk. Lending support for our

hypotheses, a significant total effect was observed ($\beta=.090$, $SE=.017$, $t=5.160$, $p<.001$, CI 95% [.056, .124]), and a significant direct effect was also observed but it was weaker ($\beta=.045$, $SE=.020$, $t=2.286$, $p=.023$, CI 95% [.006, .083]), indicating partial mediation. A greater level of perceived burdensomeness was associated with a greater level of internal hostility, which in turn was associated with greater suicide risk. Approximately 18% of the indirect effect was accounted for by this model ($R^2=.183$).

In our second model, we examined internal hostility as a mediator of the relation between thwarted belongingness and suicide risk. Partially supporting the hypotheses, a significant total effect was observed ($\beta=.090$, $SE=.010$, $t=8.781$, $p<.001$, CI 95% [.067, .105]), and a significant direct effect was also observed but at a reduced effect size ($\beta=.070$, $SE=.011$, $t=6.218$, $p<.001$, CI 95% [.0476, .0916]), indicating partial mediation. A greater level of thwarted belongingness was associated with a greater level of internal hostility, which in turn was associated with greater suicide risk. Approximately 27% of the indirect effect was accounted for by this model ($R^2=.273$).

Figure 3

Simple Mediation Models



Note: Depiction of two separate simple mediation models. Perceived Burdensomeness (PB) = PB Scale from Interpersonal Needs Questionnaire; Thwarted Belongingness (TB) = TB Scale from Interpersonal Needs Questionnaire; Internal Hostility (IH) = IH Scale from Differential Emotions Scale – IV; Suicide Risk = Suicide Behaviors Questionnaire – Revised. * $p < .05$, ** $p < .01$, *** $p < .001$

Moderated Mediation Models

To test the contingent effects of various aspects of feeling forgiven on the model, we investigated conditional indirect effects models. As there were two separate simple mediation models, and three aspects of forgiveness we examined, a total of six moderated-mediation models were analyzed. All moderated mediation models were tested for their index of moderated mediation, which reflects the bootstrapped sample. Across the six models, no index of moderated mediation was found to be significant, thus our hypotheses were unsupported. Below, we also report the indirect effects of the underlying mediation model at the three levels at which the moderator was tested (i.e., the 16th, 50th, and 84th percentiles).

Perceived Burdensomeness and Self-Forgiveness. We first examined a conditional indirect effects model examining the moderating role of self-forgiveness on the association between perceived burdensomeness and suicide risk through internal hostility, and found that self-forgiveness did not significantly moderate the mediational relation ($\beta_{\text{bootstrap}} = -.009$, $SE_{\text{bootstrap}} = .007$, 95% CI [-.025, .004]). Analyses revealed that at all levels of self-forgiveness, the indirect effect of the simple mediation model (i.e., perceived burdensomeness on suicide risk through internal hostility) occurred. Specifically, we evaluated the association at the level of self-forgiveness that was one standard deviation below the mean ($\beta_{\text{bootstrap}} = .044$, $SE_{\text{bootstrap}} = .012$, 95% CI [.022, .069]), at the mean ($\beta_{\text{bootstrap}} = .034$, $SE_{\text{bootstrap}} = .010$, 95% CI [.018, .056]), and at one standard deviation above the mean ($\beta_{\text{bootstrap}} = .025$, $SE_{\text{bootstrap}} = .013$, 95% CI [.006, .055]). Because no significant differences occurred between the levels of the moderator (as evidenced by the index of moderated mediation), our hypothesis remained unsupported.

Perceived Burdensomeness and Accepting Forgiveness from Others. We also examined the moderating role of accepting forgiveness from others on the perceived burdensomeness model (Figure 4). Accepting forgiveness from others did not moderate the mediational association between perceived burdensomeness and suicide risk through internal hostility ($\beta_{\text{bootstrap}} = -.000$, $SE_{\text{bootstrap}} = .008$, 95% CI [-.012, .017]). More specifically, the indirect effect of X (perceived burdensomeness) on Y (suicide risk) through M (internal hostility) was present at the varying levels of accepting forgiveness from others: at one standard deviation below the mean ($\beta_{\text{bootstrap}} = .044$, $SE_{\text{bootstrap}} = .012$, 95% CI [.022, .068]), at the mean ($\beta_{\text{bootstrap}} = .044$, $SE_{\text{bootstrap}} = .013$, 95% CI [.022, .071]), and at one standard deviation above the mean ($\beta_{\text{bootstrap}} = .043$, $SE_{\text{bootstrap}} = .018$, 95% CI [.015, .084]). As with the first model, since no significant differences occurred between the levels of the moderator, our hypothesis remained unsupported.

Perceived Burdensomeness and Feeling Forgiven by God. In the last of the perceived burdensomeness models, we examined the conditional indirect effect of feeling forgiven by God on the relation between the independent variable of perceived burdensomeness on the outcome of suicide risk, occurring through internal hostility. Upon analysis, it was discovered that feeling forgiven by God did not significantly moderate the association ($\beta_{\text{bootstrap}} = .002$, $SE_{\text{bootstrap}} = .005$, 95% CI [-.009, .011]); thus, our hypothesis was unsupported. Following the pattern of the aforementioned models, the indirect effect of internal hostility mediating the association between perceived burdensomeness and suicide risk was present at all three levels of the moderator (16th percentile: [$\beta_{\text{bootstrap}} = .039$, $SE_{\text{bootstrap}} = .015$, 95% CI [.014, .074]]; 50th percentile: [$\beta_{\text{bootstrap}} = .044$, $SE_{\text{bootstrap}} = .013$, 95% CI [.021, .070]]; 84th percentile: [$\beta_{\text{bootstrap}} = .044$, $SE_{\text{bootstrap}} = .013$, 95% CI [.021, .070]]).

Thwarted Belongingness and Self-Forgiveness. In a conditional indirect effects analysis examining the influence of self-forgiveness on the association between thwarted belongingness and suicide risk, through internal hostility, it was found that feeling forgiven by God did not significantly moderate the mediated association ($\beta_{\text{bootstrap}} = -.005$, $SE_{\text{bootstrap}} = .003$, 95% CI [-.012, -.001]). The indirect effect of internal hostility mediating the association between thwarted belongingness and suicide risk occurred at all three levels tested of self-forgiveness (16th percentile: [$\beta_{\text{bootstrap}} = .019$, $SE_{\text{bootstrap}} = .008$, 95% CI [.005, .037]]; 50th percentile: [$\beta_{\text{bootstrap}} = .014$, $SE_{\text{bootstrap}} = .006$, 95% CI [.004, .026]]; 84th percentile: [$\beta_{\text{bootstrap}} = .009$, $SE_{\text{bootstrap}} = .004$, 95% CI [.002, .019]]). Thus, our hypothesis remained unsupported.

Thwarted Belongingness and Accepting Forgiveness from Others. In our fifth moderated mediation model, we examined the role of accepting forgiveness from others as a moderator on the path between thwarted belongingness and internal hostility. Upon analysis, it

was revealed that accepting forgiveness from others did not significantly moderate the association ($\beta_{\text{bootstrap}} = .003$, $SE_{\text{bootstrap}} = .003$, 95% CI [-.002, .010]). The indirect effect of internal hostility mediating the association between thwarted belongingness and suicide risk occurred at the three tested levels of accepting forgiveness from others (16th percentile: [$\beta_{\text{bootstrap}} = .014$, $SE_{\text{bootstrap}} = .006$, 95% CI [.003, .027]]; 50th percentile: [$\beta_{\text{bootstrap}} = .017$, $SE_{\text{bootstrap}} = .007$, 95% CI [.004, .031]]; 84th percentile: [$\beta_{\text{bootstrap}} = .020$, $SE_{\text{bootstrap}} = .009$, 95% CI [.005, .038]]). Parallel to the other models, these findings did not provide support for our hypothesis.

Thwarted Belongingness and Feeling Forgiven by God. In our final conditional indirect effects analysis, we examined the moderating role of feeling forgiven by God on the pathway between thwarted belongingness and internal hostility. We found that feeling forgiven by God did not significantly moderate the meditational relation between thwarted belongingness and suicide risk through internal hostility ($\beta_{\text{bootstrap}} = .002$, $SE_{\text{bootstrap}} = .002$, 95% CI [-.001, .005]). The indirect effect of internal hostility mediating the association between thwarted belongingness and suicide risk occurred at all three levels tested of feeling forgiven by God (16th percentile: [$\beta_{\text{bootstrap}} = .013$, $SE_{\text{bootstrap}} = .007$, 95% CI [.003, .028]]; 50th percentile: [$\beta_{\text{bootstrap}} = .018$, $SE_{\text{bootstrap}} = .007$, 95% CI [.005, .033]]; 84th percentile: [$\beta_{\text{bootstrap}} = .018$, $SE_{\text{bootstrap}} = .007$, 95% CI [.005, .033]]). Thus, our hypothesis remained unsupported.

Chapter 4. Discussion

In our community-based convenience sample, we examined the bivariate associations between interpersonal need factors (i.e., perceived burdensomeness, thwarted belongingness), internal hostility, suicide risk, and aspects of receiving forgiveness (i.e., self-forgiveness, accepting forgiveness from others, feeling forgiven by God). In support of our hypotheses and consistent with previous findings, perceived burdensomeness, thwarted belongingness, internal hostility, and suicide risk were all positively related (Christensen et al., 2013; Joiner, 2005; McKinney et al., 2017), and the three aspects of receiving forgiveness were all positively related (Hall & Fincham, 2005; Worthington & Scherer, 2004). These two groups of variables were inversely related to one another, also consistent with the extant literature (Barber et al., 2005; Hirsch et al., 2017).

Some, but not all, of our multivariate hypotheses were supported. In our examination of simple mediation models, findings supported a partially mediating role of internal hostility between interpersonal needs and suicide risk, such that higher levels of perceived burdensomeness and thwarted belongingness were related to higher levels of internal hostility, which in turn was associated with higher levels of suicide risk. This finding lends support for the sociometer theory (Leary & Baumeister, 2000), and contributes to the literature, which has largely omitted mediating variables in the study of interpersonal needs. However, our analyses did not provide support for our hypotheses regarding the moderating role of forgiveness on this association. The findings of our study are discussed below, in turn, as well as the limitations and the potential implications of the results.

Discussion of Bivariate Associations

Our study variables can be conceptualized into two broad categories: the first being risk variables (i.e., perceived burdensomeness, thwarted belongingness, internal hostility, and suicide risk), and the second being forgiveness variables (i.e., self-forgiveness, accepting forgiveness from others, feeling forgiven by God). In the following sections, we discuss both.

Associations Among Risk Variables

As hypothesized, perceived burdensomeness was associated with thwarted belongingness. While these variables are often paired together, and are drawn from the same scale of interpersonal needs (Van Orden et al., 2012), they should be considered as independent variables, and the presence of one does not necessarily indicate the presence of another. For instance, persons with physical disabilities have been shown to have higher levels of perceived burdensomeness, but not thwarted belongingness (Bryan, 2011; Khazem et al., 2015). However, although the variables are distinct, there is still a notable correlation between these variables, and there are theoretical reasons as to why they may be related. Importantly, both are connected to the underlying construct of unmet social needs, and the presence of one variable may influence the strength of the other. For instance, if someone perceives their presence as being a difficulty or a nuisance towards other people, they may in turn distance themselves from social relationships in an attempt to lessen burden on others, thus contributing to a sense of loss of belonging (Hapenny & Fergus, 2017). Indeed, this phenomenon was observed in a qualitative study of women with endometriosis (Cole et al., 2020). Conversely, if a person is consistently isolated or does not have strong interpersonal connections, they may come to believe that their lack of group belonging is due to a qualitatively difficult or burdensome characteristic of their personhood or presentation (Stern, 2017; Wright, 2019).

Consistent with previous literature and supporting hypotheses, perceived burdensomeness and thwarted belongingness were both related to internal hostility and suicide risk (Rogers et al., 2017). Although interpersonal theory of suicide has generally examined perceived burdensomeness and thwarted belongingness as predictors of negative self-view (e.g., self-disgust, self-stigma, internal hostility) or suicide risk, the non-causal correlations of these constructs may also be considered. Perceived burdensomeness may be associated with internal hostility such that both may have an underlying sense that one is somehow difficult or causes encumbrance, and this may serve as a basis for a less compassionate view towards an individual, whether it be directed towards another or towards the self (Umphrey et al., 2020). Similarly, thwarted belongingness and internal hostility share an underlying sense of exclusion from social groups, which signals a sense of rejection to the target (Schilpzand et al., 2016).

Supporting a well-established body of literature, thwarted belongingness was associated with higher levels of suicide risk (Chu et al., 2017). As explored in the introduction, this association likely is attributable to both constructs' relations to isolation and the negative impact this can have on psychological wellbeing (Tucker & Wingate, 2014). Consistent with our hypothesis, perceived burdensomeness was also positively associated with suicide risk, lending further evidence to the interpersonal theory of suicide (Gautam & Nagle, 2016; Teismann et al., 2016). This association is likely attributable to both constructs' relations to beliefs around liability, with suicide perceived as a way to reduce liability or burden on others (Van Orden et al., 2006). Joiner and colleagues note that this association may have evolutionary underpinnings, such that a "sense of burdensomeness towards kin may erode self-preservational motives" (2002, p. 531), thus providing an explanation for why these constructs may be correlated. Finally, also in support of our hypotheses, internal hostility was positively associated with suicide risk. Both

internal hostility and suicide risk are strongly related to underlying mental health issues (Hendin et al., 2004, Mann et al., 2004; Turnell et al., 2019), as well as other adverse or detrimental environmental situations, such as social isolation or ostracism from peers (Williams et al., 2018).

Associations Among Forgiveness Variables

As hypothesized, all forgiveness variables were related to one another. These positive associations may underscore trait characteristics. Indeed, trait forgiveness (defined as a general tendency towards extending forgiveness following a perceived transgression) has been conceptualized as a long-enduring disposition (Emmons, 2001), and has been found to be connected with long-enduring personality traits, such as honesty-humility, agreeableness, emotionality, and conscientiousness (Shepherd & Belicki, 2008). In a conceptually similar vein, “shame-proneness” has been studied as a trait disposition antithetical to processes of accepting forgiveness (Carpenter et al., 2016; Rhangganadhan & Todorov, 2016).

Beyond this, the three aspects of accepting forgiveness that are examined in this study may influence one another (Hall & Fincham, 2005). Our study revealed that self-forgiveness was positively associated with feeling forgiven by God, supporting hypotheses. Some literature has hypothesized that feeling forgiven by God fosters a sense of self-acceptance (Martin, 2008); for example, if one perceives they have been forgiven by a divine, supreme being, one may have an enhanced capacity in their ability to exercise self-forgiveness, due to a sense of permission, or establishment of feeling worthy of forgiveness (McConnell & Dixon, 2012). Similarly, our study expands upon the body of forgiveness literature by explicitly linking self-forgiveness to accepting forgiveness from others (McCullough & Witvliet, 2002). Theoretically, if one is accepting of forgiveness from others, they may perceive themselves to be worthy of forgiveness and also be more apt to exercise self-forgiveness. Indeed, common counseling wisdom,

established in psychological literature, has alluded to the idea that self-forgiveness is difficult to achieve when one perceives that the victim of a committed transgression has not yet forgiven the perpetrator (Enright, 1996). In this way, the association among forgiveness variables may be reflective of sociometer theory itself, such that self-forgiveness is present when one perceives they have been forgiven by others, or by God.

Associations Between Risk and Forgiveness Variables

Our study also lends support to the literature of the inverse relationship between aspects of feeling forgiven and risk variables for mental health and suicide (Barber et al., 2005; Hirsch et al., 2017).

Feeling Forgiven and Perceived Burdensomeness. First, we will discuss the inverse relation between forgiveness variables and Joiner's identified variables of perceived burdensomeness and thwarted belongingness. The bivariate association between feeling forgiven and perceived burdensomeness may be related to one's perceived independence, or ability to function on one's own. In one study of older adults, a loss of independence was related to higher levels of perceived burdensomeness (Cukrowicz et al., 2011). In another study of older adults, the relation between various aspects of forgiveness, autonomy, and mastery were examined (Lawler-Row, 2010). Older adults who reported more autonomy and more mastery over their environments were also more likely to exhibit trait forgiveness, and also more likely to experience self-forgiveness and feeling forgiven by God.

Here we acknowledge the potentially confounding factor in these studies: as perceived burdensomeness is intricately connected with the concept of guilt (Guidry & Cukrowicz, 2016), it may be that individuals who function at a higher level of autonomy may more readily perceive they are forgiven, due to an appraisal that their presence may not be particularly as

burdensomeness, or “heavy,” as those who may perceive their presence as particularly draining or difficult. Further, perceived burdensomeness may also be counteracted by a perception of efficacy, or a belief in one’s productivity and the positive nature of their contributions to the external environment (Chu, Walker, et al., 2018; Damirchi et al., 2019). Theoretically, if one feels like they make worthy contributions to the world, or possess a certain perceived level of self-integrity, that individual may feel less inclined to blame themselves or carry guilt when they do have needs that might inconvenience others (Blazer, 2002; Dezutter et al., 2016).

Feeling Forgiven and Thwarted Belongingness. The constructs of receiving forgiveness and thwarted belongingness were also significantly, inversely related to one another in our study. First, this correlation may be present simply because of the inherent relational nature of forgiveness, particularly in the variables of accepting forgiveness from others and feeling forgiven by God. Logically, endorsing feeling forgiven by someone indicates a sense of relationship with that person, and thus precludes the sense of total or utter isolation (Bono et al., 2008; Wohl et al., 2008). Similarly, to experience feeling forgiven by God, one would likely also endorse a sense of community with God (Torges et al., 2013). Indeed, forgiveness, although separate construct from reconciliation (Worthington, Brown, & McConnell, 2019), has been shown to predict a sense of restoration or closeness within a given human relationship (Tsang et al., 2006). Beyond the underlying, others-oriented relational nature of forgiveness (i.e., as seen in accepting forgiveness from others and feeling forgiven by God), thwarted belongingness was also inversely related to self-forgiveness. However, self-forgiveness too may indicate a sense of connection with others. In one study, it was found that genuine self-forgiveness, which includes active effort in working through one’s offense, taking responsibility, and embracing a radical

form of acceptance, predicted positive outcomes in restoration of relationships between the offender and the victim (Woodyatt & Wenzell, 2013a).

Similar to our explanation on feeling forgiven and perceived burdensomeness, the significant relationship we observed between forgiveness variables and thwarted belongingness may be explained by a confounding factor in the sample, that those who have relatively intact relationships to begin with may not have had difficulty in fostering a sense of feeling forgiven. It might be reasoned that forgiveness may not be as difficult to procure if a transgression was not particularly egregious. In other words, people who have maintained relatively intact relationships may be more likely to endorse both feeling forgiven, and higher levels of belongingness, due to not having committed a transgression that could have been perceived as extremely difficult to forgive or reconcile from. In such relationships, the victim may more easily forgive lesser transgressions, and also, the transgressor may be more readily accepting of someone's forgivingness when it was extended (Sheldon & Antony, 2019). Conversely, if one were to commit a particularly grievous transgression, it may be more difficult to procure a sense of feeling forgiven, which could also reasonably result in higher levels of thwarted belongingness due to an ostracism of a particular relationship (Thompson & Korsgaard, 2019).

Feeling Forgiven and Internal Hostility. Following this trend, all three aspects of feeling forgiven were significantly, inversely related to internal hostility. Psychological literature has explored experiencing forgiveness as a sort of soothing mechanism on poor mental health outcomes; for instance, feeling forgiven by a divine being has been shown to have alleviating effects on psychiatric symptoms (Uecker et al., 2016), and experiencing forgiveness by others bears positive influence not only on collectivistic wellbeing, but also on one's feelings of inner peace (Hook et al., 2009).

Enwrapped within the ideology of forgiveness is the factor of acceptance, even in the presence of wrongdoing. Importantly, as proposed by Webb and colleagues (2017), self-forgiveness is an intentional process, occurring over time, that “results in ready accountability for said wrong, and a fundamental, constructive shift in one’s relationship to, reconciliation with, and *acceptance* of the self through human-connectedness and commitment to change” (p. 221, emphasis added). Indeed, as observed in a twenty-year study following patients with borderline personality disorder, levels of acceptance (which encompasses self-acceptance) and forgiveness grew together in a linear fashion, suggesting their interconnectedness (Zanarini et al., 2020). In a study of patients with fibromyalgia, Vallejo and colleagues (2020) found that self-forgiveness was positively correlated with acceptance of one’s perceived shortcomings. Given that self-acceptance has been theorized and shown to be antithetical to self-criticism (Donald et al., 2019; Pomeroy & Ellis, 2014), it is reasonable to deduce that self-forgiveness, too, would be antithetical to internalized hostility.

Other explanations may exist that explain the association between feeling forgiven variables and internal hostility. Although this evidence is mixed, for instance, individuals with the trait characteristic of narcissism, which can be conceptualized as an exaggerated form of self-regard (Mahadevan et al., 2019), may be less likely to endorse feelings of internal blame or internal dislike (Geukes et al., 2017), as well as less likely to endorse guilt or admit transgression (Leunissen et al., 2017), which in turn could influence heightened assumptions that all committed transgressions were either not transgressions to begin with, or, that the guilt of the transgression had been absolved. Less severe than narcissism, higher levels of self-esteem may underlie both one’s ability to accept forgiveness from the self, others, and God (Kent et al., 2018;

Yao et al., 2017), as well as one's ability to exert positive attitudes towards the self, antithetical to internalized hostility (Goss, 2007; McKinney et al., 2017).

Feeling Forgiven and Suicide Risk. Finally, in support of existing literature, all three aspects of feeling forgiven were significantly, inversely associated with suicide risk (Hirsch et al., 2011; Pugh, 2019; Worthington et al., 2007). One potential factor that may underlie the inverse association between the acceptance of forgiveness and suicide risk is the concept of guilt. Guilt, although sometimes associated with perceived burdensomeness or internal hostility, is a unique construct that is broadly understood as perceiving one's actions (or inactions) as resulting in real or imagined moral transgressions (Tilghman-Osborne et al., 2010). Of relevance, guilt specifically has been linked to increased suicidal ideation and risk, across independent studies and in unique populations, such as veterans (Bryan et al., 2013), individuals who practice BDSM (Roush et al., 2017), and in women diagnosed with ectopic pregnancies (Benute et al., 2016).

The association between guilt and suicide may also be related to cultural factors. For instance, Crowder and Kimmelmeier (2018) found that individuals from U.S. States who practiced "dignity" laws (i.e., laws enabling physician assisted suicide) were more likely to view guilt as an understandable reason for suicide, than their other U.S. counterparts. Further, "honor culture" and suicide rates have been linked, whereby a person may be more likely to die by suicide in order to give honor following a perceived transgression (Bock et al., 2019; Crowder & Kimmelmeier, 2017). Given this background consideration, whereby suicide may be seen as a way to either remove oneself from guilt, to give honor following a personal offense, or to "make up" for a perceived transgression, it could theoretically follow that the experience of forgiveness would assuage such perceptions of guilt, thereby reducing suicide risk. Indeed, accepting forgiveness from oneself (Ranganadahn & Todorov, 2010), from others (vanOyen-Witvliet et

al., 2002), and from God (McConnell & Dixon, 2012) have all been shown to have an inverse relationship with perceived guilt.

Beyond this explanation, accepting forgiveness from others, to some degree, may imply that one is in relationship with others (although forgiveness does not always entail reconciliation). As social connectedness alone is related to reduced risk for suicide (Rasic et al., 2009; Robins & Fiske, 2009), it may be that both variables simply highlight the role of social support, or social connection.

Specifically, our examined variable of feeling forgiven by God and suicide risk were also inversely related. As with accepting forgiveness from others, a perceived fractured relationship with the divine can also produce distress, perhaps even above or beyond that of perceiving a broken relationship with other humans, due to existential concerns dealing with ideas such as the afterlife or divine punishment (Exline et al., 2015). Also, it should be noted that in general, those who endorse higher levels of religiosity are also less at risk for suicide, as evidenced in a recent, nationally representative sample ($N=30,560$; Kleiman & Liu, 2018). A variety of mechanisms have been proposed for this relationship, including religious doctrines that teach against suicidal behavior (Pugh, 2019), stronger social support networks found within religious communities (Clary, 2015; Rasic et al., 2009), and religious coping such as religiously-based meaning-making (Pargament et al., 2000). Regardless of the mechanism, it may be inferred that those who endorse higher levels of feeling forgiven by God are also the ones who identify as more religious, and thus may also possess other associated protective factors against suicide such as these.

In sum, our bivariate hypotheses were supported, whereas all risk variables were positively related to one another and all forgiveness variables were positively related to one

another, and each risk variable was inversely related to each forgiveness variable. While many of these associations are intuitive and build upon a large body of existing literature, our findings contributed to constructs that are not as thoroughly studied: namely, feeling forgiven by God, accepting forgiveness from others (McCullough & Witvliet, 2002), and internal hostility (McKinney et al., 2017). Given the seriousness of suicide, the straightforward examination of associations among relevant variables is important for understanding. How, and the degree to which these variables influence one another, remains complex, and is the focus of the remainder of our discussion on multivariate models, explored below.

Discussion of Simple Mediation Models

In multivariate analyses, we first investigated the potential mediating role of internal hostility in the relationships between perceived burdensomeness/thwarted belongingness and suicide risk, in two separate mediation models. In both models, our findings indicated partial mediation, suggesting that internal hostility accounted for some of the relationship between the independent variable and the dependent variable. Said another way, perceived burdensomeness/thwarted belongingness predicted increased internalized feelings of self-directed hatred, which in turn predicted greater reported levels of suicide risk. We first explore the mediational role of internal hostility in general, and then more specifically discuss the two models below.

Internal Hostility as a Mediator

Our study provides a unique contribution to the existing body of research, in that internal hostility was identified as a mediating mechanism between perceived burdensomeness/thwarted belongingness and suicide risk. As explored in the introduction, there is a limited number of studies that have found support for the mechanisms by which interpersonal variables contributes

to suicide (for examples, see Barizlay et al., 2015 and Kleiman & Beaver, 2013). This is a somewhat surprising gap in the literature, given the theory's extensive body of research. Additionally, beyond the limited study of mediating variables, other researchers have noted that the interpersonal theory of suicide generally focuses on one's perception of relationships with others, and may not account for how self-interpretation (e.g., internal hostility) contributes to suicide risk (Hjelmeland & Knizek, 2016). Through simple mediation analysis, our study demonstrates that interpersonal factors are predictive of suicide risk through the pathway of internal hostility; in other words, hatred directed towards the self partially explains why perceived burdensomeness and thwarted belongingness predict suicidal ideation and behavior.

The mediational role of hostility directed inward lends support for sociometer theory, which suggests that one's self-evaluation is preceded, and influenced by, one's perception of their social standing (Leary & Baumeister, 2000). In other words, if one believes that the external world perceives one to be a burden, or that they do not belong, that belief is adopted and internalized towards the self. The internalization of negative external beliefs has been explored in other studies. For instance, in a study of transgender and gender nonconforming (TGNC) Italian individuals ($N=149$; Scandurra et al., 2018), having the experience of being exposed to discriminatory attitudes towards the TGNC community was associated with heightened levels of internalized transphobia. In one recent study exploring weight stigma and suicidality, it was found that the perception of being overweight was predictive of suicidality, even when controlling for objective, societally determined metrics such as BMI indicators of obesity (Brochu, 2020). Further, it has been found that the self-derogation that presents with internalized weight bias contributes to mental health issues beyond that of weight discrimination alone (Pearl & Puhl, 2018). In a community-based study of individuals with serious mental illness, it was

found that taking the societal stigma against serious mental illness, and applying it to oneself, led to poorer outcomes in recovery (Cunningham & Luckstead, 2017).

Studies such as these underscore the saliency of how self-interpretation influences mental health related outcomes. It is recognized that the presence of adverse experiences contributes to the development of internalized, emotion-laden beliefs, which in turn influence an individual's current emotional state (Aafesjes-van Doorn et al., 2020). The significant findings in our study suggest that this internalized negative belief contributes to suicide risk above and beyond that of received societal or interpersonal messages alone. In other words, while societal or interpersonal messages may certainly contribute to poor mental health, the narratives one translates to the self is one mechanism by which suicide risk is dynamically enhanced (Rogers & Joiner, 2019).

Perceived Burdensomeness

Our findings also build upon the existing literature that have shown both perceived burdensomeness and negative internalized feelings predict suicidal behavior (Rogers et al., 2017; Testa et al., 2017). In our analysis examining perceived burdensomeness as the predictor, internal hostility was a significant mediator of the perceived burdensomeness-suicide risk linkage, suggesting the translation of burdensomeness into self-hatred explains more variance in suicide risk than just the perception of burdensomeness alone. Said another way, it could be that the perception that one is a burden develops into a core belief that one truly is a burden, and since burdens are generally thought of as aversive, one then develops an adversarial stance towards oneself (i.e., internal hostility).

There is some existing evidence that suggests burdensomeness is linearly related to internal hostility. For instance, theories on internalized ableism have emerged, positing that a desire to not further impose liability or strain on others results in thoughts of self-disdain and

associated feelings of shame (Campbell, 2009), which are conceptually similar to internal hostility. As explored in bivariate discussion, perceived burdensomeness itself has been shown to be ridden with ideas such as low self-efficacy, or a belief that, on balance, one adds more negative hardships to the world around them than positive contributions (Umphrey et al., 2020; Wright, 2019). Such a belief has been related to self-esteem and self-efficacy issues (Eades et al., 2019). The commonality between perceived burdensomeness and low-self-evaluation may partially explain the small overall variance that internal hostility contributed to the simple mediation model. In other words, although our findings lend support for the theory of internalized hostility, and more broadly sociometer theory, it remains difficult to tease apart these constructs (Rucker et al., 2011).

Thwarted Belongingness

In our analysis examining thwarted belongingness as the predictor, internal hostility was a significant mediator of the thwarted belongingness-suicide risk linkage. This finding not only builds upon the existing literature that has demonstrated that social connectedness is predictive of suicidal behavior (Chu et al., 2017; Testa et al., 2017), but also contributes to the literature in that it establishes internal hostility as a mediating mechanism by which this process occurs. More specifically, perceived exclusion or isolation may translate to one's perception of self-identity, including self-hatred, which then contributes to enhanced suicide risk.

The link between thwarted belongingness and internalized cognitions have been alluded to in other studies, building on sociometer theory, which posits that self-perception is influenced by how one thinks others views the self. For instance, across four studies, Breines and Ayduk (2015) found that priming for instances of social rejection (either through recall task or subliminally) resulted in greater self-directed hostile cognitions compared to control participants.

In one study of Chicana/o and Latina/o college students, it was found that perceived interpersonal racism (a construct that inherently ostracizes “outsiders”) contributed to internalized racism (Hipolito-Delgado, 2010). In one study that explicitly builds on sociometer theory, Schilpzand and Huang (2018) examined how workplace incivility and ostracism contributed to a sense of self-identification with these labels. In other words, the experience of thwarted belongingness, which may be characterized as the perception of disconnection from other people, in turn may contribute to a self-directed belief such as “I don’t belong” or “I am an outsider.” Such statements are tangential to the idea of internal hostility as measured in the present study (e.g., “feeling sick about oneself”).

Overall, the findings of our simple mediation models suggest that the degree to which an individual internalizes beliefs related to perceived burdensomeness/thwarted belongingness may be a mechanism by which suicide risk is enhanced. These findings build upon the existing literature, both in terms of supporting Leary and Baumeister’s theory of self-evaluation (2000), as well as in terms of understanding how interpersonal variables are related to the development of heightened suicide risk (Rogers & Joiner, 2019).

Discussion of Conditional Indirect Effects Models

Beyond our multivariate analyses of simple mediation models, we also examined moderated mediation models. Specifically, in these conditional indirect effects models, we examined the potential moderating role of aspects of receiving forgiveness (i.e., self-forgiveness, feeling forgiven by others, feeling forgiven by God) on the association between interpersonal needs and internal hostility, as it relates to suicide risk. Our hypotheses were not supported for these six models which tested moderating effects. Contrary to our hypotheses, aspects of receiving forgiveness did not significantly influence the strength of the association between

perceived burdensomeness/thwarted belongingness and internal hostility. Regardless of the level of forgiveness endorsed (i.e., -SD below the mean, the mean, and +1SD above the mean), the overall impact on reported levels of internal hostility and the outcome of suicide risk was not substantively changed. In other words, the relation between the study variables did not depend on the level of forgiveness.

There may be broad explanations for the lack of significant findings. First, when examining the simple mediation effects (explored above), the meditational effect of internal hostility contributed limited variance to the model (i.e., a partial mediation with a relatively small effect size). It can be interpreted that the conditional indirect effect of forgiveness variables, which examined the pathway between the independent variable and the mediating variable, thus might not affect the outcome variable at a statistically or clinically significant level due to the already limited effect of internal hostility on the model.

Second, and more related to the construct of receiving forgiveness itself, it is noted that receiving forgiveness, while having the potential for a positive and healing experience, inherently places one in the role of transgressor, or as an individual who has contributed some form of hurt to a relationship (whether intentional or not). This positional role may be associated with negative internalized emotions such as guilt or shame (Griffin et al., 2016; vanOyen-Witvliet et al., 2002). Indeed, in one study examining the forgiveness experiences of transgressors, it was found that forgiveness-seeking behavior itself was motivated by the emotion of guilt over time (Riek et al., 2013); this finding was corroborated by another study suggesting the presence of guilt itself (as opposed to shame) predicted self-forgiveness (Griffin et al., 2016). While guilt and shame are not the same construct as internalized hostility, all three represent negative internalized emotions that are laden with self-appraisal; thus, the very nature of placing

oneself as the recipient of forgiveness, or of needing forgiveness, may also be associated with feelings of self-hatred or self-disdain (Enright, 1996; Wohl et al., 2008). Considered together, it may be that even if the reception of forgiveness is inversely related to negative interpersonal factors (i.e., thwarted belongingness and perceived burdensomeness), internal hostility, and suicide risk (Donald et al., 2019; Pomeroy & Ellis, 2014; Vallejo et al., 2020), endorsing high levels of forgiveness or low levels of forgiveness may not substantively influence how one feels about oneself.

Limitations

Our findings should be interpreted within the context of limitations. Although regression models are designed to infer causal relationships, the cross-sectional design of this study precludes true examination of causality. While our model was built on strong theory (Leary & Baumeister, 2000), which is required for good practice in statistical modeling (Wu & Zumbo, 2008), there is some degree to which our factors may be bidirectional. For example, internal hostility may influence perceptions of thwarted belongingness. Indeed, it has been theorized that internalized self-disgust may inhibit individuals from seeking interpersonal relationships (Ypsilanti, 2018) and peer rejection and self-perception processes have been shown to influence one another (Zimmer-Gembeck, 2016). In one study examining relationship formation in real-time dyads ($N=274$), it was observed that the perception of thwarted belongingness predicted a decrease in a desire to continue in that relationship, thus perhaps engaging in a cycle of “self fulfilling prophecy” (Jankowski et al., 2020). Internal hostility and perceived burdensomeness may also have a bidirectional relationship. For example, one’s internal perception of their self-competence has been shown to be predictive of perceived burdensomeness (Tucker & Wingate, 2014) and it has been theorized that self-hatred may contribute to heightened perceived

burdensomeness (Jahn et al., 2011). Last, but importantly, there is new and emerging evidence that even suicide risk and interpersonal needs may be better modeled by a temporal, dynamic relationship, as opposed to a strictly linear or unidirectional one. In a recent longitudinal study of adults at high-risk for suicide, it was found that suicidal behaviors contributed to an increase of perceived burdensomeness and thwarted belongingness across time (Rogers & Joiner, 2019).

A second limitation to our present study is the generalizability of the sample. Our sample was predominantly white, female, religiously-affiliated, and of a younger age, with the modal age of participants being 18 years old. Importantly, these demographic variables have been broadly associated with differing levels of suicide risk. In some ways, the demographic variables of our study may indicate our sample as more prone to suicide risk. For instance, in the United States, white individuals are consistently at greater risk suicide than other ethnic minorities (Houle & Light, 2017). In regard to sex, while males are more likely to complete suicide (ASFP, 2017), females are more likely to be at risk for suicidal behaviors as they typically endorse higher levels of ideation and number of attempts of suicide (Olfson et al., 2017). In regard to age, young adults have been shown to have a higher rate of suicide attempts than any other age group (Olfson et al., 2017). In other ways, the demographic variance in our study may indicate our sample as less vulnerable to suicide risk, specifically in terms of religious orientation, which, albeit mixed evidence, is generally regarded as a protective factor of suicide risk (Pugh, 2019). While these variables were controlled for in the present study, our findings may not be generalizable to other groups, and thus, future research is warranted to substantiate these findings in diverse populations.

It is also noted that the measurement of forgiveness variables was limited by nature of being single-item measures. Although the BMMRS has been used in a variety of studies (e.g.,

Johnstone et al., 2009; Kioulos et al., 2015; Webb et al., 2013; Vespa et al., 2017), authors such as Fernández-Capo and colleagues (2017) have noted that a certain level of sophistication is likely required for an accurate, and nuanced understanding of how forgiveness operates in interpersonal relationships. The measurement of forgiveness in the present study did not methodically account for the level that an individual may have internalized the experience of receiving forgiveness, which psychological literature has recognized as an important part of the forgiveness process (Hidalgo, 2018; Sapmaz et al., 2016). For example, in one report of two studies examining ostracism following an interpersonal transgression, authors Woodyatt and Wenzel (2013b) noted that, when met with hostility or continued ostracism, a transgressor would engage in process of “pseudo-self-forgiveness,” described as minimizing the harm done or derogating the victim, which led to differential outcomes from other studies demonstrating the protective factors of internalized self-forgiveness (Cheavens et al., 2016). Also, regarding difficulty in the measurement of forgiveness, it is noted that some researchers have conceptualized forgiveness as being a moral virtue actively practiced and consistently embraced, as opposed to a simple dichotomy of a general state of being or a singular episode of forgiving (Kim & Enright, 2016). Such authors note that if forgiveness is indeed a complex phenomenon as opposed to a static trait or state, the construct itself is difficult to measure, and thus may explain why forgiveness failed to moderate the relationship between interpersonal needs and internal hostility in our study.

Additionally, although the present study offers insight into how interpersonal factors are related to suicide risk, there may be other notable pathways and variables to explore in future studies. For instance, a more careful exploration regarding if an actual disruption in relationships has occurred (Chang, Díaz, et al., 2017), and looking at how this impacts perception of the self,

may elucidate findings, as the present study did not account for an individual's network of support, which is a known factor in predicting mental health outcomes and suicide risk (Kazan et al., 2016; Miller et al., 2015). Other psychological factors such as cognitive rigidity may moderate the associations between perceived interpersonal needs and one's self-perception (Hapenny & Fergus, 2017). Finally, other theories of self and social evaluation exist. Although not as well supported as self-esteem or sociometer theory by psychological literature, there does exist some evidence for the self-consistency theory, which posits that one's view of self in turn influences how one evaluates their relationship with others (Joiner et al., 1993; Swann et al., 1987). Relatedly, other studies have found that self-competence influences one's perceptions of perceived burdensomeness and thwarted belongingness (Tucker & Wingate, 2014). Given the possible bidirectional nature of inter- and intra-personal variables (Jones, 1973), as well as recent literature suggesting even the bidirectional nature of suicidality on interpersonal needs (Rogers & Joiner, 2019), a more dynamic modeling system of the variables examined in our study could be warranted (Migon et al., 2005; Nakajima & West, 2013).

Implications

Despite limitations, the findings of our study contribute to the existing body of literature concerning risk factors for suicide and the mechanisms by which these factors operate. First, our findings provide empirical support for the existing body of literature concerning the correlation, and predictive qualities, of interpersonal needs and suicide risk (Christensen et al., 2013; Chu et al., 2017). We also contribute to this area of research by establishing support for a mediating mechanism by which interpersonal needs are related to suicide risk (i.e., internal hostility), which has been a gap in the literature (Hjelmeland & Knizek, 2016). Further, the function of internal hostility in our model, understood as an internalized hatred, anger, or disgust about oneself, lends

support for the sociometer theory of self-evaluation (Leary & Baumeister, 2000). Finally, we expanded on the extant literature regarding receiving forgiveness, whether in the form of self-forgiveness, accepting forgiveness from others, or feeling forgiven by God. Although inconclusive, our findings still contribute to psychological knowledge such that these factors may not, on the whole, provide significant buffering effects against the development of internal hostility. This may be somewhat congruent with existing literature that suggests receiving forgiveness is not as well understood as extending forgiveness to others (Worthington et al., 2007).

Beyond the theoretical contributions of this study, there may be pragmatic implications for reducing suicide risk. Given the significant relationship between interpersonal needs and the outcome of suicide risk, interventions directly targeting perceived burdensomeness and thwarted belongingness may be warranted. Indeed, the theory of thwarted belongingness in particular is supported by body of literature examining the importance of social needs on mental health outcomes, and this might suggest that directly improving an individual's social connectedness may result in better mental health outcomes. For instance, in one recent study by Conwell and colleagues (2020), researchers experimented the effects of being involved in a peer companionship group in a randomized sample of older, socially disconnected, primary care patients. After 12 months, it was found that among individuals who had been matched with a peer as part of the community-based program, symptoms of depression, anxiety, and feeling like a burden improved at a greater rate than the individuals who received treatment as usual. Additionally, interventions such as enhancing interpersonal effectiveness skills to help foster an individual's sense of community has been proposed as being potential helpful in mitigating risk (Linehan, 2014; Rogers & Joiner, 2019). Behavioral activation strategies such as deliberately

reaching out to others to expand social networks may also be effective in reducing suicide risk (Hollingsworth et al., 2018). Being aware of contextual factors that may contribute to thwarted belongingness may be important for clinicians. As examples, the loss of significant loved ones, especially when one has a sparse network of contacts, has been shown to relate to increased levels of suicide as demonstrated by statistical modeling (Liu et al., 2017). Relevant to today's time, there is evidence suggesting that the social isolation related to the COVID-19 pandemic has contributed to a rise in thwarted belongingness, and suicide risk, among the general population (Gratz et al., 2020). Knowing these risk factors related to thwarted belongingness may be important in assessing risk for suicidality and may also guide clinical intervention.

Intervention may also be targeted towards improving perceived burdensomeness. For example, using therapy in a way to target “myths” surrounding perceived burdensomeness has preliminary support as effective in reducing suicide risk (i.e., providing psychoeducation about the idea that “asking for help is not a burden”) (Short et al., 2019). In one study utilizing a cognitive behavioral, web-based intervention designed to target misperceptions of burdensomeness in a group of adolescents ($N=80$), it was found that among those who completed two 30-45 minute web seminars had a significant reduction in perceived burdensomeness and depressive symptoms at a six-week follow up, when compared with controls (Hill & Pettit, 2019). In another intervention study of adults ($N=138$), it was found that a three-week intervention involving both psychoeducation and “cognitive bias modification” significantly reduced perceived burdensomeness and a 12% reduction in likelihood of reporting suicidal ideation at a six-month follow up (Allan et al., 2018). In another study among homeless youths ($N=150$; Zhang et al., 2020), it was found that cognitive therapy targeted towards reducing cognitive rigidity around perceptions of burdensomeness reduced suicidal ideation. Finally,

although it is recognized that perceived burdensomeness is usually a cognitive misperception (van Orden et al., 2010), for some individuals (e.g., individuals involved in rehabilitative therapies), enhancing occupational or vocational skills has been related to enhancing self-esteem (Martin et al., 2008; Farmer et al., 2018), which in turn may buffer against suicide risk (Gooding et al., 2015).

Beyond directly targeting perceptions of burdensomeness and thwarted belongingness, another potential therapeutic implication could be intervening on the level of internal hostility. As demonstrated by our study, internalized feelings of hatred or disgust towards oneself is a mechanism by which interpersonal needs are translated to suicide risk. Certain interventions have demonstrated effectiveness in reducing self-stigma or negative beliefs about oneself. One such intervention piloted by Lucksted and colleagues (2011) involved a 9-week intervention targeting cognitive misperceptions and strengthening positive aspects of oneself among individuals with mental illness. In this intervention, not only did self-stigmatizing beliefs reduce, but also positive outcomes of self-empowerment and overall wellbeing were enhanced. Additionally, increasing an individual's awareness of their cognitive tendencies may be important in reducing risk. For example, in an aforementioned study of individuals living with serious mental illness, it was found that cognitive insight buffered the effect of self-stigmatizing beliefs on poor outcomes (Cunningham & Lucksted, 2017). This suggests that bringing awareness to one's own patterns of thinking, and increasing cognitive flexibility surrounding stigmatization beliefs, may reduce negative internalized beliefs which in turn may lead to better mental health outcomes. Indeed, there is some evidence that cognitive processes involved in Acceptance and Commitment Therapy (ACT) may be related to interpersonal needs and internalized, negative narratives of the self (i.e., self-disgust). Specifically, the belief that one is

a burden has been related to psychologically inflexible processes of cognitive fusion and experiential avoidance (Hapenny & Fergus, 2017); thus, a point of intervention towards reducing may be through promoting cognitive defusion and acceptance (Ducasse et al., 2014). Other authors have noted the significance of self-disgust as a strong predictor of suicide risk, and have called for further examination to explore whether self-disgust should be targeted for suicide prevention efforts (Schienle et al., 2020).

Although feeling forgiven did not moderate the relationship between interpersonal needs and internal hostility, all domains of feeling forgiven (i.e., by self, others, and God) were significantly inversely related to risk factors. Thus, we briefly note the potential psychological and therapeutic benefits of accepting forgiveness, including extending forgiveness to oneself, as this has been linked to better mental health outcomes and reduced suicide risk (Cheavens et al., 2016; Griffin et al., 2017; Hirsch et al., 2012; Sanger & Veach, 2008). One intervention for cultivating self-forgiveness is evidenced by Worthington's REACH Model of Forgiveness, which involves the active recalling of the offense, understanding the pain that was caused, making amends, extending forgiveness as a gift, and committing to the perpetual act accepting self-forgiveness (Worthington, 2013). Beyond this, it is noted that the process of feeling or accepting forgiveness may be difficult to cultivate in a therapeutic setting, but clinical processes such as cognitive reframing (Baskin & Enright, 2004), or enhancing one's ability to hold dialectical constructs (e.g., remorse for past action while not ruminating on past mistakes; Sandage et al., 2015) may be beneficial in helping one to accept forgiveness from others or from God.

Conclusion

Overall, in our community-based convenience sample, we found that the variables of interpersonal needs (i.e., perceived burdensomeness and thwarted belongingness), internal hostility, and suicide risk were all related to one another. Moreover, we found that internal hostility, understood as anger or disgust directed towards oneself, partially mediated the relationship between interpersonal needs and suicide risk. Said another way, greater levels of perceived burdensomeness and thwarted belongingness predicted a heightened sense of self-hatred, which in turn predicted greater suicide risk. While interpersonal needs have long been established as a predictor of suicide risk (Chu et al., 2017), mediating mechanisms of this association have been a notable dearth in the psychological literature, and researchers have pointed to the importance of including self-evaluative variables in explaining risk for suicidality (Hjelmeland & Knizek, 2019). Our study addresses this critique and offers novel insight regarding how perceptions of interpersonal relationships influence one's relationship towards oneself, and thus supports a sociometer theory of self-evaluation and enhances our understanding of how suicide risk is developed.

Beyond this, our study also indicated various domains of receiving forgiveness (i.e., from self, others, and God) as being inversely related to suicide risk, corroborating past evidence (Hirsch et al., 2011; Pugh, 2019; Worthington et al., 2007). While we hypothesized that aspects of receiving forgiveness could buffer the effects of interpersonal needs on internal hostility, our study did not provide support for that premise. Receiving forgiveness may be an area of exploration in the future, given its inverse relation to suicide risk, but may have limited clinical value in the particular pathway of serving as a protective factor in the development of negative self-evaluations.

In conclusion, our findings suggest that experiencing perceived burdensomeness and thwarted belongingness in external relationships may expand to the development of a negative attitude towards oneself, consistent with theories of self-evaluation such as sociometer theory (Leary & Baumeister, 2000). This self-directed attitude of internal hostility contributes to heightened suicide risk. These findings not only inform psychological theory, but also can be used in clinical intervention, as they demonstrate which variables may be relevant to target in suicide prevention efforts, which represents a growing and significant public and personal health concern.

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Appalachian Research Forum Masters Graduate Oral Presentation
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