SOCIAL SUPPORT AS A PROTECTIVE FACTOR FOR YOUTH SUICIDE:
AN INTERSECTIONAL AND SOCIOECOLOGICAL APPROACH

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ABSTRACT

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Background: While suicide rates for youth continue to rise, most extant research continues to approach prevention from the individual level focused on risk factors. This study aims to address this issue and contribute to the existing literature by (1) examining suicide and the role of social support as a protective factor through the lens of a socioecological framework, and (2) using an intersectional approach to determine which youth are most at risk for suicide and how social support may be differentially effective for marginalized youth. **Methods:** Secondary analysis of Michigan Profile for Healthy Youth survey data involved cluster analyses to determine the implications of intersectionality on youth suicide, and a combination of stepwise and hierarchical regression models to investigate the unique and compounding role of social support as a protective factor for youth suicide, as well as its role in moderating in the relationship between intersectionality and suicide risk. **Results:** Youth with marginalized identities, as well as those with intersecting marginalized identities, were significantly more likely to be high-risk. Social support at the family, school, and community levels was found to be significantly associated with reduced suicide risk, and the combination of multiple sources of support was more protective than any unique source. Finally, family and school support significantly moderated the impacts of intersecting marginalized identities on suicide risk. **Discussion:** Findings highlight the importance of attending to protective factors in every context in which youth live, learn, and play. In addition, measuring and reporting social identities as well as their combinations and interactions adds to our understanding of both risk and prevention.

This thesis is dedicated to my late brother, David Standley.
"I'm everything that I am because of you."

ACKNOWLEDGEMENTS

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INTRODUCTION

Historically, there has been a demonstrable positive association between suicide and age such that the highest suicide rates were among the oldest populations (Cutler, Glaeser, & Norberg, 2001). More recently, however, this relationship has faded as youth suicide rates have increased more rapidly than rates among adults. Among youth, suicide and suicidal behaviors are often viewed as attention-seeking by a group of people often thought to be rebellious and irresponsible (Bourke, 2003; Fullagar, 2003). These destructive perceptions of youth have allowed many communities to ignore the increasing rates of suicide among youth, often pathologizing suicidal ideation and suicide attempts as an issue without a solution. This stigma, combined with a lack of focus on the extra-individual factors contributing to suicidality, has resulted in a dearth of knowledge regarding the social and ecological factors impacting suicide among youth.

Worldwide, nearly 800,000 people die by suicide each year (World Health Organization, 2018).[1] More people die by suicide each year than in all wars, terrorist acts, and homicides combined (Mishara & Weisstub, 2005). Despite decreasing mortality overall, suicide rates have reached a 30-year high in the United States with the sharpest and most steady increases occurring in the last 10 years (Curtin, Warner, & Hedegaard, 2016; Twenge, 2017). In fact, between 1999 and 2016, the suicide rate in the United States increased by more than 30%. During this same period, some states saw increased suicide rates of more than 50% (Centers for Disease Control and Prevention, 2018a). Overall, suicide is the 10th leading cause of death nationally and the suicide rate in 2017 was the highest since the Great Depression (Drapeau & McIntosh, 2018).

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[1] A note regarding language: Within the suicide prevention, intervention, post-intervention, and survivor circles, the term "commit" has been strongly discouraged due to (a) its negative connotation and association with crime, and (b) its subtle assignment of moral judgement and perpetuation of stigma. The phrase "died by suicide" is preferred.

Even more alarming, suicide is currently the second leading cause of death among 15- to 29-year-olds globally (WHO, 2018). In the U.S., suicide is the third leading cause of death among youth ages 10 to 14, and the second leading cause of death among youth and young adults ages 15 to 34 (CDC, 2016). In 2016, an average of one young person (age 24 or younger) died by suicide every 92 minutes—an average of 15.6 young lives lost per day, up from 13.4 per day in 2013 (Drapeau & McIntosh, 2015; Drapeau & McIntosh, 2017). Going back further, 62.4% more 10- to 19-year-olds died by suicide in 2016 than in 2007 (Twenge, 2017). Therefore, it is no surprise that suicidal ideation and suicide attempts are the most commonly reported mental health crises among youth (Miller, Esposito-Smythers, & Leichtweis, 2015).

In the state of Michigan, suicide rates have risen by about 33% in the last 17 years (CDC, 2018a). Currently, Michigan ranks 34th in the country for suicide deaths with nearly 1,400 people lost to suicide in 2016 alone. On average, one person dies by suicide every six hours in the state of Michigan (CDC, 2017). In addition, recent National Youth Risk Behavior Survey (YRBS) data indicate that students in Michigan were significantly more likely to report considering attempting suicide and having made a plan to attempt suicide than students nationally (CDC, 2018b).

As these sobering statistics illustrate, suicide rates have increased across demographic groups over the last few decades. These increases are even more pronounced among youth and young adults, but why is that? As one researcher has found, increases in youth using smartphones and other electronic devices is associated with higher rates of loneliness and increased levels of depression (Twenge, 2017). Moreover, she found that youth who "spend more than three hours a day on electronic devices are 35% more likely to have at least one suicide risk factor" (Twenge, 2017, pp. 83-84). As such, it is imperative that more research look at the effects of isolation and

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depression on suicide risk and, more importantly, what we can do to combat it. To do this, suicide research must expand beyond its traditional boundaries.

> The field of suicidology has become too narrowly focused on questions of individual pathology and deficit, as well as too wedded to positivist research methodologies, and thus has come to actively exclude from consideration approaches to understanding and preventing suicide that do not fit well with these orthodoxies. (White, Marsh, Kral, & Morris, 2016, p. 2)

The present study answers the first of these calls for a "critical suicidology" and aims to contribute to the existing literature in two major ways. Firstly, the study goes beyond the individual level of analysis to look at suicide and the role of social support as a protective factor through the lens of a socioecological framework. Secondly, it uses an intersectional approach to determine which youth are most at risk for suicide and how that intersectionality moderates the effects of protective factors on suicide risk. The study is the second of a multi-phase project designed in collaboration with the Tri-County LifeSavers Suicide Prevention Coalition in mid-Michigan. Study I of the project focused on determining the demographic risk factors for suicide risk among youth in the area, as well as detailing the prevalence of suicidal ideation and suicide attempts among youth.

Building on this previous study (see Standley, 2018), four primary research questions guided the study. Firstly, given the known higher risk profiles for certain youth uncovered in Study I (i.e., females, youth identifying with more than one racial identity, and youth identifying as gay, lesbian, or bisexual), which intersectional subgroups of youth are most at risk for suicide? Cluster analyses were used to determine the combinations of youth identity (gender, race and ethnicity, and sexual identity) that contribute to risk. Secondly, as Twenge (2017) suggests, a lack

of social interactions and supports contributes to suicide risk among youth. As such, to what extent does the presence of social support reduce suicide risk among youth? The study investigated the role of social support at the family, school, and community levels in protecting against suicide risk among youth. In addition, what is the most powerful combination of ecological social support sources in reducing suicide risk? Finally, to what extent does social support moderate the effect of intersectionality on suicide risk? The study assessed the extent to which family, school, and community support moderated the effects of intersectionality on increased suicide risk. In sum, the study investigated the role of intersectionality in determining which youth are most at risk for suicide, and how social support may be effective for these youth.

LITERATURE REVIEW

The continually rising rates of youth suicide in the United States have been cause for concern for decades. Regardless of demographics, suicide is best understood as "death caused by self-directed injurious behavior with an intent to die as a result of the behavior" (CDC, 2016). Throughout this paper, this is the context from which other terms related to suicide are derived. More specifically, regarding terminology used throughout this study, suicidal ideation refers to the thoughts of suicide one might experience (O'Carroll et al., 1996; Silverman, Berman, Sanddal, O'Carroll, & Joiner, 2007). Suicidal behavior refers to any self-directed injurious behavior enacted with the intent to die (Silverman et al., 2007). Suicidality refers to the likelihood of an individual or individuals to engage in suicidal behavior (Silverman, 2006; Silverman et al., 2007). Lastly, suicidology refers to the empirical and theoretical study of suicide and its prevention (O'Carroll et al., 1996; Silverman, 2006; Silverman et al., 2007).

The following is a review of the literature regarding the influence of sociodemographic factors on suicidality among youth. Next, a discussion on the importance of intersectionality in

suicide research is presented. I then propose the use of a socioecological framework to better encompass the complexity of suicide and its contributing factors. Finally, a discussion of the relevant risk factors related to suicide risk is followed by a discussion of the research regarding social support as a protective factor for youth suicide.

Sociodemographic Factors

Suicide affects all demographics, though some populations are more at risk than others. As discussed below, differential risk for suicide and suicidal behaviors among youth has been demonstrated based upon sociodemographic factors such as gender, race and ethnicity, and sexual identity (Canetto, 1997; Cover, 2013; Drapeau & McIntosh, 2017; Miller, 2011; Sharaf, Thompson, & Walsh, 2009; Silenzio, Pena, Duberstein, Cerel, & Knox, 2007; Stone et al., 2018; Worthington & Reynolds, 2009). The intersectional, compounding effects of these identities on suicide risk has been largely uninvestigated by suicide researchers and is a major focus of this study.

Gender. Among sociodemographic variables, gender appears to have the strongest and most consistent effect on suicidal behavior (Miller, 2011). Generally, males are at three times greater risk for death by suicide than are females, whereas females are more likely to experience suicidal ideation and attempt suicide (Canetto, 1997; Stone et al., 2018). In fact, in 2015, nearly 77% of those who died by suicide in the United States were males (Stone et al., 2018). This gender paradox is seen across ages and ethnicities and is largely because males are more likely to use more lethal methods than females (e.g., firearms as opposed to poisoning, respectively; Curtin et al., 2016; Drapeau & McIntosh, 2017; Mazza & Reynolds, 1998; Miller, 2011).

Race and ethnicity. Racial and ethnic groups differ significantly in their rates of suicide, and this same pattern is often borne out among youth (Miller, 2011). While rates of suicide are

generally lower among Hispanic and Latinx individuals than among Whites, rates among Native American, Alaska Native, and other indigenous populations are higher than any non-White population (Drapeau & McIntosh, 2017; Miller, 2011; WHO, 2018). For example, in one study of 849 potential high-school dropouts across 15 high schools in the Pacific Northwest and New Mexico, researchers found that, proportionally, American Indian youth had the highest average suicide risk in the sample (Sharaf, Thompson, & Walsh, 2009). Moreover, while African American youth have historically had lower rates of suicide than White youth, the youth suicide rate has risen more substantially among African American males than among White males in recent years (Miller, 2011). These differences do not, however, tell us anything about youth with multiple racial identities. Though research in such populations is scarce, one nationally representative sample of middle- and high-school youth found that mixed-race adolescents were at greater risk for considering suicide than their single-race peers (Udry, Li, & Hendrickson-Smith, 2003). Further research is necessary to better understand these differences.

Sexual identity. Though research on the relationship between sexual minority youth (i.e., those identifying as lesbian, gay, or bisexual [LGB]) and suicide risk is increasing, solid data regarding suicide rates among LGB youth are hard to come by. Moreover, within-group differences among sexual minority youth—such as the potential differential risk for gay and lesbian youth as compared to bisexual youth—are scarcely examined as many studies dichotomize sexual identity as "heterosexual" and "other" (Miller, 2011; Worthington & Reynolds, 2009).

Despite this dearth of solid data, extant research suggests that LGB youth are at a significantly higher risk for suicidal ideation and suicide attempts than are their heterosexual counterparts (Cover, 2013; Cover, 2016; Miller, 2011; Stone, et al., 2014; Worthington &

Reynolds, 2009). For example, a study based on 2002 data from the National Longitudinal Study of Adolescent Health found that LGB youth were 2.7 times more likely to report experiencing suicidal ideation and over three times more likely to report attempting suicide than their non-LGB peers (Miller, 2011; Silenzio et al., 2007). Moreover, recent Michigan data from the YRBS suggests that LGB students were significantly more likely to report experiencing suicidal ideation, having made a plan to attempt suicide, and having attempted suicide than were heterosexual students (Standley, 2018; Stone et al., 2018).

Intersectionality

Broadly, intersectionality aims to explore the dynamics between co-existing social identities and systems of power and oppression (Crenshaw, 1989). It illuminates the relationships between individuals' identities by recognizing the ways in which multiple cultural and social identities such as race, gender, disability, sexuality, and class combine to create unique experiences across domains and outcomes in every facet of one's life, including privilege and oppression (Crenshaw, 1989; Knudsen, 2006). Intersectionality recognizes that unique historical, social, cultural, and political factors inform the intersections of sexual identity, race, and sex, and therefore differentially influence life experiences (Bostwick et al., 2014). The importance and salience of these intersections cannot be overstated. For example, research suggests that the categories of sexual identities differ greatly across ethnic groups, and thus LGB youth of varying ethnicities experience identity development differently (SMART, 2009). Given that both LGB and Native American youth are more likely to experience suicidal ideation, for instance, it could be hypothesized that Native American youth identifying as lesbian, gay, or bisexual are at a compounded higher risk for suicidal ideation than Native American youth identifying as heterosexual.

Adolescence is a pivotal time for youth as they work toward the development of their identity, and intersectionality is a vital piece of that development. In fact, research has shown the adolescent development often differs as a function of gender (McLean & Breen, 2009), race and ethnicity (Crawford & Alaggia, 2008; Phinney, Jacoby, & Silva, 2007), and sexual identity (Cover, 2016; Saewyc, 2011) such that youth identifying with the minority group in these categories are often more conflicted with their identity and typically report more negative health outcomes, including suicidal ideation and behaviors (Bostwick et al., 2014; McManama, Putney, Hebert, Falk, & Aguinaldo, 2016; Shade, Kools, Weiss, & Pinderhughes, 2011). At the same time, discrimination and bullying based on one's identity increases during adolescence (Garnett et al., 2014). When combined, these developmental and victimization factors can be fatal for youth.

Overall, extant research on the role of intersectionality in suicide risk among youth has found that youth with multiple minority identities are at increased risk for suicide (Bostwick et al., 2014; Garnett et al., 2014; McManama et al., 2016). For example, a 2006 survey of high school students in Boston public schools found that students who were identified as an "intersectional class" (characterized by an endorsement of a combination of racial, immigration status, sexual identity, and weight discrimination) were more likely to experience suicidal ideation than their counterparts, including those endorsing only one type of discrimination (Garnett et al., 2014).

Despite this overarching theme, however, findings related to specific combinations of marginalized identities have been inconsistent. One mixed-methods study of LGBT youth in Chicago found that LGBT Latinx youth were more likely to report having attempted suicide while LGBT Black and White youth were more likely to report suicidal ideation (Mustanski,

Garofalo, & Emerson, 2010). Conversely, a study of adults in New York City found that both Latinx and Black LGB respondents were more likely to report attempting suicide during adolescence than White respondents (O'Donnell, Meyer, & Schwartz, 2011). An analysis of National Longitudinal Study of Adolescent Health data found that same-sex-attracted Black and White youth were more likely to report suicidal ideation than their heterosexual peers while Latinx and Asian/Pacific Islander youth did not differ in suicidality by sexual identity (Consolacion, Russell, & Sue, 2004). An analysis of YRBS data from multiple metropolitan regions of the U.S. found that Asian and Black LGB youth were less likely to report considering, planning, or attempting suicide than their White peers (Bostwick et al., 2014). However, when adding gender identity to the analysis, the researchers found that this pattern applied only to Asian and Black females, with the exception that Asian gay and bisexual males were *less* likely to report suicidal behavior than their White counterparts (Bostwick et al., 2014).

As these studies illustrate, the use of disaggregated data to examine the intersections of gender, race, ethnicity, and sexual identity has been increasing in recent years, but the findings from such studies have been mixed. These mixed findings highlight the complexity of intersecting identities and "reaffirm that the consequences of possessing multiple marginalized identities are not simply additive," but may be multiplicative for some youth (Bostwick et al., 2014, p. 1134). As such, it is imperative that suicidologists continue to examine the compounding effects of multiple minority identities on risk and how protective factors may work to mitigate that relationship.

To that end, the present study aimed to investigate the extent to which social support moderates the relationship between intersectionality (as informed by the intersection of multiple minority identities) and suicide risk. Given the higher prevalence of suicidal ideation and

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increased reports of suicide attempts among female and LGB youth (Canetto, 1997; Cover, 2013; Miller, 2011; Silenzio et al., 2007; Stone, et al., 2014; Worthington & Reynolds, 2009), as well as results from Study I (see Standley, 2018), it is hypothesized that of the youth in the sample, those with at least two minority identities (i.e., female, minority racial or ethnic identity; and lesbian, gay, or bisexual) will score highest on the suicide risk scale. Given the exponentially increased suicide risk for minority youth, it is further hypothesized that when minority youth do experience social support, its protective effects will be stronger, resulting in a more significant decrease in suicide risk for higher levels of support. That is, it is hypothesized that social support will play significant role in moderating the impact of intersectionality (i.e., the combination of female, racial and ethnic minority, and/or LGB status) on suicide risk.

The Complexity of Suicide

If suicidology researchers agree on one thing, it is that suicide is complex. A multitude of individual factors (such as those mentioned above) as well as social and societal factors "attest to the fact that suicide cannot be easily understood in singular, static, or acontextual terms" (White et al., 2016, p. 1). A recent CDC report also highlights this important fact. According to data from the CDC's National Violent Death Reporting System, a multitude of factors including substance use, employment and financial problems, relationship issues, loss of housing, interactions with the legal system, and physical health issues can—and do—contribute to suicidality among those with and without mental health conditions (CDC, 2018a). Moreover, as the National Action Alliance for Suicide Prevention (2018) recently stated, "A combination of individual, family, community, and societal factors influence suicidal behavior" (p. 1).

Societal manifestations of suicidal behavior also contribute to this complexity. For example, data show that national suicide rates decrease during times of national crisis (as during

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the days following the attacks in the U.S. on September 11, 2001, and the London bombings on July 7, 2005), or when a city's professional sports team is in the championships due in large part to their impacts on social cohesion in communities (Durkheim, 1951; Joiner, 2005; Salib & Cortina-Borja, 2009). These examples illustrate this complexity in that, as one of the field's leading experts states, "the extent and diversity of facts related to suicide are intimidating and baffling" (Joiner, 2005, p.16).

Despite this complexity, however, much of suicide research has been focused at the individual level of analysis (Bourke, 2003; Henry, Stephenson, Hanson, & Hargett, 1993; Marsh, 2015; White et al., 2016). Until relatively recently, research into the biological (e.g., biochemical precursors and physical illness) and psychological (e.g., psychiatric disorders, personality traits, and resilience) factors of suicide has dominated the field (Bourke, 2003; Henry et al., 1993). While theories such as those outlined in Durkheim's *Suicide* (1897) and family systems theory (e.g., Frances & Clarkin, 1985) have worked to investigate the ways in which social factors impact individuals' suicidality, little has been done to integrate these levels of analysis to understand how these factors interact to contribute to suicidality and the role of the social, political, and historical contexts in which such interactions are embedded (Bourke, 2003; Henry et al., 1993; White et al., 2016).

In response to the growing understanding of this complexity, the recent emergence of *critical suicidology* (largely coming from Australia and the United Kingdom) has resulted in more discussion of the importance of social, historical, and cultural contexts in studying suicidality and its prevention (e.g., Hjelmeland, 2010; Hjelmeland, 2016; Hjelmeland & Knizek, 2016; Kral & White, 2017; Marsh, 2015; Marsh, 2016; White & Kral, 2014, White et al., 2016). Critical suicidology aims to examine and confront the assumptions of traditional suicidology

which are rooted in a positivist epistemology that (1) pathologizes suicidality, (2) treats suicidology as an objective science, and (3) conceptualizes suicidality as strictly individual (Marsh, 2016). In short, critical suicidology aims to liberate the field from the domination of "an excessively individualistic and technical account of suicide, which serves to both de-contextualize the act and strip away its inherently relational, ethical, historical, and political nature" (White & Kral, 2014, p. 123).

Socioecological Model

From this critical perspective, Hjelmeland (2010) states that "[s]uicidal behaviour always occurs and is embedded within a cultural context and no suicidal act is conducted without reference to the prevailing normative standards and attitudes of a cultural community" (p. 34). Moreover, the contexts in which youth live and interact play a vital role in their development and ability to thrive. Despite these facts, an overwhelming focus on risk factors for suicide at the individual level analysis has resulted in the neglect of the social contexts and ecological factors impacting youth (Bourke, 2003; Marsh, 2016). As Bearman and Moody (2004) state, "[a]dolescent well-being is largely the product of interactions among multiple contexts in which adolescents are embedded" (p. 89). Therefore, the use of socioecological theory is one method of better encapsulating this complexity by allowing researchers to explore the individual, social, and systemic factors impacting suicidality among youth.

One such theory comes from Urie Bronfenbrenner (1979). His ecological systems theory (EST) developed out of a belief that human behavior is a function of both the person and the settings in which they live. His "ecology of human development" posits that youth develop as a function of reciprocal interactions between the individual and their environments—interactions that make up a nested design of ecological levels. The first of these levels is the individual—

characteristics and factors that make up the person themselves. The *microsystem* consists of interactions within settings directly experienced by the individual (e.g., school, family, or peer group). Links between microsystems (e.g., parent-teacher interactions) are known as *mesosystems*. The *exosystem* is made up of interactions that indirectly affect the individual, but do not actively include them (e.g., parents' workplace policies). System- and societal-level policies and influences are known as the *macrosystem* (e.g., school funding policies). Finally, the *chronosystem* refers to the cumulative impact of developmental transitions over time (e.g., maturation, childhood trauma, etc.; Bronfenbrenner, 1979; Henry et al., 1993; Hong, Espelage, & Kral, 2011).

Hong and colleagues (2011) provide a powerful, yet rare example of EST as applied to suicidality. In a review of empirical studies assessing suicidal behavior among sexual minority youth, the authors examined risk factors at multiple ecological levels to more holistically understand suicide risk and its implications for youth. Risk and protective factors at the microsystem level included youth demographic characteristics such as gender, racial identity, and sexual identity; the importance and salience of intersectionality; and one-on-one interactions with parents and peers. Mesosystemic factors included social support from teachers, school staff, and the mental health care system. Factors at the exosystem level included support for parents and its impact on youth, as well as parents' workplace interactions and impacts. Macrosystem level factors included larger societal influences such as homophobia, conservative values and beliefs, and religious beliefs. Finally, chronosystemic factors included changes over time such as normative youth development; physical, verbal, and sexual abuse; and other childhood trauma (Hong et al., 2011).

Similarly, Duerden and Witt (2010) provide an excellent example of EST as applied to the presence of social support. In describing the necessary components of effective programs for engaging youth, the authors describe key characteristics related to social support nested within ecological levels. Such characteristics included the hiring of supportive adults at the microsystem level; collaborative relationships, youth advocacy, and parental participation at the mesosystem level; workplace morale and employee encouragement at the exosystem level; and the public perception of youth at the macrosystem level (Duerden & Witt, 2010). Expanding on their framework, the emergence of social media as a method of communication is an example of an historical factor in the chronosystem level that may impact youths' perception and incorporation of social support (e.g., Twenge, 2017).

These are just a couple examples of socioecological theory applied to suicidality and social support. Broadly, the incorporation of socioecological theories in suicidology provides a fitting lens through which to examine the complexities of suicide and its contributing factors. Specifically, it allows for further investigation into the individual, social, and environmental impacts on suicide and how these impacts are interrelated. Moreover, it allows for further investigation into how such factors might be mitigated within and between systems.

Risk Factors

The causes, predictors, and risk factors for youth suicide are innumerable, complex, and continually emerging. Despite this reality, research has uncovered and enumerated many of the risk factors associated with suicide. Risk factors can best be understood as the characteristics or contexts that are known to increase risk of poor behavior or outcomes (Toumbourou, 2010). In a recent review of the three predominant suicidology journals, Goldblatt, Schechter, Maltsberger, and Ronningstam (2012) found that, between 2006 and 2010, nearly half of all published

manuscripts were epidemiological studies exclusively focused on risk factors. In fact, studies in suicidology have been hyper-focused on risk factors to the point where such studies are now repetitive and "unable to provide much new or useful knowledge" (Hjelmeland, 2016, p. 31).

Given the over-emphasis on risk factors in the literature, the present study focused on protective factors (namely, social support) for youth suicide with the exception of risk profiles complied using demographic variables to understand intersectionality. However, the importance of risk factors cannot be overlooked, and some research has examined such factors within a socioecological framework (e.g., Henry et al., 1993). The following paragraphs examine the relevant risk factors for youth suicide by ecological level.

Individual level. In addition to the sociodemographic factors discussed earlier, at the individual level, mental health conditions and previous suicide attempts have been known to increase the risk for suicide among youth. Extant research suggests that mental health conditions and suicide are inextricably linked. Nearly 90% of those who die by suicide have a diagnosable mental health condition at the time of death. (Shahtahmasebi, 2013; Stack, 2014; U.S. Department of Health & Human Services, 1999). More specifically, research has shown a significant positive association between diagnoses of depression and suicide attempts (Maimon, Browning, & Brooks-Gunn, 2010; Mazza & Reynolds, 1998). In addition, previous suicide attempts are a significant predictor of suicide among youth (Bourke, 2003). This is particularly concerning given that for every teen who dies by suicide, as many as 400 youth have attempted suicide (Cutler et al., 2001).

Despite these findings, two points should be noted in clarifying these associations. Firstly, while depression is the most common disorder associated with suicide, research shows that most suicides are marked by two or more simultaneous mental health diagnoses (Stack,

2014). Secondly, the majority of people who experience mental health conditions do not die by suicide (Stack, 2014).

Social factors. Since the seminal sociological study of suicide by Émile Durkheim in 1897, it has been well-established that social integration plays a vital role in decreasing suicide rates. Modern theories of suicidality also emphasize the importance social belonging and cohesion (e.g., Joiner, 2005). As it pertains to youth suicide, the research regarding social integration can best be summarized in terms of rurality and stigma.

Data suggest that those living in rural communities are more likely to die by suicide than are those living in urban areas (CDC, 2017). Qualitative research supports these data, finding that those in rural areas are more likely to report being directly affected by suicide—having lost a loved one or attempted themselves (Bourke, 2003; Cutler et al., 2001; Fullagar et al., 2007; Gilchrist & Sullivan, 2006). Moreover, as Fullagar and colleagues (2007) suggest, those living in rural communities suffer the paradox of feeling both highly visible and utterly invisible—both connected and isolated. This stems from living in small communities where everyone is aware of one another's business while also feeling isolated for being different. As Bourke (2003) put it, "rurality depresses opportunities for, and the diversity of, social interactions resulting in a lack of anonymity, fewer contacts and greater likelihood of social isolation" (p. 2357).

Youths' reluctance to seek help or confide in adults is also related to the stigma of suicide. The reality is that suicide and mental health conditions are inextricably linked. By the same token, the stigma so often associated with mental health conditions plagues those experiencing suicidal ideation. Stigma is one of the most frequently occurring themes in research on youth suicide (Bourke, 2003; Coggan et al., 1997; Fullagar et al., 2007; Gilchrist & Sullivan, 2006; Kidd, 2004).

Although conversations around mental health are becoming more commonplace, youth recognize that discussing suicide publicly is still taboo in most social situations (Coggan et al., 1997; Gilchrist & Sullivan, 2006). Youth often feel that discussing such issues is "uncool" or "weak", and for males specifically, broaching the topic challenges the social construction of masculinity (Canetto, 1997). This stigma highlights the seemingly increasing distance between the "normal" and "abnormal"—the "rational" and "irrational" youth. As Fullagar and colleagues (2007) state, "The construction of suicide risk in relation to the social differences within communities points to the stigmatizing process of *othering* that blames the person for individual (not coping) and social circumstances (poverty)" (p. 8, italics added). Youth with multiple minority identities face this *othering* process multiple times over, and thus are at an exponentially increased risk for suicide (e.g., Canetto, 1997; Cover, 2013; Miller, 2011).

Community factors. The contexts in which youth live and interact play a vital role in their development and ability to thrive. Therefore, communities have an important part to play in increasing individuals' understanding of youth suicide and contributing to its prevention (Fullagar et al., 2007). Despite this importance, the ways in which societal, social, and systemic patterns and norms influence suicidality are only just being uncovered. That said, community understanding and barriers to resources have emerged in the literature as two major factors.

Suicide significantly impacts every community, yet many people are still unaware of its warning signs, risk factors, protective factors, and prevention strategies (Gilchrist & Sullivan, 2006). For example, in interviews with parents, teachers, and community members, Bourke (2003) found that most adults discuss suicide in a disconnected, impersonal manner. In addition, many stated that suicide was not an issue within their community. These views were echoed by teachers, coaches, school counselors, and health care providers in interviews conducted by

Fullagar and colleagues (2007) such that those in the community—even those who were aware of the statistics related to suicide—discussed it in a distant, disengaged manner. Most were unaware of the issue to begin with.

Given a situation wherein adolescents are able to navigate through the stigmatization of suicide and have their confidentiality concerns assuaged, they are likely to encounter further barriers to obtaining the mental health services needed while in crisis. Particularly in rural communities, access to professional mental health resources are scarce. When they are available, many community members and parents are unaware of them (Gilchrist & Sullivan, 2006). In addition, many youth perceive these services to be impersonal and unhelpful (Coggan et al., 1997). For marginalized populations such as homeless youth and LGBTQ+ youth, appropriately trained and welcoming resources are also scarce or ill-equipped to handle co-occurring issues such as substance use disorders or gender identity issues (Kidd, 2004; Grossman & D'Augelli, 2007).

Protective Factors

As described above, the majority of extant research in suicidology has focused on the examination of risk factors for suicide among both youth and adults (e.g., Coggan, Patterson, & Fill, 1997; Cutler et al., 2001; Fullagar, Gilchrist, & Sullivan, 2007; Hjelmeland, 2016; Kidd, 2004; Twenge, 2017). Comparatively little research, however, has examined protective factors for suicide, particularly in terms of how these factors might be nested within an ecological model. As with a focus on the individual level of analysis, suicidology has been largely focused on the identification and mitigation of risk factors rather than the promotion of protective factors (Hjelmeland, 2016).

As Appleby (1992) states, "protective factors are not simply the mirror image of risk factors, but they are circumstances that, in the presence of considerable risk, act preventively without alternating the risk factors themselves" (as cited by Sharaf et al., 2009, p. 160). In other words, protective factors are conditions or attributes that enable individuals to effectively cope with stressful events or mitigate risk (Child Welfare Information Gateway [CWIG], 2014; Toumbourou, 2010). Protective factors at the personal, family, school, and community levels have been shown to decrease negative health outcomes including suicidal ideation and attempts among youth (Eisenberg & Resnick, 2006; Fenaughty & Harré, 2003). Despite these general findings, however, the effectiveness of these factors has been shown to differ significantly by ecological level (e.g., Hong et al., 2011), demographic groups (e.g., Eisenberg & Resnick, 2006; Fenaughty & Harré, 2003), and type of protective factor (e.g., CWIG, 2014). To that end, protective factors at the individual and socioecological levels warrant further investigation if researchers and the public hope to curb rising youth suicide rates. One purpose of this study was to determine which protective factors are most effective for high-risk youth, and at which ecological level(s) this is true.

The Role of Social Support

A review of the literature suggests that protective factors can be broadly categorized according to ecological level: family-related factors, school-related factors, and community factors. One such factor that has emerged to curb youth suicide is social support (Button, O'Connell, & Gealt, 2012; D'Attilio, Campbell, Lubold, Jacobson, & Richard, 1992; Kleiman & Liu, 2013; Logan, Crosby, & Hamburger, 2011; Mazza & Reynolds, 1998; Winfree & Jiang, 2010). As Twenge (2017) suggests, social isolation (resulting in part from increased use of

electronic devices) has contributed to increased rates of depression and suicidality among youth. Social support may be one method of combating this isolation.

While the literature has not settled on a mutually agreed-upon definition, social support can be broadly defined as the pragmatic, informational, interpersonal, and emotional supports that contribute to feelings of emotional well-being and validation (Kerr et al., 2006). Research also suggests that two major conditions are related to social support: *opportunities* and *rewards* (Bond, Thomas, Toumbourou, Patton, & Catalano, 2000; Bond, Toumbourou, Thomas, Catalano, & Patton, 2005; Toumbourou, 2010). The first refers to the opportunities present for prosocial involvement at each ecological level. Examples include opportunities for youth to provide input in decision making within the family and school environments, as well as opportunities for interaction with peers and neighbors within the community. The second refers to the rewards for prosocial involvement at each of these levels. Praise and encouragement from parents, teachers, and neighbors are an example of these rewards (Toumbourou, 2010). Extant research using this operationalization of social support among youth has shown that both opportunities and rewards for prosocial involvement contribute to decreased substance use, school suspension, homelessness, and violence, as well as decreased depressive symptoms and deliberate self-harm—both of which often predict suicide attempts (Bond et al., 2000, Bond et al., 2005).

Research shows that a lack of social support, meaningful relationships, and sense of belonging can increase risk for suicidal ideation and suicide attempts (Joiner, 2005; Miller et al., 2015). As such, social support has been found to be a significant protective factor for youth suicide, both in terms of suicide attempts and suicidal ideation (Bearman & Moody, 2004; Bonanno & Hymel, 2010; Button et al., 2012; D'Attilio et al., 1992; Logan et al., 2011; Kerr et al., 2006; King et al., 2009; King & Merchant, 2008; Kleiman & Liu, 2013; Mazza & Reynolds,

1998; McKeown et al., 1998; Nazeer, 2016; O'Donnell, O'Donnell, Dana, & Steueve, 2004; Prinstein, Boergers, Spirito, Little, & Grapentine, 2000; Winfree & Jiang, 2010). In fact, in a sample of nationally representative adults, Kleiman & Liu (2013) found that individuals with higher social support were over 30% less likely to have a lifetime suicide attempt compared to those with lower social support after controlling for other known risk and protective factors.

For the purposes of this study, three socioecological sources of social support were examined: family, school, and community. Given that both opportunities and rewards for prosocial involvement constitute effective social support, the two will be combined at each of these levels. Familial support may come from parents, siblings, or other family members in a youth's home life (Maimon et al., 2010; Logan et al., 2011; Miller et al., 2015; Winfree & Jiang, 2010; Bonanno & Hymel, 2010; Greening & Stoppelbein, 2002; Merchant et al., 2009; O'Donnell et al., 2004; Perkins & Hartless, 2002; Sharaf et al., 2009). School support comes from similarly-aged friends as well as teachers and school administrators (Cole-Lewis et al., 2016; Logan et al., 2011; Miller et al., 2015; Perkins & Hartless, 2002). For the purposes of this review, community support is broadly defined as support from extra-familial sources in one's neighborhood (e.g., non-family, non-teacher adult support and neighbor support).

Familial support. For many young people, the family serves as an invaluable source of social support despite an increasing reliance on peer support as they age (Furman & Buhrmester, 1992; Kerr et al., 2006; Olsson, Bond, Burns, Vella-Brodrick, & Sawyer, 2003). Multiple studies have illustrated that a breadth of familial factors can positively contribute to resilience among youth (Bonanno & Hymel, 2010; Greening & Stoppelbein, 2002; Logan et al., 2011; Maimon et al., 2010; Miller et al., 2015; Winfree & Jiang, 2010). Opportunities related to social support at the family level include decision-making influence and activities with family members (Bond et

al., 2000; Toumbourou, 2010). Rewards at the family level conceptualized as the extent to which youth felt supported by family members and has been defined as family attachment (Maimon et al., 2010), family connectedness (Logan et al., 2011), parental support (Bond et al., 2000; Miller et al., 2015; Winfree & Jiang, 2010), and family support (Bonanno & Hymel, 2010; Greening & Stoppelbein, 2002; Merchant et al., 2009; O'Donnell et al., 2004; Perkins & Hartless, 2002; Sharaf et al., 2009; Waldner & Magrader, 1999).

Generally speaking, multiple studies have shown significant negative associations between support from family members and suicidal ideation among youth such that increased familial support is associated with lower levels of suicidal ideation (Bonanno & Hymel, 2010; Cole-Lewis et al., 2016; Logan et al., 2011; Miller et al., 2015; O'Donnell et al., 2004; Perkins & Hartless, 2002; Waldner & Magrader, 1999; Winfree & Jiang, 2010). Moreover, higher levels of familial support is associated with lower levels of suicide risk and fewer suicide attempts among youth (Greening & Stoppelbein, 2002; Maimon et al., 2010; Merchant et al., 2009; Miller et al., 2015; Nazeer, 2016; Sharaf et al., 2009; Winfree & Jiang, 2010).

While overall support for the relationship between familial support and suicidal ideation is strong, the strength of this protective effects has been shown to vary based on gender, race and ethnicity, and sexual identity. Regarding gender, the longitudinal protective effects of familial support on suicidal ideation have been shown to remain significant among females while becoming non-significant among males after one year (Mazza & Reynolds, 1998). In another study of 220 clinically suicidal adolescents under psychiatric hospitalization, researchers found differential effects of familial support based on gender such that perceptions of low familial support was related to greater levels of suicidal ideation among girls than among boys in the

sample (Kerr et al., 2006). These findings suggest that, while males may perceive greater levels of familial support, the longitudinal protective effects of such support are stronger for females.

Regarding race and ethnicity, a recent study of 161 Midwestern youth who presented to emergency departments or urgent care clinics for a range of complaints and were subsequently screened for suicide risk found that perceived parent-family connectedness was significantly related to lower suicidal ideation among Black females in the sample. This relationship was not found to be significant among White females. Moreover, there were no effects of race on this relationship among males in the sample (Cole-Lewis et al., 2016).

Regarding sexual identity, recent research has shown that family social support is protective against depression and suicidal ideation for LGB youth (McConnell, Birkett, & Mustanski, 2015; Wise, Smith, Amelie, Boarts, & Delahanty, 2017). In fact, in a study of 102 racial minority, LGB, mid-western youth and young adults, Wise and colleagues (2017) found that family-level social support was the only source of social support that uniquely predicted lower depression symptoms. This finding also points to the unique effects of social support for youth who are both racial and sexual minorities. Similarly, McConnell and colleagues (2015) found that familial support was the most important source of social support in predicting better mental health outcomes among LGBT 16- to 20-year-olds in Chicago.

School support. For many youth, school is the primary environment in which they interact and develop. As a result, ample research has examined the role of school climate in predicting health outcomes among youth. This research indicates that school climate and connectedness is a significant predictor of both academic and health outcomes among youth (Carter, McGee, Taylor, & Williams, 2007; Thapa, Cohen, Guffey, & Higgins-D'Alessandro, 2013). For example, in one study of 16-year-old New Zealand youth, Carter and colleagues

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(2007) found that school climate was related to lower levels of risky health behaviors such as substance use, physical aggression, and sexual activity—behaviors associated with increased likelihood for suicidal ideation and behavior (Burge, Felts, Chenier, & Parrillo, 1995; Hallfors et al., 2004).

Despite this, researchers have only recently begun examining the role of school support as a protective factor for suicide risk among youth. Opportunities for social support at the school level include student input, one-on-one interactions, and extracurricular activities (Bond et al., 2000; Toumbourou, 2010). Rewards related to school-level social support can be operationalized as school connectedness (feeling like a part of the school's culture and environment; Carter et al., 2007; Cole-Lewis et al., 2016; Eisenberg & Resnick, 2006; Logan et al., 2011) school climate (feeling safe and supported; Perkins & Hartless, 2002) and support from school personnel (King et al., 2009; Mazza & Reynolds, 1998; Miller et al., 2015). Cross-sectional and longitudinal studies investigating this relationship among youth from ages 10 to 18 (including regional and national samples in the United States and New Zealand) suggest that school support is significantly negatively associated with suicidal ideation among youth such that higher levels of school support are associated with lower reported scores of suicidal ideation and suicide attempts (Carter et al., 2007; Cole-Lewis et al., 2016; Eisenberg & Resnick, 2006; Hatzenbuehler, Birkett, Wagenen, & Meyer, 2014; Logan et al., 2011; Miller et al., 2015; Perkins & Hartless, 2002).

While such studies are limited, differential effects of school support by gender and race and ethnicity have been found. There is emerging evidence to suggest that school support many only play a protective role for males (Perkins & Hartless, 2002) and White youth (Cole-Lewis et al., 2016). More specifically, in a diverse sample of 12- to 17-year-old Midwestern youth, Perkins and Hartless (2002) found that the protective effects of school support on suicidal

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ideation was significant only among males in the sample. Another study of youth who presented to clinics with various conditions found that the association between school support and suicidal ideation was significant for both White males and females but was not statistically significant among African Americans in the sample (Cole-Lewis et al., 2016).

Community support. Of the three levels of social support examined, literature regarding community-level social support and its association with suicide risk among youth is the most limited. Despite this limitation, opportunities for community-level social support include community activities and interactions with community members. Rewards include non-familial adult support and encouragement from neighbors (Bond et al., 2000; Toumbourou, 2010). Some research has found indirect associations between community support and youth suicidality. For example, while no research has found that non-familial adult support was *uniquely* associated with suicidal ideation among youth, some studies have found that, in general, increased overall perceived social support—with the inclusion of non-familial adult support—was negatively related to suicidal ideation (Cole-Lewis et al., 2016; Logan et al., 2011; Merchant et al., 2009). Moreover, in a study of sixth- to ninth-grade students in the U.S., Chapman (2005) found that neighborhood support was significantly related to family environment, which has been shown to be protective against suicidality among youth (Bonanno & Hymel, 2010; Cole-Lewis et al., 2016; Logan et al., 2011; Miller et al., 2015; O'Donnell et al., 2004; Perkins & Hartless, 2002; Waldner & Magrader, 1999; Winfree & Jiang, 2010).

One source of community support comes from faith communities. In fact, Greening and Stoppelbein (2002) purport "the social support that church members derive from networking with coreligionists as the basis for the religion-suicide link" (p. 406). In other words, the social support and social interaction components of religious involvement (i.e., service attendance and

church event attendance) may help explain the preventive association between religiosity and suicide, particularly among youth (Chatters, Taylor, Lincoln, Nguyen, & Joe, 2011; Cole-Lewis et al., 2016; Greening & Stoppelbein, 2002). This preventive relationship has been shown to be particularly strong among African American communities (Chatters et al., 2011), but the research on this relationship among youth is scarce.

Research Gaps

Numerous methodological and substantive gaps are evident in the literature. These include the use of common measures, consideration of previous suicidal behavior in determining risk, the inclusion of community-level social supports, and an examination of the compounding effect of family, school, and community supports in protecting against youth suicide. These are discussed in detail below. Moreover, the present study aimed to address two of these gaps while attending to the intersectional and socioecological influences of suicidality among youth.

The use of varying measures of social support across the literature greatly limits comparability between studies. While the use of the Suicidal Ideation Questionnaire – Junior (SIQ-JR; Reynolds, 1987) as a measure for suicidal ideation is widely adopted in suicidology research among youth, no unanimous adoption of a social support measure has occurred. As such, future research should employ similar measures of social support, and should also endorse a consensus for operationalizing the construct.

The study below addresses two major substantive gaps in the extant research. Firstly, while studies of familial support among youth are increasingly evident, studies of school- and community-level supports are limited. As a result, the operationalization of these supports focuses on numerous *sources* of support while failing to examine them in depth. To that end, the present study examined school- and community-level support both independent of and in

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addition to familial support in order to better understand their role as a protective factor for youth suicide.

Next, little research has examined the additive or compounding effects of family, school, and/or community-level supports on youth suicide (Maimon et al., 2010). One notable exception found that the combination of multiple sources of support (family, peer, and significant other) was most associated with improved mental health outcomes (McConnell et al., 2015). The question remains, however, does the compounding effect of both familial *and* school support significantly contribute to reductions in suicidal ideation over and above their individual effects? Do community-level supports add to the preventive effects of familial support on suicidal ideation? In order to inform interventions that holistically target suicidality among youth, the present study aims to investigate such questions.

CURRENT STUDY

The present study addressed these questions through Study II of a multi-study project. The following pages detail my relevant personal history and experiences. Next, the context for the study and a description of the initial study of this project are presented. A brief discussion of the second study is then discussed. Finally, details regarding the study design, including context, and methods are discussed.

Researcher Identity

The role that personal identity and experience play in one's approach to research cannot be overlooked. As colleagues and friends would attest, the boundaries between my personal life and my academic work are frequently blurred. This is due in large part to my dual identity as a suicide loss survivor and a scholar. I lost my brother to suicide during my late adolescence and, in many ways, this experience transformed my personal and professional lives as both an

advocate and a scholar. My experience in suicide prevention spans over eight years and includes work in policy analysis and advocacy; survivor support; prevention, intervention, and post-intervention consultation; public speaking and education workshops; volunteerism; and research.

"By emotionally engaging in our work, we can gain a closer and potentially insightful perspective. In other words, this kind of emotional inquiry could be an intellectual resource" (Campbell, 2002, p. 27). The loss of my brother has undoubtedly influenced my scholarly and personal pursuits. This "intellectual resource" has provided me with invaluable perspective, a personal connection to the population of interest, and a passion to save lives and bring hope to those affected by suicide.

Project Context

Over the course of nine months beginning in the fall of 2017, I cultivated positive working relationships and partnerships with several community organizations in mid-Michigan. Through introductory meetings, I was able to begin these relationships and develop an understanding of the extensiveness of youth suicide in a three-county area. From these meetings, I was invited to join the newly-established LifeSavers Suicide Prevention Coalition, a tri-county coalition of school administrators, mental health professionals, juvenile justice representatives, legislative officials, and other community members.

The study presented below is Study II of a secondary data analysis project conducted in partnership with the LifeSavers Suicide Prevention Coalition, the American Foundation for Suicide Prevention, Eaton Regional Education Service Agency (Eaton RESA), and tri-county Community Mental Health (CEI-CMH). Overall, the aims of the project are to (1) determine the incidence of youth suicide in Clinton, Eaton, and Ingham counties in mid-Michigan, (2)

determine the risk and protective factors for youth suicide in the tri-county area, and (3) research and implement interventions to target those factors.

Study I

In Study I of the project, I worked with the aforementioned organizations to establish a partnership over the course of several months. Beginning in the spring of 2018, the LifeSavers Coalition approached me describing a need for secondary data analysis. I then developed a quantitative study focused on the analysis of existing data sets including the Michigan Profile for Healthy Youth (MiPHY), tri-county 911 data, and nationally available aggregate suicide incidence data.

The purpose of Study I was to determine the overall demographic risk factors for youth suicide in Clinton, Eaton, and Ingham counties in mid-Michigan, as well as to describe the prevalence of suicidal ideation and suicide attempts among youth. A final report of these findings (*Tri-County Youth Suicide: Preliminary Data Report*; Standley, 2018), including recommendations for future research, policy and legislation, and programmatic interventions, was provided to these partners in May of 2018. A full copy of this report is available upon request.

Results and findings. The following paragraphs report the Study I findings specific to the demographic risk factors for suicidal ideation, suicide plans, and attempted suicides reported in the 2015-2016 wave of the MiPHY survey conducted in high schools in Clinton, Eaton, and Ingham counties. Given the more limited scope of Study II, results are presented only for high school students. Findings are presented by gender, race and ethnicity, and sexual identity. *Table 1* through *Table 4* detail the descriptive statistics and summarize these findings.

Gender. Similar to previous research, findings indicated that female high school students were significantly more likely to report experiencing sadness and hopelessness (t (5686) = -16.51, $p < .001$), suicidal ideation (t (5680) = -13.26, $p < .001$), and having made a plan to attempt (t (5650) = -9.91, $p < .001$) in the previous 12 months than were male students. *Table 1* below summarizes these findings.

Table 1:

Study I t-test results for suicide variables by gender.

	Female		Male			
	M*	*SD*	*M**	*SD*	*df*	*t*
Sadness/hopelessness[a]	1.56	0.496	1.76	0.425	5686	-16.51**
Suicidal ideation[b]	1.75	0.436	1.88	0.325	5680	-13.26**
Suicide plan[c]	1.81	0.394	1.90	.0300	5650	-9.91**

[a] "During the past 12 months, did you ever feel so sad or hopeless almost every day for two weeks or more in a row that you stopped doing some usual activities?"
[b] "During the past 12 months, did you ever seriously consider attempting suicide?"
[c] "During the past 12 months, did make a plan about how you would attempt suicide?"
* 1 = Yes, 2 = No
** $p < .001$

Race and ethnicity. Significant differences in suicide outcomes by race and ethnicity emerged in the sample of high school students for sadness and hopelessness (F (6, 5518) = 6.27, $p < .001$), suicidal ideation (F (6, 5510) = 5.72, $p < .001$), and plans to attempt suicide (F (6, 5481) = 7.68, $p < .001$). Post-hoc analyses using Tukey's HSD revealed significant differences among five racial groups across the three items.

Students identifying as Hispanic with multiple racial identities were significantly more likely to report experiencing sadness and hopelessness than Asian, Black/African American, or White students.[2] Students with multiple racial identities (both Hispanic and non-Hispanic) were

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[2] The secondary MiPHY survey data obtained from the Department of Education coded students who selected more than one racial identity by their response to the separate "Are you Hispanic or Latino?" question, thereby creating two additional subgroups of racial identity (7=Multiple-Hispanic, 8=Multiple-Non-Hispanic).

significantly more likely to report experiencing suicidal ideation than were White or Asian students. Reports of ideation between students with multiple racial identities (i.e., Hispanic and non-Hispanic students) did not significantly differ from each other. Finally, significant differences emerged with regards to having planned to attempt suicide among five racial groups such that students with multiple racial identities (both Hispanic and non-Hispanic) were significantly more likely to report having made a plan to attempt suicide than were White, Black/African American, or Asian students. Again, reports of plans to attempt between students with multiple racial identities (i.e., Hispanic and non-Hispanic students) did not significantly differ from each other. Due in part to a small cell size (See *Table 5*), no differences were found for American Indian/Alaska Native or Native Hawaiian/Pacific Islander students, therefore this population is unable to be further explored in this dataset. *Table 2* below summarizes these findings.

Table 2:

Study I ANOVA results for suicide variables by racial identity.

	df	*SS*	*MS*	*F*	*p*
Sadness/hopelessness[a]					
Between	6	8.33	1.39	6.271	.000
Within	5518	1222.21	.221		
Suicidal ideation[b]					
Between	6	5.19	.865	5.722	.000
Within	5510	833.14	.151		
Suicide plan[c]					
Between	6	5.66	.943	7.682	.000
Within	5481	672.76	.123		

[a] "During the past 12 months, did you ever feel so sad or hopeless almost every day for two weeks or more in a row that you stopped doing some usual activities?"
[b] "During the past 12 months, did you ever seriously consider attempting suicide?"
[c] "During the past 12 months, did make a plan about how you would attempt suicide?"

Sexual identity. Significant differences in suicide outcomes by sexual identity also emerged in the sample of high school students for sadness and hopelessness (F (3, 5491) = 109.89, $p < .001$), suicidal ideation (F (3, 5491) = 192.81, $p < .001$), and plans to attempt suicide (F (6, 5464) = 138.03, $p < .001$). Post-hoc analyses using Tukey's HSD revealed significant differences between sexual identity groups across the three items.

Across all three items measuring suicidal ideation and behavior, all four sexual identity groups (gay or lesbian, bisexual, heterosexual, and those who selected "not sure") significantly differed from each other group. Those who identified as bisexual were most likely to report experiencing suicidal ideation in the previous 12 months followed by gay and lesbian students, students who indicated they were unsure of their identity, and heterosexual students, respectively. These same significant differences were found for students reporting feelings of sadness or hopeless and reports of having planned to attempt suicide, although in these cases, gay and

lesbian students did not significantly differ from bisexual students. These findings are summarized in *Table 3* below.

Overall, findings from Study I echo those of previous local, regional, and national studies regarding suicidal ideation and behavior among youth (Canetto, 1997; Cover, 2013; Cover, 2016; Drapeau & McIntosh, 2017; Miller, 2011; Stone et al., 2018, WHO, 2018; Worthington & Reynolds, 2009). A comparison of national, state, and tri-county rates for these items can be found in *Table 6* below. Three key findings summarize Study I. Firstly, female students were significantly more likely to report feelings of sadness and hopelessness and suicidal ideation, as well as report having made a plan to attempt suicide than male students. Secondly, students with multiple racial identities (both Hispanic and non-Hispanic) were significantly most likely to report experiencing suicidal ideation and having made a plan to attempt suicide than were students of other racial identities. Finally, gay, lesbian, and bisexual students were most likely to report feelings of sadness and hopelessness and suicidal ideation, as well as report having made a plan to attempt suicide than heterosexual students.

These findings reiterate the need for research examining the intersection of multiple minority identities. More importantly, they highlight the urgency with which such research is needed. As youth suicide rates continue to climb (e.g., Drapeau & McIntosh, 2017; Twenge, 2017), more thoroughly understanding and more effectively responding to this differential risk is a moral imperative for the field of suicidology and for society in general.

Table 3:

Study I ANOVA results for suicide variables by sexual identity.

	df	SS	MS	F	p
Sadness/hopelessness[a]					
Between	3	69.65	23.22	109.89	.000
Within	5491	1160.11	.211		
Suicidal ideation[b]					
Between	3	79.94	26.65	192.81	.000
Within	5491	758.87	.138		
Suicide plan[c]					
Between	3	48.21	16.07	138.03	.000
Within	5464	636.16	.116		

[a] "During the past 12 months, did you ever feel so sad or hopeless almost every day for two weeks or more in a row that you stopped doing some usual activities?"

[b] "During the past 12 months, did you ever seriously consider attempting suicide?"

[c] "During the past 12 months, did make a plan about how you would attempt suicide?

Table 4:

Study I means and standard deviations for suicide variables by demographics.

	Sadness/ Hopelessness		Suicidal Ideation		Suicide Plan	
	M*	*SD*	*M**	*SD*	*M**	*SD*
Gender						
Female	1.56	.496	1.75	.436	1.81	.394
Male	1.76	.425	1.88	.325	1.90	.300
Racial identity						
American Indian/Alaska Native	1.67	.474	1.78	.417	1.83	.379
Asian	1.71	.454	1.88	.327	1.89	.312
Black/African American	1.68	.466	1.81	.390	1.89	.316
Native Hawaiian/Pacific Islander	1.42	.515	1.75	.452	1.64	.505
White	1.68	.467	1.83	.380	1.87	.340
Multiple-Hispanic	1.57	.495	1.75	.434	1.79	.408
Multiple-Non-Hispanic	1.62	.487	1.76	.429	1.80	.404
Sexual identity						
Bisexual	1.30	.459	1.41	.492	1.55	.498
Gay or Lesbian	1.37	.485	1.56	.499	1.59	.494
Heterosexual	1.70	.457	1.86	.351	1.89	.316
Not Sure	1.55	.499	1.71	.456	1.77	.419

* 1 = Yes, 2 = No

Table 5:

Study I demographic characteristics of high school students who participated in the 2015-2016 wave of the MiPHY survey in Clinton, Eaton, and Ingham counties.

Demographic	*n*	%*
County		
Clinton	1198	16.6
Eaton	1860	25.7
Ingham	4178	57.7
Grade		
9th grade	3903	53.9
11th grade	3333	46.1
Age		
12-13	74	1.1
14	2322	32.1
15	1449	20.0
16	2052	28.4
17	1255	17.3
18 or older	77	1.1
Gender		
Female	3491	48.2
Male	3705	51.2
Sexual Orientation		
Bisexual	386	5.3
Gay or Lesbian	94	1.3
Heterosexual	4805	66.4
Not Sure	314	4.3
Race/Ethnicity		
American Indian/Alaska Native	74	1.0
Asian	315	4.4
Black/African American	665	9.2
Native Hawaiian/Pacific Islander	14	0.2
White	4668	64.5
Multiple-Hispanic	743	10.3
Multiple-Non-Hispanic	97	6.9
TOTAL	**7,236**	

* Percentages within a category may not add up to 100% given missing data and incomplete survey responses.

Table 6:

Percentage of high school students who have expressed suicide risk by location and MiPHY survey year.

Question	United States 2017[d]	Michigan 2017	Tri-County Area[e] 2017
Sadness/hopelessness[a]	31.5	37.3	26.6
Suicidal ideation[b]	17.2	21.3	18.7
Suicide plan[c]	13.6	17.7	14.5

[a] "During the past 12 months, did you ever feel so sad or hopeless almost every day for two weeks or more in a row that you stopped doing some usual activities?"
[b] "During the past 12 months, did you ever seriously consider attempting suicide?"
[c] "During the past 12 months, did make a plan about how you would attempt suicide?
[d] Survey data reported in 2017 (regardless of location) come from the wave of the survey that took place during the 2015-2016 academic year.
[e] The tri-county area covers high schools in Clinton, Eaton, and Ingham counties.

Study II

In the following pages, I describe a quantitative study of secondary data to expand upon the demographic risk factors of youth suicide uncovered in Study I of the project. The study contributes to the existing literature in two major ways. Firstly, it uses an intersectional approach to determine which youth are most at risk for suicide. Secondly, the study goes beyond the individual level of analysis to look at suicide and the role of social support as a protective factor through the lens of a socioecological framework.

Research questions and hypotheses. Building from this literature and the findings from Study I, the current study was guided by four primary research questions and their respective hypotheses and propositions as follows:

1. Given the known higher risk profiles for certain youth uncovered in Study I, which intersectional group of youth is most at risk for suicide?

    a. Hypothesis 1: Risk group membership will be largely delineated by minority status for gender, race and ethnicity, and sexual identity such that youth

identifying as female; minority racial or ethnic identity; and lesbian, gay, or bisexual will score highest on the suicide risk scale.

b. Hypothesis 2: Youth classified as the group in the sample at highest risk for suicide will be largely intersectional with at least two minority identities (female; minority racial or ethnic identity; and lesbian, gay, or bisexual).

2. To what extent does the presence of social support reduce suicide risk among youth?

a. Hypothesis 3: Familial, school, and community support will be significantly associated with decreased suicide risk among youth.

b. Hypothesis 4: Of the domains examined, family support will be most strongly associated with decreased suicide risk, followed by school support and community support, respectively.

3. What is the most powerful combination of ecological sources of social support in reducing suicide risk?

a. Proposition 1: The combination of any two or more sources of social support will be more strongly associated with decreased suicide risk than any one unique source of support while familial support will remain the strongest overall contributor to reduced risk.

4. To what extent does social support moderate the effect of intersectionality on suicide risk?

a. Proposition 2: The presence of social support at any domain level will moderate the relationship between intersectionality and suicide risk. More specifically, the role of social support with be stronger for those with multiple

marginalized identities leading to a stronger decrease in suicide risk for higher levels of support for these youth.

METHODS

Participants for the study participated in the 2015-2016 wave of the Michigan Profile for Healthy Youth (MiPHY) survey, a biennial survey measuring substance use, violence, physical activity, nutrition, sexual behavior, and emotional health in middle schools and high schools across the state. The survey is administered online by the Michigan Department of Education (MDE). Data for this wave of the survey were obtained as a result of a data use agreement signed in partnership with Eaton RESA on behalf of the LifeSavers Suicide Prevention Coalition (See *Appendix B*). Data were deidentified by MDE and did not include school building or school district identifiers.

Sample

The study used data from ninth- and eleventh-grade high school students in Clinton, Eaton, and Ingham counties who participated in the 2015-2016 wave of the MiPHY survey. The final subsample includes 5,058 respondents after the removal of 1,123 respondents by MDE due to missing and invalid data, and 2,178 respondents removed due to listwise deletion procedures described below. Ages ranged from 12 to 18 and older ($M = 15$), 49.7% of the sample identified as male, and the majority of the sample (69.3%) identified as White. *Table 9* below summarizes the demographic characteristics of the sample. *Table 7* below details the rationale and count of surveys excluded from the sample.

Table 7:

Count and percentage of excluded surveys by rationale.

Reasoning	*n*	%
Respondent selected a grade level other than 9th or 11th	797	9.5%
Respondent answered fewer than 20% of the questions in the survey	326	3.9%
Removed in listwise deletion procedures before analysis	2178	26.1%
Total	**3,301**	**39.5%**

Scales and Measures

Three major constructs were of interest in the study including (a) identity and intersectionality, (b) suicide risk, and (c) social support. The scales and measures used in the study for each of these constructs is detailed in the following paragraphs. *Appendix A* below summarizes all MiPHY survey items included in the analyses.

Identity and intersectionality. The MiPHY survey includes nine questions measuring the demographic characteristics of respondents, three of which are of interest in the present study. Gender is measured as a dichotomous variable (1=female, 2=male). The race and ethnicity variable was transformed by MDE prior to receiving the data and is measured as a categorical variable with eight levels (1=American Indian/Alaska Native, 2=Asian, 3=Black/African American, 4=Hispanic/Latino, 5=Native Hawaiian/Pacific Islander, 6=White, 7=Multiple-Hispanic, and 8=Multiple-Non-Hispanic). Finally, sexual identity is measured as a categorical variable with four levels (1=Heterosexual, 2=Gay or lesbian, 3=Bisexual, 4=Not Sure).

Intersectionality was assessed using results from the analyses used to investigate the first research question. It was hypothesized that the high-risk group would be youth with at least two minority identities (i.e., gender, race and ethnicity, and sexual identity). This group membership will then be used to investigate the fourth research question regarding the moderating effects of social support on the association between intersectionality and suicide risk. To do this, an

additive intersectionality variable was calculated using dummy-coded variables for gender, race and ethnicity, and sexual identity. In each case, minority status for each variable was coded as a 1 with non-minority status coded as 0 (e.g., female = 1, male = 0). A sum total of these scores was calculated into the intersectionality variable with a range of zero to three (3 = three minority identities).

Suicide risk. Questions regarding suicide risk in the MiPHY are derived from the Youth Risk Behavior Survey (YRBS). Beginning in 1991 and conducted biennially, the YRBS is administered to middle and high school students at the national, state, and territorial levels (CDC, 2013). The survey consists of exclusively self-report items designed to investigate the prevalence of health and risk behaviors among youth, determine trends in these behaviors over time, and evaluate policies and programs aimed at influencing these behaviors. As of 2011, 47 states, five territories, and two tribal governments submit data (including data from the YRBS) to the Youth Risk Behavior Surveillance System (CDC, 2013).

Data for the 2015-2016 wave of the YRBS were reported both locally and nationally in 2017. In the national sample of data used by the Department of Education, nearly 15,000 completed YRBS questionnaires were included in 2017, 1,626 of which were from Michigan (Redfield et al., 2018). The demographic breakdown of the national and Michigan data are presented in *Table 8* below. These data suggest that the sample included in the study is representative of the state of Michigan.

Table 8:

Percentage of YRBS participants by gender, sexual identity, and race/ethnicity.

Demographic Variable		US	MI
Gender	Female	50.7	49.3
	Male	49.3	50.7
Sexual Identity	Straight	85.4	85.1
	Gay or Lesbian	2.4	2
	Bisexual	8	6.9
	Not Sure	4.2	6
Race/Ethnicity	White	53.5	70.5
	Black	13.4	16
	Hispanic	22.8	6.6
	Other	10.3	6.8
Total		**14,765**	**1,626**

Note. Data represent only valid surveys included in the sample. Totals may not reflect the additive sum of categories. Data are based on a representative sample according to the CDC sampling frame (Redfield et al., 2018).

The YRBS consists of five questions pertaining to suicide and suicidal behavior. These questions measure sadness, suicidal ideation, attempted suicide, frequency of attempts, and injury resulting from attempts. For the purposes of this study, the following four items were scaled and included in the analyses. Each of these items were measured dichotomously (0=No, 1=Yes). (1) "During the past 12 months, did you ever feel so sad or hopeless almost every day for two weeks or more in a row that you stopped doing some usual activities?" (2) "During the past 12 months, did you ever seriously consider attempting suicide?" (3) "During the past 12 months, did you ever make a plan about how you would attempt suicide?" and (4) "During the past 12 months, how many times did you actually attempt suicide?" (recoded as 0=no attempts, 1=attempts). As one purpose of the study is to assess suicide risk, the final question measuring severity of injury resulting from previous suicide attempts was not included in the analyses.

Given that depressed mood among youth is strongly associated with suicidal ideation and behavior, that suicidal ideation and plans to attempt suicide are closely linked (e.g., Maimon, Browning, & Brooks-Gunn, 2010; May & Klonsky, 2011; Mazza & Reynolds, 1998), and the strong convergent and discriminant validity among the suicide-related YRBS items with comparable suicide risk scales (May & Klonsky, 2011) the four questions above were combined into one suicide risk variable based on the sum score from of the four items. This variable was then reverse coded so that a higher combined suicide risk score denoted a higher overall risk for suicide. Initial analyses indicate that the combined items have a Cronbach's alpha of .77 and inter-item correlations between .29 and .67.

Social support. Questions related to social support at the familial, school, and community levels are derived from the Communities that Care Youth Survey (CTCYS). The survey, scales, and subscales were developed by the Social Development Research Group at the University of Washington and it is now a national survey administered by the Center for Substance Abuse Prevention. The survey is designed to measure risk and protective factors as well as health and behavior outcomes for youth (Arthur, Hawkins, Pollard, Catalano, & Baglioni, 2002; Toumbourou, 2010). The risk and protective factors measured in the CTCYS fall into four main "domains" that align with a socioecological framework: individual and peer, family, school, and community.

For the purposes of the present study, the CTCYS items related to social support at the family, school, and community levels were included in the analyses. Within each of these domains, questions measuring social support fall into two main categories as defined by Communities That Care: opportunities for prosocial involvement (*opportunities*) and rewards for prosocial involvement (*rewards*). These subscales are based on the literature suggesting that

youth perceiving opportunities for involvement and who are rewarded for such involvement within and across contexts are more likely to participate in these activities and, therefore, are less likely to engage in risky or harmful behaviors such as drug use, alcohol abuse, harming others, self-harm, or suicide (Arthur et al., 2002). There are three domains (family, school, and community) with two scales in each for a total of six subscales measuring social support and its hypothesized influence on suicide risk for youth. All 20 items across the social support scales and subscales are measured on a four-point Likert scale measuring agreeableness ("Choose the best answer to the following statements…"; 1=NO!, 2=no, 3=yes, 4=YES!). Overall reliability for these scales is strong with Cronbach's alphas ranging from .65 (opportunities for prosocial school involvement) to .84 (rewards for prosocial community involvement; University of Washington, 2014). Initial analyses discussed below also show strong reliability within and significant correlations between among the subscales within this specific sample. For the purposes of addressing the second research question, a combined mean score for the two subscales in each domain will be used in the analyses.

A total of seven items across the two subscales are included at the family level. Three *opportunities* items measure opportunities for youth to engage in prosocial activities and provide input within their family (e.g., "My parents ask me what I think before most family decisions affecting me are made"). The *opportunities* mean was 2.92 and analyses revealed a Cronbach's alpha of .802 for these items. Four *rewards* items measure rewards for prosocial involvement within the family (e.g., "My parents notice when I am doing a good job and let me know about it"). The *rewards* mean was 3.00 and analyses revealed a Cronbach's alpha of .803 for these items. The two subscales for family support show a significant positive correlation ($r = .781$, $p < .001$).

Nine items are included at the school level. Five *opportunities* items measure opportunities for students to engage in activities and provide input at school (e.g., "Teachers ask me to work on special classroom projects"). The *opportunities* mean was 2.81 and these items have a Cronbach's alpha of .743. Four *rewards* items measure rewards for involvement and achievement (e.g., "My teachers praise me when I work hard in school"), had a subscale mean of 2.49 and a Cronbach's alpha of .778. The two subscales for school support show a significant positive correlation ($r = .629$, $p < .001$).

Four items measure community-level social support for youth. One *opportunities* item measures opportunities for praise ("There are adults in my neighborhood I could talk to about something important"). The mean for this item was 2.40. Three *rewards* items measure rewards at the community level (e.g., "My neighbors notice when I'm doing a good job and let me know"), had a subscale mean of 2.06 and a Cronbach's alpha of .916. The two subscales for community support show a significant positive correlation ($r = .705$, $p < .001$).

Within each of the three scales, a subscale score will be calculated for the *opportunities* items and the *rewards* items, resulting in six total social support subscale scores (Family O, Family R, School O, School R, Community O, and Community R). These subscale scores will then be averaged together creating three combined mean scores for social support. In total, the study included 20 questions across three scales and six subscales assessing the independent variable of social support as a protective factor and four items measuring the dependent variable of suicide risk. In addition, race and ethnicity, gender, and sexual identity are included as part of the combined intersectionality variable. *Appendix A* below lists each of the MiPHY survey questions included in the study. Full copies of the 2015-2016 high school MiPHY survey and codebook are available upon request.

Missing Data Analyses

Prior to examining the research questions of the study, missing values analysis (MVA) and dummy coding were used to determine which cases to include in subsequent analyses, as well as to assess the ramifications of those decisions. For suicide risk, MVA was used at the item level and composite score level, while for social support MVA was used at both the subscale and domain levels. Across the full sample ($N = 7236$), 30.1% ($n = 2178$) of cases had missing data for one or more variables of interest. Thus, MVAs tested for patterns of data missing completely at random (MCAR), which tests the null hypothesis that there is no relationship between whether a data point is missing and any values in the dataset (Grace-Martin, 2011; Little & Rubin, 2014). The MVA also tested for patterns of data missing at random (MAR), which tests the null hypothesis that there is no relationship between missing data and observed data in the dataset (Grace-Martin, 2011; Little & Rubin, 2014).

The MVA at the scale level was statistically significant (χ^2 (26) = 61.028, $p < .001$). Similarly, at the subscale level, the MCAR analysis was statistically significant (χ^2 (346) = 516.413, $p < .001$). These results indicate that the data are not missing completely at random. As such, given that there is no simple test to determine whether data are MAR (Schafer & Graham, 2002), expectation-maximization (EM) correlations were conducted between all predictor and outcome variables to evaluate for patterns of missingness in the data. Results revealed no significant EM correlations suggesting that the missingness in the data is not related to the pattern or association of missingness between items. Therefore, the data meets missing at random (MAR) criteria (Little & Rubin, 2014).

A complete-case analysis approach (i.e., listwise deletion; Gilman & Hill, 2006; Schafer & Graham, 2002) was used to retain only cases for which data on the outcome and predictor

variables were available. A total of $n = 2178$ (30.1%) cases were excluded (*Figure 1* below

illustrates this decision-making process). These analyses resulted in a final subsample of $N =$

5058 for all subsequent analyses. See *Table 9* below for a comparison of the full sample and final

subsample.

Table 9:

Demographic comparison of full sample and final subsample of students.

	Full Sample (*N* = 7236)		Final Subsample (*N* = 5058)	
	n	*%*	*n*	*%*
Gender				
Female	3491	48.5	2546	50.3
Male	3705	51.5	2512	49.7
Racial identity				
American Indian/Alaska Native	74	1.1	47	0.9
Asian	315	4.5	209	4.1
Black/African American	665	9.5	419	8.3
Native Hawaiian/Pacific Islander	14	0.2	*	*
White	4668	66.9	3503	69.3
Multiple-Hispanic	743	10.7	516	10.2
Multiple-Non-Hispanic	497	7.1	356	7.0
Sexual identity				
Bisexual	386	6.9	330	6.5
Gay or Lesbian	94	1.7	82	1.6
Heterosexual	4805	85.8	4366	86.3
Not Sure	314	5.6	280	5.5
Intersectionality score				
0	1710	31.8	1614	31.9
1	2414	44.9	2295	45.4
2	1027	19.1	949	18.8
3	222	4.1	200	4.0

*Suppressed due to small cell size (n < 10).

The rationale for excluding a sizable portion of cases from these analyses was four-fold.

Firstly, the final subsample of $N = 5058$ provided sufficient power for the analyses conducted,

and thus the exclusion of these cases did not hinder study progress. More specifically, a priori

power analyses determined a necessary sample size of 119 while post hoc power analyses

revealed a power of 1. Secondly, since the demographic variables were being tested in regression

models (rather than simply controlled for), the likelihood of introducing error into the models

through multiple imputation was thought to be too great, particularly considering the sufficient

remaining power. Thirdly, the demographic distribution of the final subsample (including

intersectionality score) did not significantly shift from the original full sample and remained

representative of the state of Michigan (see *Table 8* and *Table 9* above). Finally, while multiple

methods exist for the imputation of missing data, the imputation of data for the present study

posed a substantial ethical dilemma. More specifically, research has demonstrated that the

imputation of demographic variables can lead to underestimation of behavioral health outcomes

(Frankel, Battaglia, Balluz, & Strine, 2012). Moreover, the present study investigated the impacts

of intersectionality on suicide risk, and the computation of this variable using imputed data

contradicts the conceptualization of intersectionality as Crenshaw (1989) describes it,

particularly with regards to the unique experiences of intersecting marginalized identities and

their impact on outcomes.

Cases were excluded in three phases. Firstly, cases that had missing data on any of the

three demographic variables of interest (gender [*n*=40], race/ethnicity [*n*=260], and sexual

identity [*n*=1637]; *n* = 1863) were excluded due to the need for complete data to compute an

intersectionality variable. Secondly, cases with any of the four items related to suicide risk

(sadness/hopelessness, suicidal ideation, suicide plan, and previous attempts; *n* = 190) missing

were excluded due to the need for complete data on these items for subsequent cluster analyses.

Finally, dummy coded variables were created for the social support domains such that

respondents who responded to 51% or more of the items for each scale were included (1) and

those who responded to 50% or fewer items, or for whom data were missing for more than 50% of items, were excluded (0; n = 125). This was done to (1) ensure that social support subscale and domain scores would be calculated only for students that responded to the majority of the items, (2) maximize the reliability of the social support subscales, (3) minimize error in the subscales, and (4) reduce the likelihood of introducing missingness bias into the dataset (Schafer & Graham, 2002).

Figure 1:

Case selection criteria and decision-making process.
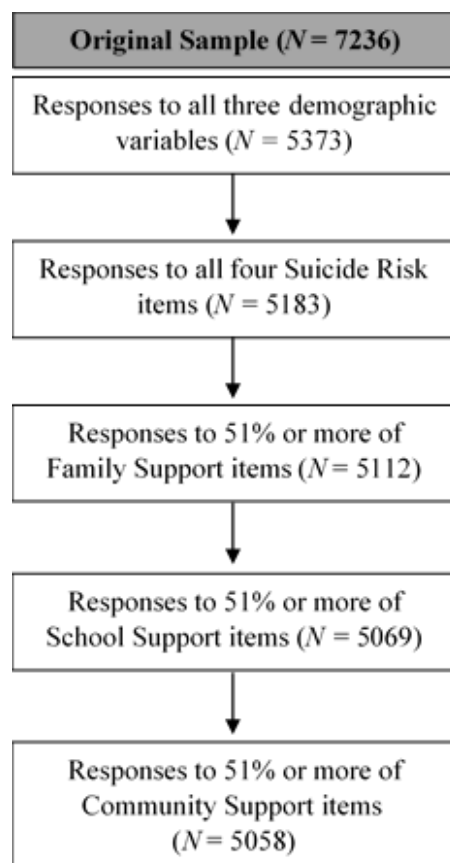
The subsequent analyses described below were conducted using only the cases included in the final subsample (N = 5058). Significant differences for those excluded were found such that males (χ^2 (1, n=7196) = 22.65, p < .001), non-white (χ^2 (1, n=6976) = 45.56, p < .001), and

non-straight (χ^2 (1, n=5599) = 10.75, p = .001) respondents were significantly more likely to be excluded from the final subsample due to missing data. Moreover, those with higher intersectionality scores were also significantly more likely to be excluded (χ^2 (1, n=5373) = 16.17, p = .001). In particular, those excluded were significantly less likely to respond to family support (F (1, 6582) = 6.84, p < .01, η^2 = .001) and school support (F (1, 6723) = 10.56, p = .001, η^2 = .002) items, but did not significantly differ in response rates to community support questions. Moreover, for suicide risk items, those excluded were significantly less likely to respond to the item regarding previous suicide attempts (F (1, 5718) = 6.65, p < .05, η^2 = .001). While these analyses suggest that those with marginalized identities were less likely to respond to all of the items used in the analyses, the nature of missing data in general is paradoxical. It is difficult to know exactly who was excluded (or more likely to be excluded) due to the missing data itself (i.e., 26% of respondents did not answer all three demographic questions).

ANALYSIS AND RESULTS

Four phases of analysis were used in the study in order to fulfill its aims. The first phase of analysis used cluster analysis to determine risk groups (research question one). The second and third used regression analyses to determine the unique and compounding effects of social support on suicide risk (research questions two and three, respectively). Finally, the fourth phase used multiple regression to assess the impact of social support as a moderator on the relationship between intersectionality and suicide risk (research question four).

To determine the most meaningful way to control for the effects of demographics on suicide risk, two exploratory regression models were used: one using the computed intersectionality variable, and one using the separated gender, race and ethnicity, and sexual identity variables. These exploratory analyses revealed that, while both models were significant,

in all social support regression models presented below, including the demographic variables separately accounted for slightly more variance in suicide risk (9.3% vs. 8.5%). Thus, these are the models presented.

Who is Most at Risk for Suicide?

The first research question examines who is most at risk for suicide and was comprised of two analyses. To examine whether marginalized youth report higher suicide risk scores (the first hypothesis), one-way ANOVA analyses were performed to examine mean differences between demographic variables and suicide risk composite score. These analyses support the first hypothesis such that females (M = 0.98) had significantly higher suicide risk composite scores than males (M = 0.50; F (1, 5056) = 229.74, p < .001; η^2 = .043). Similarly, non-white respondents (M = 0.86) had significantly higher suicide risk scores than white respondents (M = 0.69; F (1, 5056) = 22.16, p < .001; η^2 = .004). Finally, sexual minority youth (M = 1.62) had significantly higher suicide risk scores than straight youth (M = 0.60; F (1, 5056) = 493.25, p < .001; η^2 = .089).

While these results are statistically significant with adequate power, the effect sizes indicate a medium-strength association between gender and suicide risk (η^2 = .043), a small association between race and ethnicity and suicide risk (η^2 = .004), and a medium association between sexual identity and suicide risk (η^2 = .089). Overall, these results support the first hypothesis such that youth classified as marginalized in terms of gender, race and ethnicity, or sexual identity had significantly higher suicide risk scores than their counterparts. The effect sizes suggest that both gender and sexual identity moderately impact suicide risk while race and ethnicity is also significant, but less practically important in predicting risk.

To examine which intersectional group of youth is most at risk for suicide (the second hypothesis), an iterative two-step cluster analysis process was used in order to partition the sample of youth into three suicide risk groups (low, medium, and high). The first of these steps pre-clustered cases sequentially to create fewer cases for the next step, which applied a hierarchical cluster analysis to produce a final cluster solution with an automatically determined number of clusters (Bacher, Wenzig, & Vogler, 2004).

Clusters were partitioned on the four dichotomous suicide risk survey items (sadness and hopelessness, ideation, plans to attempt, and previous attempts). The robustness of the cluster solution was assessed using the silhouette coefficient. This measures both the cohesion of cases within a cluster as well as their separation and distinction from other clusters. The silhouette coefficients ranges from -1 to +1 with a value over 0.5 indicating a quality cluster solution (Sarstedt & Mooi, 2014). After finding the most robust cluster solution, the clusters were examined for demographic characteristics to assess the first hypothesis regarding minority status and suicide risk.

A two-step cluster analysis using the four dichotomous suicide risk variables yielded three clusters (low-, medium-, and high-risk) and revealed a strong goodness of fit (silhouette coefficient = 0.9). The low-risk cluster contained 61.9% ($n = 3130$) of the 5058 respondents included in the analyses and was characterized by a 100% suicide risk composite score of 0 within the cluster, indicating that all respondents in the low-risk cluster responded "no" to all four suicide risk questions. The medium-risk cluster contained 16.1% ($n = 812$) and was characterized by a 100% suicide risk composite score of 1 within the cluster indicating that every member of the medium-risk cluster responded "yes" to one of the four suicide risk items (in this case, the sadness/hopelessness item). Finally, the high-risk cluster contained 22.1% ($n = 1116$) of

the respondents and was characterized by 12.9% of a suicide risk composite score of 1 and 87.1% of a suicide risk composite score of 2 or higher. In other words, within the high-risk cluster, most members answered "yes" on at least two suicide risk items.

Table 10:

Percentage of responses to suicide risk items by cluster membership.

Suicide Risk Variable		Low-Risk (n = 3130)	Medium-Risk (n = 812)	High-Risk (n = 1116)
Sadness/hopelessness	Yes	0.0	100.0	78.3
	No	100.0	0.0	21.7
Suicidal ideation	Yes	0.0	0.0	84.8
	No	100.0	100.0	15.2
Suicide plan	Yes	0.0	0.0	66.7
	No	100.0	100.0	33.3
Previous attempts	Yes	0.0	0.0	35.5
	No	100.0	100.0	65.5
Suicide risk composite score	0	100.0	0.0	0.0
	1	0.0	100.0	12.9
	2	0.0	0.0	33.8
	3	0.0	0.0	29.7
	4	0.0	0.0	23.6

Within the high-risk group specifically, most members reported experiencing sadness/hopelessness (78.3%), suicidal ideation (84.8%), and having made a plan to attempt suicide (66.7%), while 34.2% reported having made a suicide attempt in the previous year. All four of the predictors included in the analyses (sadness and hopelessness, ideation, plans to attempt, and previous attempts) revealed an importance score of 1 in the final model meaning that all four predictors were maximally important in predicting suicide risk cluster. *Table 10* above summarizes these findings.

The second hypothesis was an extension of the first involving further investigation of cluster memberships to determine what, if any, intersectional profiles emerged. To examine the

second hypothesis, a means comparison was performed to examine mean differences between intersectionality score and suicide risk cluster membership. These analyses support the second hypothesis such that suicide risk clusters significantly differed from one another by level of intersectionality (F (2, 5055) = 218.9, $p < .001$, $\eta^2 = .080$). This finding revealed a medium effect size suggesting a moderate association between intersectionality and suicide risk (Cohen, 1988; Ellis, 2010).

Post-hoc comparison tests using the Bonferroni correction were used to better understand these differences. Each suicide risk cluster significantly differed from every other cluster in terms of intersectionality such that those with higher intersectionality scores were significantly more likely to be classified as high-risk ($p < .001$). More specifically, those in the high-risk cluster are significantly more likely to have more than one marginalized identity ($M = 1.32$) compared to those in the medium- ($M = 1.10$) and low-risk clusters ($M = 0.78$), respectively. Overall, the more marginalized identities a respondent has, the more likely they were to be classified as "high-risk." *Table 11* below describes the demographic characteristics of each cluster.

Table 11:

Demographic composition of the low-, medium-, and high-risk suicide risk cluster membership by cluster.

	Low-Risk (n = 3130)	Medium-Risk (n = 812)	High-Risk (n = 1116)
	%	*%*	*%*
Gender			
Female	42.20	61.90	64.80
Male	57.80	38.10	35.20
Racial identity			
American Indian/Alaska Native	0.90	*	1.00
Asian	4.50	3.90	3.20
Black/African American	8.20	8.50	8.40
Native Hawaiian/Pacific Islander	*	*	*
White	71.80	66.30	64.30
Multiple-Hispanic	8.30	12.70	13.70
Multiple-Non-Hispanic	6.20	7.30	9.20
Sexual identity			
Bisexual	2.50	6.00	18.20
Gay or Lesbian	0.70	1.70	4.20
Heterosexual	92.90	85.60	68.50
Not Sure	4.0	6.70	9.10
Intersectionality score			
0	39.00	23.80	17.90
1	46.10	46.30	42.60
2	13.20	26.00	29.10
3	1.70	3.90	10.40

*Suppressed due to small cell size (n < 10).

To What Extent Does Social Support Reduce Suicide Risk?

To answer the second research question regarding the role of social support in reducing suicide risk, three separate multiple linear regression analyses were conducted to determine the unique relationship between each source of social support and suicide risk. Analyses included a social support Opportunities and Rewards for each domain. These mean scores were entered in each regression model for the family, school, and community domains after controlling for

gender, race and ethnicity, and sexual identity. The third hypothesis was investigated by examining the statistical significance of each social support domain in the models. The fourth hypothesis examined the R-squared coefficient to determine the percentage of remaining variance in the model explained by the variable (i.e., support domain) being examined after accounting for demographic variables, as well as the effect sizes to determine the strength of the relationship. This illustrates which social support domain is most strongly associated with reduced suicide risk. Finally, post-hoc analyses were used to investigate differences in opportunities and rewards related to social support at each ecological level.

To examine the unique association between each domain of social support and suicide risk (the third and fourth hypotheses), hierarchical multiple linear regression analyses were conducted to examine the relationship between social support and suicide risk. In this model, gender, race and ethnicity, and sexual identity were entered into the first block to control for these differences in risk. Using suicide risk composite score as the dependent variable, a separate regression was conducted for each domain of social support (i.e., family, school, and community) using their respective *opportunities* and *rewards* subscale scores. *Table 12* below describes the means, standard deviations, and correlations among these variables.

Table 12:

Means, standard deviations, and correlation coefficients among suicide risk composite score social support domain scores.

	M	SD	1	2	3	4	5	6	7
1. Suicide Risk Score	0.74	1.17	1	-.36*	-.35*	-.18*	-.23*	-.18*	-.16*
2. Family Opportunities	2.93	0.76		1	.79*	.41*	.42*	.35*	.30*
3. Family Rewards	3.02	0.73			1	.40*	.41*	.32*	.30*
4. School Opportunities	2.82	0.54				1	.61*	.29*	.28*
5. School Rewards	2.50	0.66					1	.30*	.34*
6. Community Opportunities	2.42	1.04						1	.70*
7. Community Rewards	2.06	0.88							1

*p<.001

Gender, race and ethnicity, and sexual identity were entered in the first block of the analysis to account for these differences, and this model was significantly related to suicide risk at the family ($R^2 = .094$; $F(3, 5021) = 173.32$, $p < .001$), school ($R^2 = .094$; $F(3, 5049) = 174.81$, $p < .001$), and community ($R^2 = .094$; $F(3, 5043) = 175.23$, $p < .001$) levels. Thus, the results presented below describe the remaining variance in suicide risk accounted for after controlling for these variables.

The family support regression analysis suggests that family support is a significant predictor of suicide risk, accounting for 11.4% of the variance in suicide risk composite score after accounting for gender, race and ethnicity, and sexual identity (R^2 change= 0.114, $F(5, 5019) = 282.67$, $p < .001$). Both family opportunities and rewards contributed to the protective role of family support on suicide risk. The unstandardized regression coefficient for family opportunities was $b = -.31$, $\beta = -.20$, $t(5052) = -9.73$, $p < .001$. Thus, each one-unit increase in family opportunities corresponded to a .31-point decrease in suicide risk composite score. Similarly, the unstandardized regression coefficient for family rewards was $b = -.26$, $\beta = -.16$, $t(5052) = -8.02$, $p < .001$. Thus, each one-unit increase in family rewards corresponded to a .26-point decrease in suicide risk composite score. These differing effects suggest that, at the family level, opportunities to have input into decision making, confide in their parents, and spend time with their parents are more protective for youth than rewards such as positive reinforcement.

The school support regression suggests that school support is also a significant predictor of suicide risk, explaining 4.4% of the variance in suicide risk composite score after controlling for the demographic variables of interest (R^2 change = 0.044, $F(5, 5049) = 161.61$, $p < .001$). Both opportunities and rewards at the school level also contribute to the protective role of school support. The unstandardized regression coefficient for school opportunities was $b = -.14$, $\beta = $

-.07, $t(5052) = -4.07$, $p < .001$. Thus, each one-unit increase in school opportunities corresponded to a .14-point decrease in suicide risk composite score. Similarly, the unstandardized regression coefficient for school rewards was $b = -.29$, $\beta = -.16$, $t(5052) = -9.79$, $p < .001$. Thus, each one-unit increase in school rewards corresponded to a .29-point decrease in suicide risk composite score. Contrary to findings for family support, these differing effects suggest that positive reinforcement (as a reward) has a stronger protective effect on suicide risk than opportunities to participate in decision-making and extracurricular activities in the school setting.

Finally, the community support regression also suggests that community support is a significant predictor or risk accounting for 2.6% of the remaining variance in suicide risk composite score after controlling for the demographic variables of interest (R^2 change = 0.026, F (5, 5041) = 137.41, $p < .001$). Again, both opportunities and rewards contributed to the protective role of community support. The unstandardized regression coefficient for community opportunities was $b = -.13$, $\beta = -.11$, $t(5052) = -6.18$, $p < .001$. Thus, each one-unit increase in community opportunities corresponded to a .13-point decrease in suicide risk composite score. Similarly, the unstandardized regression coefficient for community rewards was $b = -.08$, $\beta = -.06$, $t(5052) = -3.19$, $p = .001$. Thus, each one-unit increase in community rewards corresponded to a .08-point decrease in suicide risk composite score. This suggests that having trustworthy community members in which youth can confide is more protective than praise and positive reinforcement from community members.

Overall, analyses support the third and fourth hypotheses such that all three sources of social support were significantly associated with a lower suicide risk composite score among youth after controlling for demographic variables. Family support explained the greatest proportion of remaining variance (11.4%) in the model, followed by school support (4.4%) and

community support (2.6%) respectively. By Cohen's (1988) benchmarks, family support

revealed a medium effect size ($\Delta R^2 = .114$) while school ($\Delta R^2 = .044$) and community support

($\Delta R^2 = .026$) revealed small effect size (Ellis, 2010). *Table 13* below summarizes these regression

results.

Table 13:

Regression analysis summary for social support predicting suicide risk composite score.

		Model 1			Model 2		
		B	*SE B*	*β*	*B*	*SE B*	*β*
Family Domain	Gender	-.40	.03	-.17**			
	Race/Ethnicity	.05	.01	.06**			
	Sexual Identity	.32	.02	.22**			
	Family opportunities				-.31	.03	-.20**
	Family rewards				-.26	.03	-.16**
	df1		3			2	
	df2		5021			5019	
	R^2		.093			.207	
	Change in R^2		.094**			.114**	
	F for change in R^2		173.317**			361.738**	
School Domain	Gender	-.40	.03	-.17**			
	Race/Ethnicity	.05	.01	.06**			
	Sexual Identity	.32	.02	.22**			
	School opportunities				-.14	.04	-.07**
	School rewards				-.29	.03	-.16**
	df1		3			2	
	df2		5049			5047	
	R^2		.094			.137	
	Change in R^2		.094**			.044**	
	F for change in R^2		174.811**			128.549**	
Community Domain	Gender	-.40	.03	-.17**			
	Race/Ethnicity	.05	.01	.06**			
	Sexual Identity	.32	.02	.22**			
	Community opportunities				-.13	.02	-.11**
	Community rewards				-.08	.02	-.06*
	df1		3			2	
	df2		5043			5041	
	R^2		.094			.119	
	Change in R^2		.094**			.026**	
	F for change in R^2		175.231**			73.160**	

*$p = .001$, **$p < .001$

How Do Compounding Sources of Social Support Reduce Suicide Risk?

The third research question regarding the compounding effects of multiple ecological sources of support on suicide risk was assessed using multiple stepwise linear regression. Again, gender, race and ethnicity, and sexual identity were entered into the first block to control for these differences in risk. The second stepwise regression block included the three combined social support domain variables (computed from the respective combined *opportunities* and *rewards* subscales) to investigate how the compounding effect of multiple sources of support was or was not more protective. The R^2 change coefficient in the stepwise model was used to assess which source(s) of social support explained the most remaining variance in the model as well as whether the *addition* of multiple sources add to that variance explained. These results in in addition to those from the second research question help to determine (1) how each source of support uniquely contributes to reduced suicide risk, and (2) the most powerful combination of support sources associated with reduced risk.

Gender, race and ethnicity, and sexual identity were entered in the first block of the analysis to account for these differences, and this model was significantly related to suicide risk (F (3, 5054) = 174.63, p < .001) resulting in an R^2 of .093, thus explaining 9.3% of the variance in the model.

The three domains of social support (family, school, and community) were then entered into the second, stepwise block of the multiple regression model. The second model with the addition of family support resulted in significant R^2 change of .113 thus explaining 11.3% of the remaining variance in suicide risk (F (4, 5053) = 329.10, p < .001). The unstandardized regression coefficient (*b*) for this model indicated that a one unit increase in familial support leads to a 0.56-point reduction in suicide risk (t (5057) = -26.80, p < .001).

The third model with the addition of school support resulted in significant R^2 change of .003 thus explaining 0.3% of the remaining variance (F (5, 5052) = 267.56, p < .001). Similarly, the addition of one unit of school support to family support leads to an additional 0.13-point reduction (b) in suicide risk (t (5057) = -4.15, p < .001).

Finally, the fourth model with the addition of community support resulted in a significant R^2 change of .001 explaining only 0.1% of the remaining variance (F (6, 5051) = 224.25, p < .001). The addition of one unit of community support to both the family and school support domains leads to an additional 0.05-point reduction (b) in suicide risk (t (5057) = -2.50, p < .05).

By Cohen's (1988) benchmarks, the addition family support revealed a medium effect size ($\varDelta R^2$ = .113) while school ($\varDelta R^2$ = .003) and community support ($\varDelta R^2$ = .001) revealed small effect size (Ellis, 2010) in addition to the prior domains. *Table 14* below summarizes these regression results. Overall, these results support the first proposition of the third research question such that the combination of all three domains of social support is significantly associated with the largest decrease in suicide risk while familial support remains the strongest overall contributor to reduced risk.

Table 14:

Summary of stepwise regression analysis for variables predicting suicide risk.

|	Model 1			Model 2			Model 3			Model 4		
	B	*SE B*	*β*	*B*	*SE B*	*β*	*B*	*SE B*	*β*	*B*	*SE(B)*	*β*
Gender	-.40	.032	-.172**	-.392	.030	-.168**	-.387	.030	-.166**	-.385	.030	-.165**
Race/Ethnicity	.047	.011	.057**	.049	.010	.059**	.046	.010	.056**	.046	.010	.056**
Sexual Identity	.314	.019	.222**	.242	.018	.171**	.243	.018	.172**	.241	.018	.170**
Family Support				-.563	.021	-.340**	-.515	.024	-.311**	-.501	.024	-.303**
School Support							-.128	.031	-.059**	-.110	.032	-.051*
Community Support										-.046	.018	-.035*
R^2		.094			.207			.209			.210	
F for change in R^2		174.625**			718.200**			17.182**			6.268*	

*p < .05. **p < .001.

How Does Social Support Moderate the Impact of Intersectionality on Suicide Risk?

The fourth research question regarding the moderating effects of social support on the relationship between intersectionality and suicide risk was assessed with a hierarchical moderated regression model using the PROCESS macro for SPSS developed by Hayes (2013). The computed intersectionality variable was used to assess the extent to which the intersection of multiple minority identities impacts suicide risk, and social support was tested as a moderator in this relationship. To do this, a multiple regression model was used with the addition of the linear interaction term for intersectionality and social support within each domain (Aguinis, 2004; Tabachnick & Fidell, 2013). Using the PROCESS macro, intersectionality was entered into the first block with suicide risk score as the dependent variable. Intersectionality and the three social support domain scores were then mean centered to address potential multicollinearity issues (Tabachnick & Fidell, 2013). The interaction term of these centered variables (intersectionality X social support) was then entered in the second block to see if social support moderated the relationship between intersectionality and suicide risk (See *Figure 2* below for a graphic depiction of these relationships). Simple slopes analysis was then used to interpret significant interaction effects. This process was repeated for each ecological source of support (family, school, and community).

Figure 2:

Conceptual and statistical diagrams for the hypothesized social support-moderated relationship

between intersectionality and suicide risk.
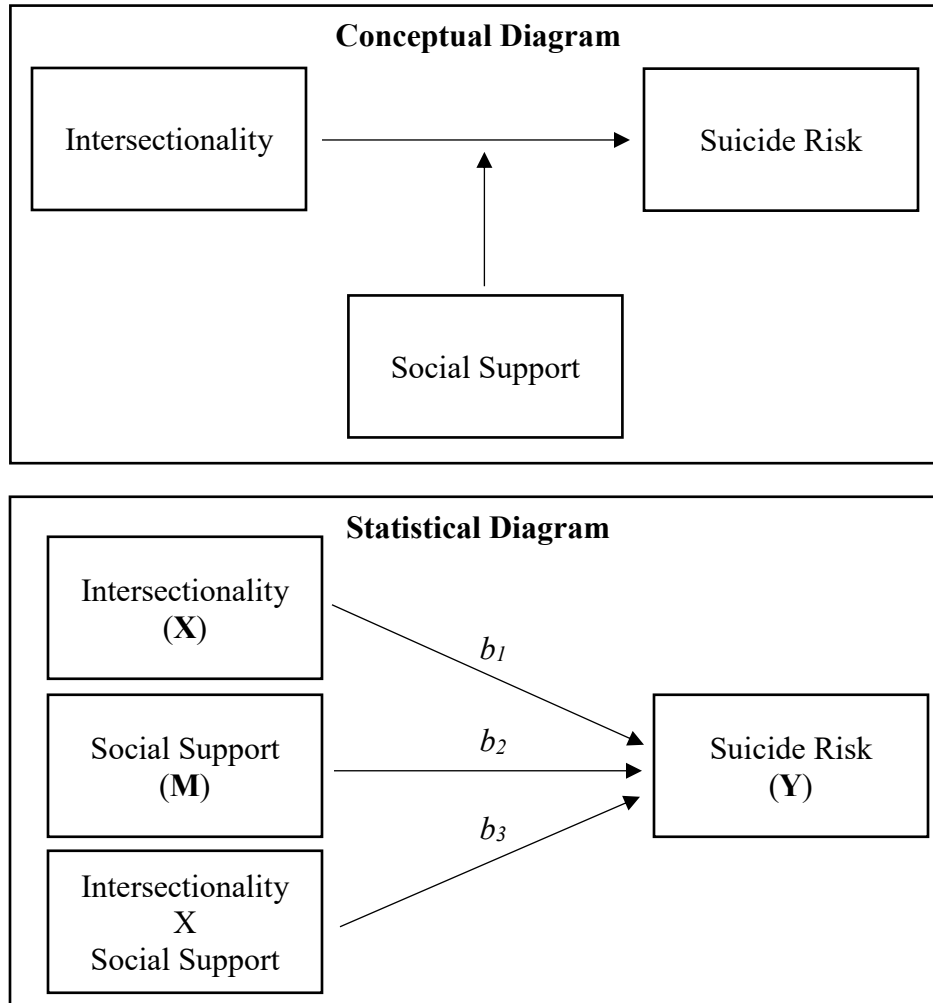
Conditional effect of X on Y = $b_1 + b_3M$ (Adapted from Hayes, 2013)

Family support. The full hierarchical regression model using family support as the hypothesized moderator was found to be statistically significant (F (3, 5054) = 414.18, $p < .001$) resulting in an R^2 of .197. Thus, intersectionality, family support, and the interaction between the two significantly explain 19.7% of the variance in suicide risk. The main effects for intersectionality and family support were each significant such that those with higher intersectionality scores reported higher suicide risk scores ($b = .34$, t (5057) = 18.27, $p < .001$)

and those with higher family support reported significantly lower suicide risk scores ($b = -.55$, t (5057) = -25.64, $p < .001$). Moreover, the interaction between intersectionality and family support was also significant (R^2 change = .0024; $F(1, 5054) = 15.16$, $p < .001$; b = -.10, t (5057) = -3.89, $p < .001$). *Table 15* below summarizes these results and *Figure 3* illustrates these statistical relationships.

Table 15:

Suicide risk by intersectionality, family support, and their interaction

Predictor	B	SE B
Intersectionality**	.337	.018
Family Support**	-.545	.021
Intersectionality X Family Support**	-.096	.025

**$p \leq .001$, *$p < .01$

Figure 3:

Statistical model of the family support-moderated relationship between intersectionality and suicide risk.
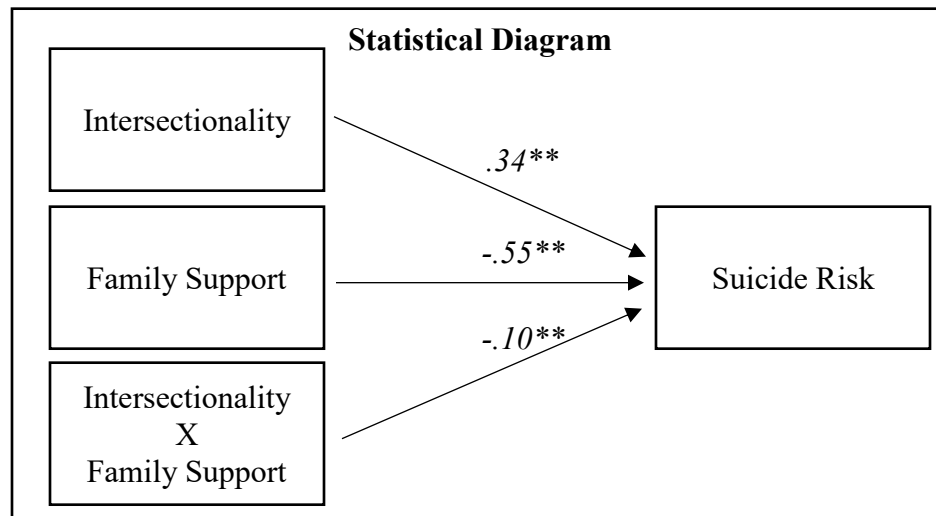
** $p < .001$, * $p < .01$

Simple slopes analyses were conducted to understand the interaction findings. The effect of intersectionality was estimated separately for high and low levels of family support (i.e., one standard deviation above and below the mean for family support, respectively). Analyses confirm a moderated relationship such that, at high levels of family support, the simple slope for intersectionality was $b = .269$, (t (5057) = 9.97, $p < .001$), and at low levels of family support, the simple slope for intersectionality was $b = .404$, (t (5057) = 17.15, $p < .001$). Thus, intersectionality is significantly positively related to suicide risk at each level of family support, but the magnitude of the effect is smaller with higher levels of social support. In other words, for those with high intersectionality scores, the protective effects of family support are stronger. *Table 16* summarizes these results and *Figure 4* illustrates the interaction between intersectionality and suicide risk at varying levels of family support.

Table 16:

Conditional effects of family support on suicide risk

Family Support	B	p	95% CI	
			Lower	Upper
One SD below mean (-.7038)	.4041	.000	.358	.450
At the mean (0)	.3365	.000	.300	.373
One SD above mean (.7038)	.2688	.000	.216	.322

To further understand this moderation effect, hierarchical regression models were conducted with a focus on the *opportunities* and *rewards* subscales of family support as the hypothesized moderators. Both of these models were found to be independently significant suggesting that, at the family level, both opportunities ($R^2 = .187$; $F(3, 5049) = 387.68$, $p < .001$) and rewards ($R^2 = .185$; $F(3, 5049) = 380.776$, $p < .001$) significantly moderate the relationship between intersectionality and suicide risk. Thus, bolstering support in either or both of these

areas of family support can significantly mitigate the relationship between intersectionality and increased suicide risk, particularly for marginalized youth.

Figure 4:

Predicting suicide risk as a function of intersectionality and family support.

- - Low Family Support ——High Family Support
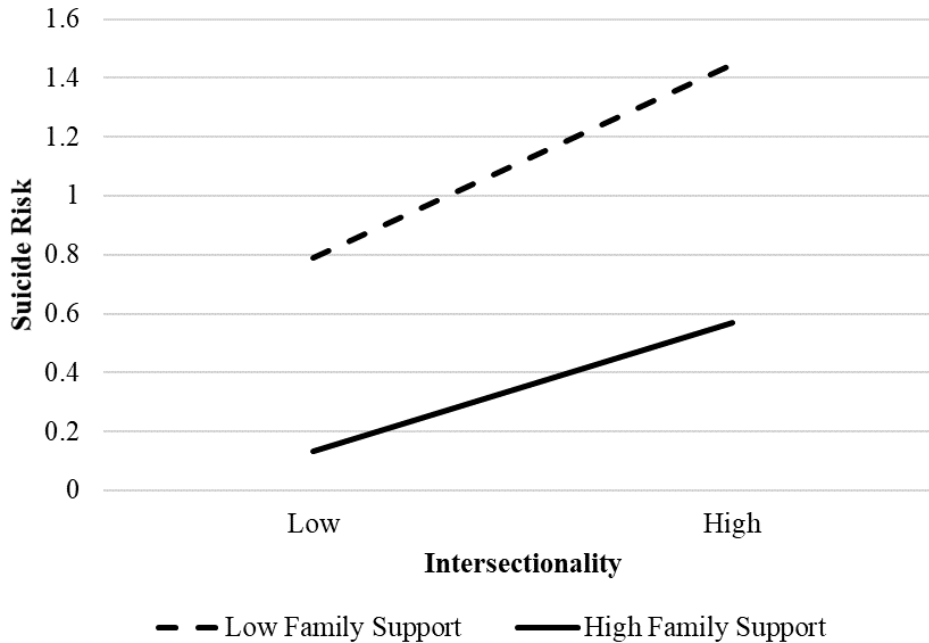
School support. Similarly, the full hierarchical regression model using school support as the hypothesized moderator was also found to be statistically significant (F (3, 5054) = 253.26, p < .001) resulting in an R^2 of .131. Thus, intersectionality, school support, and the interaction between the two significantly explain 13.1% of the variance in suicide risk. The main effects for intersectionality and school support significant such that those with higher intersectionality scores reported higher suicide risk scores (b = .39, t (5057) = 20.75, p < .001) and those with higher school support reported significantly lower suicide risk scores (b = -.45, t (5057) = -15.74, p < .001). Moreover, the interaction between intersectionality and school support was also significant (R^2 change = .0019; F(1, 5054) = 10.79, p = .001; b = -.11, t (5057) = -3.28, p = .001). *Table 17* below summarizes these findings and *Figure 5* illustrates these statistical relationships.
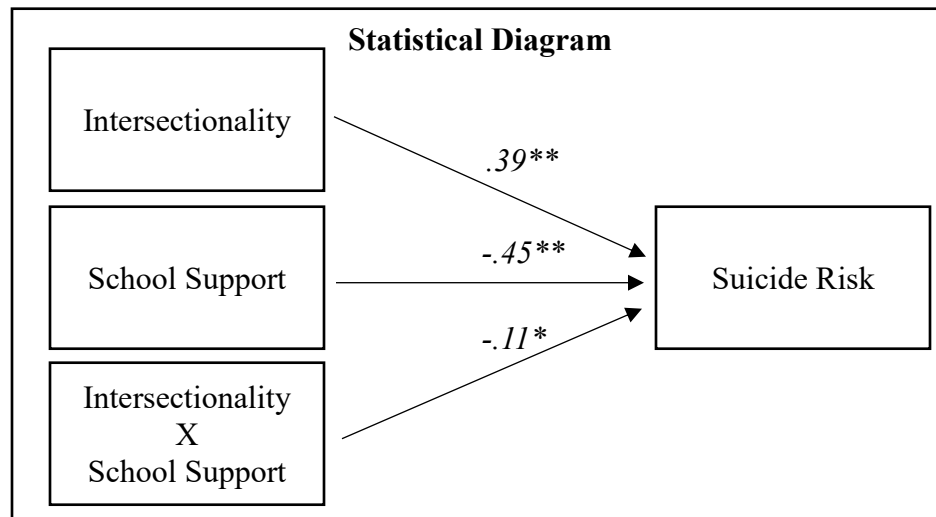
Table 17:

Suicide risk by intersectionality, school support, and their interaction

Predictor	B	SE B
Intersectionality**	.391	.019
School Support**	-.448	.028
Intersectionality X School Support*	-.111	.034

**$p \leq .001$, *$p < .01$

Figure 5:

Statistical model of the school support-moderated relationship between intersectionality and

suicide risk.

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

  Simple slopes analyses confirm a moderated relationship such that, at high levels of

school support, the simple slope for intersectionality was $b = .331$, (t (5057) $= 12.26$, $p < .001$),

and at low levels of school support, the simple slope for intersectionality was $b = .451$, (t (5057)

$= 17.72$, $p < .001$). Thus, intersectionality is significantly positively related to suicide risk at each

level of school support, but the magnitude of the effect is smaller with higher levels of social

support. In other words, the protective effects of school support are stronger for those with high

intersectionality scores. *Table 18* below summarizes these results and *Figure 6* illustrates the

interaction between intersectionality and suicide risk at varying levels of school support.

Table 18:

Conditional effects of school support on suicide risk

School Support	B	p	95% CI	
			Lower	Upper
One SD below mean (-.5398)	.4514	.0000	.401	.501
At the mean (0)	.3914	.0000	.354	.428
One SD above mean (.5398)	.3314	.0000	.278	.384

Figure 6:

Predicting suicide risk as a function of intersectionality and school support.
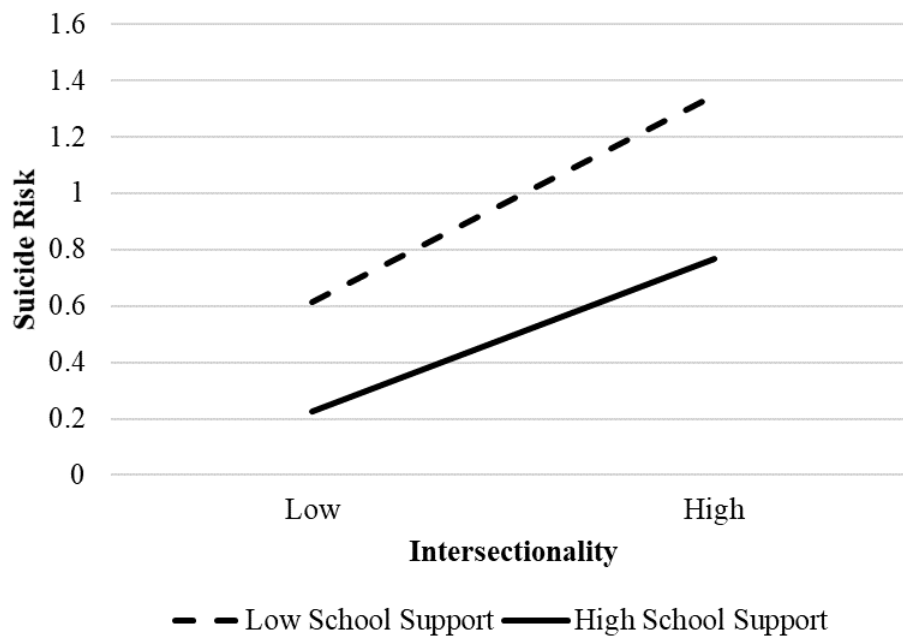
To further understand this moderation effect, hierarchical regression models were

conducted with a focus on the *opportunities* and *rewards* subscales of school support as the

hypothesized moderators. When broken down in this way, opportunities alone was not found be a

significant moderator ($p = .141$). However, rewards at the school level was found to significantly

moderate the relationship between intersectionality and suicide risk ($R^2 = .131$; $F(3, 5049) =$

253.16, $p < .001$). Thus, increasing rewards such as positive reinforcement within the school environment can significantly mitigate the relationship between intersectionality and increased suicide risk, particularly for marginalized youth.

Community support. Finally, the full hierarchical regression model using community support as the hypothesized moderator was also found to be statistically significant (F (3, 5054) = 202.86, $p < .001$) resulting in an R^2 of .108. Thus, intersectionality, community support, and the interaction between the two significantly explain 10.8% of the variance in suicide risk. The main effects of intersectionality and community support were each significant such that those with higher intersectionality scores reported higher suicide risk scores ($b = .38$, t (5057) = 19.88, $p < .001$) and those with higher community support reported significantly lower suicide risk scores ($b = -.20$, t (5057) = -11.08, $p < .001$). *Table 19* below summarizes these results and *Figure 7* illustrates these statistical relationships. The interaction between intersectionality and community support was not found to be significant ($b = -.03$, t (5057) = -1.36, $p = .174$). As such, simple slopes analyses and community support subscale regressions for community support were not conducted.

Table 19:

*Suicide risk by intersectionality, community support, and their interaction*

Predictor	B	SE B
Intersectionality**	.384	.019
Community Support**	-.196	.018
Intersectionality X Community Support	-.029	.022

**$p \leq .001$, *$p < .01$

Figure 7:

Statistical model of the community support-moderated relationship between intersectionality and suicide risk.

Statistical Diagram

Intersectionality — .38** → Suicide Risk

Community Support — -.20** → Suicide Risk

Intersectionality X Comm. Support — -.03 → Suicide Risk
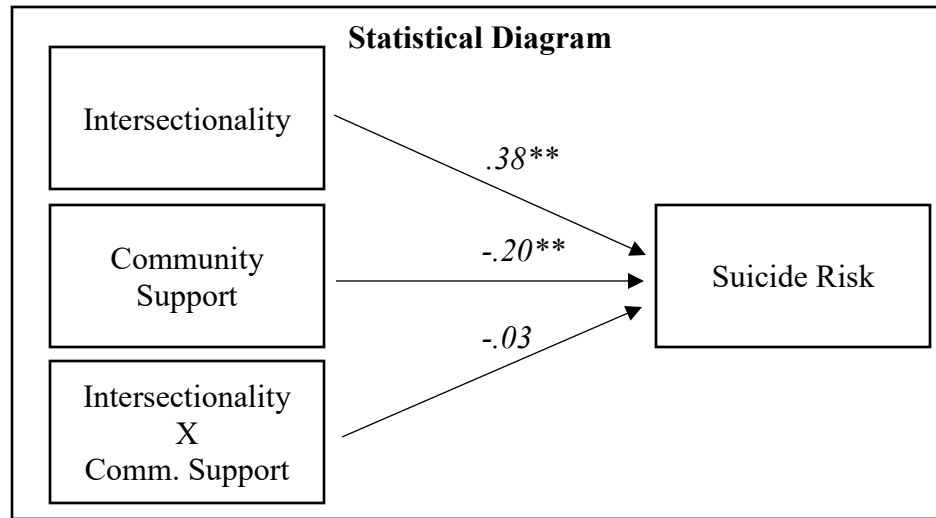
*** p < .001, * p < .01*

Social support as a moderator. Overall, these findings partially support the second proposition of the fourth research question such that both family support and school support significantly moderate the relationship between intersectionality and suicide risk. More specifically, higher intersectionality scores are associated with significantly higher suicide risk at each level of family and school support, but the magnitude of the effect is smaller with higher levels of social support. This finding was not found to be true for community-level social support.

DISCUSSION

The present study examined how social identity influences suicide risk and the role of social support as a protective factor in that relationship. Overall, findings provide support for the use of the socioecological model. More specifically, they highlight the importance of paying attention to protective factors in every context in which youth live, learn, and play. Moreover,

findings also suggest that measuring and reporting social identities as well as their intersections and interactions adds to our understanding of both risk and prevention when it comes to youth suicide.

Risk for Suicide

The first research question aimed to investigate which youth are most at risk for suicide. Findings indicated that risk group membership was largely delineated by minority status for gender, race and ethnicity, and sexual identity. In other words, females, non-white students, and LGB youth were found to be at significantly higher risk for suicide, which supports the first hypothesis. These findings echo previous research regarding gender (Canetto, 1997; Miller, 2011; Stone et al., 2018) and sexual identity (Miller, 2011; Worthington & Reynolds, 2009) and provide yet more evidence that attending to issues of marginalization experienced by females and LGB individuals is not only advisable but necessary in order to prevent suicides. These findings do not, however, clarify the mixed literature regarding race and ethnicity and suicide risk (e.g., Drapeau & McIntosh, 2017; Udry et al., 2003; WHO, 2018). Overall, non-white youth were significantly more likely to be classified as high-risk, however, this finding revealed a small effect size. Moreover, findings from Study I revealed significant differences between racial and ethnic groups only for those with multiple racial identities (i.e., those who identified as multi-racial were significantly more likely to have high risk scores as compared to their Asian, Black/African American, and White peers). Further research should aim to explore these differences in depth.

Findings also indicate that those with intersecting marginalized identities were significantly more likely to be classified as high-risk. This supports the second hypothesis, adds to the scarce literature regarding intersectionality and suicide risk, and echoes authors such as

Bostwick and colleagues (2014) and Garnett and colleagues (2014) who found that intersectional groups of youth are more at risk for suicide. Taken together, these findings suggest that, while per-capita suicide rates for white Americans are higher than most minority groups (CDC, 2018c; Drapeau & McIntosh, 2018), once we account for intersectional disadvantage, such trends become less clear.

Social Support as a Protective Factor

The second research question assessed the extent to which social support reduces suicide risk among youth. Overall, family, school, and community social support each uniquely and significantly contributed to reduced suicide risk in the sample, illustrating significant support for the third hypothesis. As Catalano and Hawkins (1996) purport in their social development theory, three conditions must be present at various levels of the socioecological model in order for youth to develop well socially: opportunities for prosocial involvement, skills to be successful in such involvement, and rewards and reinforcement for such involvement (Toumbourou, 2010). Findings from the present study support this theory and highlight the importance of increasing social support for youth throughout every level of the socioecological model.

In addition, the regression coefficients and effect sizes for these results support the fourth hypothesis such that more proximal sources of social support were more protective than more distal sources (i.e., the magnitude of the protective effects of family support were greater than those for school support and community support, respectively). This also echoes previous research regarding the influence of protective factors at various levels of the ecological model (Kilmer, Cook, Crusto, Strater, & Haber, 2012; Toumbourou, 2010). For example, Kjellstrand (2017) describes similar patterns for distal and proximal influences on youth behavior in the context of families affected by parental incarceration.

Moreover, the protective effects of both *opportunities* and *rewards* were significant for each source of support; however, the unstandardized regression coefficients demonstrate how these manifestations of support might best be applied at each ecological level. Within the family and community environments, *opportunities* were found to be slightly more protective than *rewards*. This suggests that opportunities to have input into decision-making; develop trusting and supportive relationships with parents, guardians, and neighbors; and engage in activities as a family are more protective than positive reinforcement within a child's home and community. As Arthur and colleagues (2002) suggest, this is likely because (1) youth who are more involved with their families and communities create stronger social bonds which reduce feelings of suicidal ideation (e.g., Bearman & Moody, 2004; King & Merchant, 2008; Prinstein et al., 2000), and (2) those bonds make youth less likely to engage in risky behaviors such as drug use, self-harm, and suicidal behavior (Toumbourou, 2010). Within the school environment, however, *rewards* were found to be slightly more protective than *opportunities*. This suggests that, when youth receive positive reinforcement for their academic and extracurricular successes in school, they are also more likely to develop strong social bonds and less likely to engage in risky behaviors (Arthur et al., 2002; Toumbourou, 2010).

Compounding Social Support

The third research question built upon the second to examine how the combination of multiple sources of social support might be more protective for youth. Findings indicate that the combination of family, school, and community support was significantly more protective than any unique source of social support, and that the variance explained by each domain was directly related to its proximity to the individual. This is a relatively novel finding supporting the first proposition for this question suggesting that while the combination of all three sources of social

support is most protective, more proximal sources of social support are more protective individually. Little research has examined how the combination of social support at multiple levels may be more protective (Maimon et al., 2010). However, these findings are similar to those of McConnell and colleagues (2015), who found that the combination of social support from family members, peers, and significant others was associated with improved mental health outcomes among LGBT youth. These findings also validate both social development (Catalano & Hawkins, 1996) and socioecological (Bronfenbrenner, 1979) theories highlighting the importance of social support at multiple ecological levels.

Moderating Effects of Social Support

The final research question investigated how social support moderates the relationship between high intersectionality and increased suicide risk. Findings indicate that both family and school support significantly moderated this relationship such that, for those with high intersectionality scores, the protective effects of social support at the family and school levels were stronger than for those with low intersectionality scores. These findings provide partial support for the second proposition of the study given that community-level support was not found to be a significant moderator in the relationship between intersectionality and suicide risk.

This novel moderation finding suggests that the role of social support is particularly important (and effective) for youth with intersecting marginalized identities. Moreover, they contradict the one-size-fits-all approach that typifies many suicide prevention efforts for youth (White, 2012; White, 2016;). Just as suicide risk itself is different for each child throughout the developmental process (Horowitz, Bridge, Pao, & Boudreaux, 2014), and based on their social identities (e.g., Cover, 2013; Drapeau & McIntosh, 2017; Goldston et al., 2008; Miller, 2011; Sharaf, Thompson, & Walsh, 2009; Silenzio et al., Stone et al., 2018; Worthington & Reynolds,

2009), so must our efforts approach prevention strategies in multifaceted, multi-level, and individually informed ways (Goldston et al., 2008). It is only through this combination of individually tailored supports at multiple ecological levels that we can make the most difference for marginalized youth struggling with suicidal ideation and behavior.

Limitations

The present study is certainly not without its limitations, many due in part to the use of secondary data. In particular, the extent of missing data and the methods used to handle it warrant discussion. While the rationale for using listwise deletion to excluding a sizable portion of cases for this study was presented above and is certainly not unique to this study, the implications of this exclusion are important to consider. Namely, marginalized youth (both in terms of race and ethnicity and sexual identity) were significantly more likely to be missing data for the variables of interest. This highlights two major considerations for survey research moving forward. Firstly, the ordering of questions in the MiPHY survey may contribute to missing data for the suicide risk variables in particular given their location in the survey and the point at which many youth stopped the survey. As such, future iterations of the survey should consider shifting the order of questions to account for this fact. Secondly, and more generally, there are significant cultural considerations to be made when assessing for constructs such as suicide risk. For example, Black and African American individuals often report culture-specific schemas for depression and suicide, particularly the strong stigma against discussing or reporting such issues (Campbell & Mowbray, 2016). Therefore, a larger cultural mindset shift is necessary within many communities (and indeed across society more generally) in which youth feel more comfortable disclosing their suicidal thoughts and behaviors. Moreover, 22.6% of youth in the full sample did not respond to the item regarding sexual identity. Thus, missingness of data for

nearly a quarter of the youth in the sample severely limits our understanding of risk and prevention among these populations.

In addition to these considerations, a major implication surrounding the exclusion of marginalized individuals from survey analyses (i.e., the introduction of nonresponse bias) is that we are likely underestimating rates of suicide in these populations as a result (Bryan & Rudd, 2006; Goldston et al., 2008; Morrison & Downey, 2000). As Morrison and Downey (2000) state, if marginalized "persons are reluctant to self-disclose suicidal ideation, there may be an underestimation of suicidal feelings in epidemiological and psychological research" (pp. 376-377). As such, it is imperative that researchers work to remedy such non-response bias, which contributes to the systematic exclusion of marginalized individuals from our findings, and thus limits the effectiveness of prevention strategies that stem from them.

Measurement limitations were also present in the study. The dataset used in the study included no data regarding gender non-conforming or gender non-binary youth. Moreover, the MiPHY survey lacks multiple options to capture a full spectrum sexual identity (The GenIUSS Group, 2014; SMART, 2009). These, in addition to the combining of "lesbian" and "gay" in the survey response options, fail to fully capture the identities and experiences of these youth, thereby further marginalizing this community and ultimately failing to provide research that can inform policy and practice aimed at improving—and saving—their lives. This restricted measurement of identity may also help explain why 22.6% of youth in the sample did not respond to the item about sexual identity. Taken together, the restricted measurement of identity drastically limits our understanding of suicidality among LGBTQ+ individuals and thus does a tremendous disservice to millions of people suffering with suicidal ideation and behavior. As

such, future research must examine the salience of social support as a preventive factor among all youth including gender non-conforming, non-binary, and all LGBQ+ individuals.

Regrettably, methods used in the present study also contribute to this marginalization. While small cell sizes and limited statistical methods for capturing intersectionality necessitated it, the collapsing of race and ethnicity and sexual identity into dichotomous variables (i.e., white vs. nonwhite and straight vs. non-straight) in order to compute the intersectionality variable likely resulted in a failure to fully capture the unique experiences of social support and suicide risk for hundreds of marginalized youth in the sample. Relatedly, a further limitation of the present study is the narrow way in which intersectionality was applied. Stemming from Black feminism studies, intersectionality is not only about the intersection of multiple identities, but the ways in which systems of power and privilege are built to oppress those with multiple minority identities, and how the intersection of identities influences one's experiences in those systems (Crenshaw, 1989). Exploratory analyses of the data in this study support this conceptualization of intersectionality such that, when entered into the second block of a hierarchical linear regression model, intersectionality significantly explained 1.2% of the remaining variance in suicide risk after accounting for its comprising variables of gender, race and ethnicity, and sexual identity ($\Delta R^2 = .012$, $F(1, 5053) = 66.245$, $p < .001$). In addition, the unstandardized regression coefficient for this model (b) indicated that, after accounting for gender, race and ethnicity, and sexual identity, each one-point increase in intersectionality score contributed to a .27-point increase in suicide risk. Given this, future research should aim to investigate unique and compounding experiences of intersectionality and move beyond the conceptualization of intersectionality as simply additive.

Methodologically, the vast majority of suicidology research among youth is cross-sectional in nature, and the present study is no exception. The largest concern of this limitation is a lack of understanding concerning the long-term protective effects of social support on suicidality. As such, future research should utilize longitudinal research designs to assess the long-term effects of social support and determine how this association might (or might not) persist into adulthood. In addition, the use of self-report measures leaves results vulnerable to bias, especially among adolescents with mental health conditions. For example, depressed youth may under-report feelings of social support or the existence of resources due to depressive cognitions (Kerr et al., 2006). On the other hand, Bonanno & Hymel (2010) argue that "since we cannot assume teachers, peers, or even parents are sentient to a child's innermost thoughts, the use of self-report measures is warranted and necessary" (p. 434). This is particularly true when measuring sensitive constructs such as suicidal ideation. Still, some researchers suggest that the inclusion of peer-reported measures of social support and social networks would be ideal moving forward (Prinstein et al., 2000).

Next, the differential effects of specific suicidal behavior history among youth is not included in the present study. As such, more research must address the effect of number of previous suicide attempts on the preventive association between social support and suicidal ideation (Winfree & Jiang, 2010). For example, King and her colleagues (2009) found that their social support intervention was most effective among youth who had multiple suicide attempts prior to the study. Conversely, another study found no significant effects for previous attempt status (Merchant et al., 2009). Future research should aim to clarify this effect.

Finally, a major component of social support is missing in much of the extant literature on this topic. As Thomas Joiner describes in his book *Why People Die by Suicide* (2005), there

are three major factors that contribute to suicidality: diminished sense of belongingness, perceived burdensomeness, and the acquired capacity for lethal self-injury. As such, the concept of perceived burdensomeness in social support warrants serious consideration in future theoretical and empirical research. That is, social support itself may increase feelings of suicidal ideation among youth due to feelings of perceived burdensomeness on the support person or persons (Joiner, 2005; King et al., 2009; King & Merchant, 2008).

Ethical Consideration

While the data used in this study is secondary, the ethical considerations related to suicide research cannot be overlooked. Suicide (and the discussion thereof) is a particularly sensitive topic for many people. As such, there is a certain level of vulnerability that is to be expected among the participants (Mishara & Weisstub, 2005). In particular, concerns regarding the iatrogenic effects of exposure to suicide-related material in research studies has been raised by institutional review boards and researchers alike (Blades, Stritzke, Page, & Brown, 2018; DeCou & Schumann, 2017; Poindexter, Nazem, Barnes, Hostetter, & Smith, 2018). Research on this subject, however, has failed to uncover any harmful effects of assessing suicidality (DeCou & Schumann). In fact, in a meta-analysis of nearly 20 studies conducted between 2000 and 2017, Blades and colleagues (2018) found that exposure to suicide-related content resulted in a significant (though small) *reduction* in suicidal ideation and likelihood for suicidal behavior among participants, due in part to the relief of being able to discuss such thoughts openly.

Implications for Research, Policy, and Practice

Findings from the current study have the potential to impact suicide prevention efforts in terms of research, policy, and practice. Research implications include (1) the consideration and application of intersectionality in determining risk and developing prevention strategies, (2) a

renewed focus on the role of protective factors in mitigating risk, and (3) the examination of such factors at multiple levels of the socioecological model. Implications for policy include an improved understanding of incidence and protective factors informing policy aimed at (1) improving family dynamics and relations in order to bolster opportunities for prosocial involvement among youth, (2) developing of holistic, school-based social support programs that engage youth in positive social interactions and mitigate risk (e.g., Miller 2011; Wright-Barryman, Hudnall, Hopkins, & Bledsoe, 2018), and (3) implementing community-level interventions for youth including community members trained to support youth in crisis and opportunities to engaged in developing social bonds within communities. Finally, implications for practice include potential transformations for clinical and mental health care such as increased access to services, culturally informed and relevant treatment and prevention strategies, and attention to youth-friendly treatment environments.

CONCLUSION

As suicide rates among youth continue to rise in the United States, it is apparent that the conventional approaches to research and prevention within suicidology are not entirely effective. Findings from previous research have undoubtedly shined light on the demographic and social risk factors for suicide, but few have examined how these factors intersect, how protective factors can be studied and enhanced, or how these factors are nested within a socioecological model. These limitations are largely due to the fact that the field of suicidology is based heavily in a positivist epistemology focused at the individual level of analysis (Bourke, 2003; Henry et al, 1993). As Marsh (2016) states, future research should be "founded on a different set of assumptions from those currently favoured in suicidology about the nature of suicide and how best to understand and respond to its prevalence and persistence" (p. 21). In applying

intersectional and socioecological approaches typically underutilized in suicidology, the present study answers these recent calls for a critical suicidology (White et al., 2016). The overarching aim is to refocus suicidology research and practice more holistically in order to better capture the individual, social, and ecological factors relevant to youth suicide. More importantly, in examining each of these areas, we learn more about their interactions and interdependencies thus illuminating critical intervention and prevention points. Lastly, by investigating these protective factors, we continue to chip away at the stigma surrounding mental health and suicide. In doing so, we prevent more deaths and fulfill our moral obligation to ensure our youth are poised to live safe, happy, and healthy lives.

APPENDICES

Demographics

Gender: What is your sex?

Race: What is your race?

Ethnicity: Are you Hispanic or Latino?

Sexual Identity: Which of the following best describes you?

Protective Factors – Family Domain

O[a] My parents ask me what I think before most family decisions affecting me are made.

O If I had a personal problem, I could ask my mom or dad for help.

O My parents give me lots of chances to do fun things with them.

R My parents notice when I am doing a good job and let me know about it.

R How often do your parents tell you they're proud of you for something you've done?

R Do you enjoy spending time with your mother?

R Do you enjoy spending time with your father?

Protective Factors – School Domain

O In my school, students have lots of chances to help decide things like class activities and rules.

O There are lots of chances for students in my school to talk with a teacher one-on-one.

O Teachers ask me to work on special classroom projects.

O There are lots of chances for students in my school to get involved in school activities outside of class.

O I have lots of chances to be part of class discussions or activities.

R My teacher(s) notice when I am doing a good job and let me know about it.

R The school lets my parents know when I have done something well.

R My teachers praise me when I work hard in school.

Protective Factors – Community Domain

O There are adults in my neighborhood I could talk to about something important

R I feel safe at my school.

R My neighbors notice when I am doing a good job and let me know.

R There are people in my neighborhood who encourage me to do my best.

R There are people in my neighborhood who are proud of me when I do something well.

Suicide Risk

During the past 12 months, did you ever feel so sad or hopeless almost every day for two weeks or more in a row that you stopped doing some usual activities?

During the past 12 months, did you ever seriously consider attempting suicide?

During the past 12 months, did you make a plan about how you would attempt suicide?

During the past 12 months, how many times did you attempt suicide?

Note: A full version of the 2015-2016 high school MiPHY survey is available upon request.

[a] "O" scales measure opportunities for prosocial involvement. "R" scales measure rewards for prosocial involvement as defined by the Communities That Care Youth Survey.

EATON
REGIONAL EDUCATION SERVICE AGENCY

January 24, 2018

Annmarie Hodges, M.A.
Temporary Survey Specialist
Coordinated School Health & Safety
Michigan Department of Education

Dear Ms. Hodges,

On behalf of Eaton Regional Education Service Agency (Eaton RESA), we are requesting the complete electronic database of 2015-2016 individual student-level MiPHY results from all Clinton, Eaton, and Ingham county middle and high school buildings who participated in the MiPHY survey during the 2015-2016 academic year. We are asking that this database not include school building or district identifiers.

Corbin J. Standley, B.S., doctoral student in Ecological-Community Psychology at Michigan State University, will be responsible for using the requested MiPHY data under the following conditions:

1. Employing all data usage protocols as set forth by the Michigan Department of Education in order to maintain the reliability and validity of the results and, most importantly, the anonymity of students. This includes not releasing data based upon a sample size of fewer than 10 students in any report, public or private.

2. Assuring that raw data is not shared or distributed outside of Eaton RESA or seen by anyone other than Ms. Thalison or Mr. Standley.

3. Assisting Eaton RESA, Community Mental Health, and the LifeSavers Suicide Prevention Coalition in their efforts to develop reports and recommendations related to identified indicators, including tri-county suicide prevention efforts.

4. Acknowledging the MiPHY and Michigan Department of Education in all publicly released documents.

Please send the line-by-line data in Microsoft Excel format along with a survey key and field descriptions to Corbin J. Standley, who can be reached to answer questions or provide additional information at corbinjs@msu.edu or 801-675-7796.

Sincerely,

Kimberly Thalison
Prevention Services Supervisor, Eaton RESA
kthalison@eatonresa.org | (517) 541-8711

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