

Sexual Orientation and The Integrated Motivational-Volitional Model of Suicidal Behavior:
Results from a Cross-Sectional Study of Young Adults in the United Kingdom

Abstract

Sexual orientation minority (i.e., lesbian, gay, bisexual, queer and other; LGBTQ+) persons represent a vulnerable population with respect to suicide-related behavior. An emerging theory of suicide, the Integrated Motivational-Volitional Model of Suicide (IMV; O'Connor, 2011; O'Connor & Kirtley, 2018), is utilized in the present study to examine sexual orientation, as well as a number of other IMV-defined pre-motivational factors (i.e., demographics, psychological distress and personality), as they impact the IMV motivational factors of defeat, entrapment, and suicidal ideation/intent. The present investigation featured a cross-sectional online survey of young adults (ages 18 to 34; $n = 418$; 27% identified as LGBTQ+) across the United Kingdom. The key findings included: (1) high rates of 12-month suicidal ideation prevalence (54.5%) and willingness to enact a future suicide attempt (60.8%); (2) bisexual and other (e.g., pansexual)-identifying sexual minority persons reported higher levels of IMV-related outcomes (e.g., internal entrapment, defeat); (3) sexual orientation accounted for significant variance in predicting motivational constructs controlling for a number of other pre-motivational factors; (4) other sexual minority status, compared to heterosexual identity, predicted all motivational outcomes, and; (5) extraversion, agreeableness, and emotional stability emerged as pre-motivational protective factors for varying motivational outcomes. Findings are discussed with respect to the suicide and sexual minority theories, as well as tailored suicide prevention efforts and future research.

Key Words: Sexual orientation; Suicide; Defeat; Entrapment; Personality

Introduction

Sexual minority persons represent a vulnerable population across an array of health outcomes (e.g., Institute of Medicine [IOM], 2011; Meyer, 2013). A variety of conceptualizations of sexual orientation exist, such as those based primarily on socio-cultural experiences (e.g., Mohr & Kendra, 2011) or sexual attraction and behavior (e.g., Klein, Sepekoff, & Wolff, 1985). The present focus concerns persons self-identifying as heterosexual, gay, lesbian, bisexual, queer, or as an array of other sexual identities (e.g., pansexual, asexual). We employ self-defined labels to be consistent with the youth and young adult literature (e.g., Russell, Clarke, & Clary, 2009), as well as guidelines (Ridolfo, Miller, & Maitland, 2012) suggesting self-identification is an important part of sexual orientation. For the sake of consistency, we employ a framing of sexual minority status (i.e., lesbian, gay, bisexual, queer and other; LGBTQ+) that is consistent with United Kingdom government (e.g., National Health Services Gender Identity Development Services [GIDS], nd) and sexual diversity organizations (e.g., PFLAG, nd).

In the following sections, we review suicide rates and mental illness risk for LGBTQ+ persons in the United Kingdom (UK; the location of the present study). We then review literature concerning an emerging theory of suicide, the Integrated Motivational-Volitional Model of Suicidal Behavior (O'Connor, 2011; O'Connor & Kirtley, 2018) in order to establish our preliminary examination of how IMV constructs may vary by sexual orientation. A final goal of the manuscript is to examine whether sexual orientation accounts for variance in IMV-related constructs, namely defeat, entrapment, and suicide-related behavior (ideation and attempt), in the presence of other pre-motivational suicide risk factors.

Sexual minority status in the UK: Prevalence and risk for mental illness

Sexual orientation-related social norms and laws (Flores & Park, 2018) vary by country. As such, a “one-size-fits-all” model presuming a dense U.S.-centric sexual minority, stress and mental health literature necessarily applies to other countries can lead to faulty conclusions for LGBQ+ persons living in other countries such as the UK. Recently, sexual minority research in the UK, especially involving young adults, has received growing attention. For instance, population-based and other surveys in the UK suggest approximately 3-6% of respondents self-identify as LGBQ+ (e.g., Hayes, Chakraborty, McManus, Brugha, Bebbington, & King, 2012; Semlyen, King, Varney, & Hagger-Johnson, 2016).

LGBQ+ persons represent a vulnerable population with respect to mental health in the UK (e.g., Semlyen et al., 2016; Warner et al., 2004). For example, Semlyen and colleagues (2016) reported findings suggesting that lesbian and gay-identifying persons have increased odds of mental illness (depression, anxiety) compared to heterosexual persons, with this pattern being especially robust for persons under the age of 35 (i.e., young adults). Moreover, bisexual persons experienced the worst mental health outcomes, with ‘other’ sexual minority possessing approximately equivalent risk as lesbian and gay persons. Overall trends suggest bisexual persons are at the highest odds for suicide ideation and attempt (Salway et al., in press). Additional UK-based LGBQ+ suicide literature has shown that (a) overall identification as LGBQ+ is associated with increased odds of suicidal thinking and behavior (Hayes et al., 2012); (b) a lifetime 17% suicide attempt prevalence rate (Taylor, Dhingra, Dickson, & McDermott, 2018); (c) gay and bisexual men, compared to heterosexual counterparts, are at uniquely elevated risk for suicide attempt in the young adult age group (Miranda-Mendizabal et al., 2017), and; (d) prevalence estimates for LGB young adult 12-month suicide ideation (45.2%), lifetime suicide attempt (13.6%), and endorsing a high likelihood of a future suicide attempt (9.5%) were all

considerably high, and largely driven by experiences of prejudice and victimization (Rimes et al., in press).

The burgeoning literature on LGBQ+ status and suicide risk in the UK is promising, but gaps remain. First, additional work needs to be done to examine within group variation in suicide-related outcomes. Second, investigation of suicide-specific theory-based work is still growing. Examining emerging theories of suicide holds promise to inform development of new prevention and intervention programs (Cramer & Kapusta, 2017). In this instance, suicide-specific theory testing can enhance knowledge of LGBQ+ status as a unique risk factor for varying aspects of suicide, holding promise to further improve prevention, assessment and intervention when working with LGBQ+ young adults. The present investigation, therefore, operates from the theoretical perspective of the Integrated Motivational-Volitional (IMV) Model (O'Connor, 2011; O'Connor & Kirtley, 2018) in order to: (1) identify sexual orientation-based disparities in IMV suicide factors (i.e., defeat, entrapment, suicide ideation, suicide intent); and (2) examine LGBQ+ status as a robust risk factor for IMV outcomes above and beyond other IMV pre-motivational characteristics (e.g., psychological distress, personality, demographics). Before doing so, we review the IMV to contextualize research questions and hypotheses.

The Integrated Motivational-Volitional (IMV) Model of Suicidal Behaviour

The IMV Model (O'Connor, 2011; O'Connor & Kirtley, 2018) operates on a paradigmatic assumption that suicide attempts and deaths occur as a result of the development of a stepwise process. In short, suicide-related death can be viewed within an ideation-to-action framework (Klonsky & May, 2014; Klonsky, Saffer & Bryan, 2018). The steps or phases culminating in suicide death encompass pre-motivational (i.e., predisposition-environment interaction to cue suicide triggers), motivational phase (i.e., explaining the formation of suicidal

thinking and intention), and volitional phase (i.e., how ideation becomes a suicidal act). The pre-motivational phase consists of background or predisposition factors (i.e., constitutional, environmental, and stress life event factors) for suicidal behavior (O'Connor, 2011). However, this aspect of the IMV is the least elaborated on. The present study attempts to build evidence concerning pre-motivational factors associated with motivational phase constructs.

The motivational phase, perhaps the most well developed and researched to date, posits that ideation and intent develop from a sense of defeat (i.e., self-concept defined by feeling like a loser and beaten down; Gilbert & Allan, 1998) yielding feelings of entrapment (i.e., a sense of powerlessness to change or escape from negative life circumstances; Gilbert & Allan, 1998), and, ultimately, suicidal thinking. Each link in the defeat-entrapment-ideation/intent-suicidal act pathway contains moderating factors that can buffer or exacerbate the process. Finally, ideation and intent transition to suicidal behavior in the volitional phase, with a feedback loop from behavior back to the motivational phase (O'Connor & Kirtley, 2018). Pertinent to the present study, several studies (Dhingra, Boduszek & O'Connor, 2015; O'Connor, Rasmussen & Hawton, 2012) have validated aspects of the IMV Model in youth and young adult samples. For example, O'Connor and colleagues (2012) confirmed that theory-supported moderators such as impulsivity and prior exposure to suicide deaths differentiated suicide ideators from suicide attempters. Likewise, Dhingra and colleagues (2015) reported findings showing defeat and entrapment predicted suicidal ideation in the expected indirect pathway. Also critical for analysis of sexual minority status in the present study is recent empirical work (Forkmann, Teismann, Stenzel, Glaesmer & de Beurs, 2018) suggesting that entrapment may be best conceptualized in a two-factor solution: internal entrapment (e.g., trapped by own thoughts/beliefs) and external

entrapment (e.g., trapped by persons or situations). We adopt the dichotomized formulation of entrapment in this study to further the basic science on this question.

A notable gap in the IMV literature is that we could not locate any research investigating sexual minority-based disparities in entrapment and defeat. Doing so has the potential to elucidate sexual orientation-based risk factor patterns in the IMV, leading to unique understanding of the development of suicide ideation and attempt. Such a preliminary step then offers further theoretical development through the integration of population-specific theories. Application of the Interpersonal Theory of Suicide (ITS; Joiner, 2005) has followed such a course; that is, ITS constructs (e.g., perceived burdensomeness and thwarted belonging) have been investigated specifically among LGBQ+ samples (e.g. Cramer et al., 2014; Hill & Pettit, 2012). Confirming the value of ITS among LGBQ+ persons, research was then developed to examine how minority specific stress (Meyer, 2013) may be reflective of or indicated by ITS cognitions (e.g., Baams et al., 2015; Plöderl et al., 2014). In this study, sexual orientation falls within the IMV pre-motivational phase as a demographic factor contributing to the diathesis or pre-depositional risk for suicide. Such a premise is consistent with public health social-ecological (Cramer & Kapusta, 2017) and clinical risk assessment (Bryan & Rudd, 2006) approaches to suicide prevention. Theoretical and empirical reasons exist to expect LGBQ+ persons may experience elevated entrapment and defeat. From a Minority Stress (Meyer, 2013) perspective, senses of defeat and entrapment coincide well with minority-specific stress processes such as expectations of social rejection and feeling as though one needs to conceal one's sexual minority identity. Defeat and entrapment also fit well as corollaries of Interpersonal-Psychological Theory (Joiner, 2005; Van Orden et al., 2010) constructs of perceived burdensomeness (i.e., putting strain on others and self-hatred) and thwarted belonging

(i.e., loneliness and absence of reciprocated care). It seems a reasonable expectation to suspect that LGBQ+ persons may experience higher levels of entrapment and defeat compared to heterosexual counterparts, although it remains an open question whether further within-group variation would exist among LGBQ+ individuals.

LGBQ+ status, though of primary interest, is not the only pre-motivational factor attended to in the present study. Pre-motivational factors constitute distal factors rendering one vulnerable to the development of suicidal ideation (O'Connor, 2011; O'Connor & Kirtley, 2018). Empirical literature highlights a number of pre-motivational factors we examine in the present study. With respect to demographics, age and gender have been documented as critical factors in understanding suicide severity and lethality (Liotta, Mento, & Settineri, 2015). Likewise, factors such as racial or ethnic identity, and immigration-related considerations are linked with suicidal ideation and related outcomes (Lai, Li, & Daoust, 2017). Finally, college student status has long been considered a "high risk" group for suicide (Dvorak, Lamis, & Malone, 2013; Schwartz, 2011; Taylor, Dhingra, Dickson & McDermott, 2018; O'Neill, McLafferty, Ennis, Lapsley, Bjourson, Armour, Murphy, Bunting & Murray, 2018).

In terms of personality, Five-Factor Theory (FFT; McCrae & Costa, 2003) posits that five broad personality domains (i.e., extraversion, agreeableness, conscientiousness, openness to experience, and neuroticism) possess direct and indirect effects on well-being. Specifically, personality traits predispose one to development of characteristic adaptations (e.g., attitudes) and self-concept (e.g., self-schemas), in turn affecting health and well-being (McCrae & Costa, 2003). Such attitudes, schemas, and health domains may include suicide-related outcomes. Specific to suicide ideation and risk, elevated neuroticism (i.e., lower emotional stability), as well as lower extraversion (i.e., higher introversion) have been robustly linked with elevated

suicide-related risk; findings concerning conscientiousness have been mixed (e.g., Cramer et al., 2016; McCann, 2010; Stroud et al., 2015). O'Connor (2011) highlights the critical role of stress as a pre-motivational factor, a notion supported by systematic review evidence (Liu & Miller, 2014) noting negative life events are consistently associated with a range of suicide indicators (e.g., ideation, attempt). Psychological distress, classified by general stress, anxiety and depression (Antony et al., 1998; Henry & Crawford, 2005), is also a well-established risk factor for suicide (e.g., Bryan & Rudd, 2006; Cramer & Kapusta, 2017; Johnson et al., 2018). Such affective distress may fall within the pre-motivational context as a backdrop predisposing one to motivational phase cognitions. While not comprehensive, this set of background factors provides evidence-based covariates by which sexual orientation can be examined with the IMV for incremental contributions.

This pre-motivational set of demographics, personality traits, and distress risk factors has also been framed as vital to effective suicide risk assessment (Bryan & Rudd, 2006) and multi-level suicide prevention programming (Cramer & Kapusta, 2017). While significant effects of many of these pre-motivational factors are expected, we anticipate sexual minority status will demonstrate associations with motivational phase constructs above and beyond (i.e., incremental validity) other pre-motivational factors.

The present study

The present study contributes to the emerging theoretical evaluation of the IMV Model (O'Connor, 2011; ;O'Connor & Kirtley, 2018) with unique emphasis on examining sexual orientation differences in motivational factors for the first time. In doing so, understanding factors such as entrapment and defeat may hold utility in the social-ecological design of suicide prevention and intervention programs for sexual minority persons. Moreover, this study provides

one of the first thorough examinations of a wide scope of pre-motivational factors (i.e., personality, demographics, psychological distress) in relation to defeat and entrapment.

We examined two overarching research questions (RQs) with respective hypotheses:

RQ1: What differences exist in IMV motivational factors by young adult sexual orientation?

H1: We expect LGBTQ+ identifying young adults to report significantly greater (small-to-moderate sized effects) IMV Model motivational characteristics (i.e., defeat, internal and external entrapment, recent suicidal ideation, and future suicidal intent) compared to heterosexual counterparts.

RQ2: Does sexual orientation predict IMV motivational factors above and beyond other pre-motivational factors (i.e., demographics, psychological distress, and personality)?

H2: Consistent with an incremental validity perspective, we expect sexual minority status to display a significant (small-to-moderate effect) on the set of IMV motivational factors above and beyond a range of other pre-motivational characteristics (i.e., personality, demographics, mental health, and stress).

Method

Participants. See Table 1 for sample descriptive statistics ($n = 418$)¹. The group was of young adult mean age and predominantly White, female, and heterosexual. More than one-fourth of the sample identified as sexual minority ($n=113$). The majority was born in Scotland, and the sample was approximately equally split between students and non-students.

Procedure. This study used a single time-point anonymous online survey approach explicitly advertised for young adults in the UK. Survey recruitment took place via a National Health Service (NHS) office, social media (e.g., Twitter, Facebook), and in-person and other on-campus

¹ Five participants were subsequently dropped from hypothesis testing either due to falling outside the young adult age range of the survey or declining to state race or sexual orientation.

strategies (e.g., posters in academic departments, in-class recruitment). Oversampling at sexual minority-specific campus and community recruitment organizations (e.g., webpages of campus and community lesbian, gay, bisexual, and transgender [LGBT] or Unity pages) was used to ensure a sexually diverse sample. All advertisements featured a study description and survey link. No inclusion or exclusion criteria (e.g., required history of suicidal behavior) were advertised with the exception of young adult age. Participants received no incentive for survey completion. The Qualtrics survey included a standard participant information sheet, e-consent form, surveys, and a debriefing form with mental health support contact information. The study was approved by the University Ethics Committee.

Measures.

IMV Pre-Motivational Factors

Demographics. Participants were asked for their age, race, gender, birth country, and profession. Profession was reclassified into student status (i.e., student vs. non-student) in order to assess potential disparities in outcomes by this breakdown.

Sexual orientation. The survey provided an array of sexual identity labels consistent with recommendations from expert professional organizations (e.g., National Health Services GIDS, nd; PFLAG, nd) and the empirical literature concerning contemporary identity labels (e.g., Barker, Bowes-Catton, Iantaffi, Cassidy, & Brewer, 2008; Russell et al., 2009). In addition to a standard range of identity labels (e.g., straight, gay, uncertain), an option to decline to state orientation, an “other” category allowed persons to identify their unique identity. A total of nine participants selected this option. Inspection of Table 1 notes that the following additional identities were reported: asexual, pansexual, queer, and bi-romantic.

Personality. The Big Five personality traits were assessed with the Ten Item Personality Inventory (TIPI; Gosling, Rentfrow, & Swann, 2003). This abbreviated measure of the Big Five traits contains subscale scores (two items per trait) assessing: Extraversion, agreeableness, conscientiousness, emotional stability, and openness to experience (internal consistency range .40 to .73; Gosling et al., 2003). However, Gosling et al. argue that the abbreviated measure's appropriate use can be seen in its test-retest reliability (range .62 to .77) and content validity (i.e., covering specific trait labels on each shortened subscale). Internal consistency values were similarly variable in our sample: extraversion ($\alpha = .71$), agreeableness ($\alpha = .29$), conscientiousness ($\alpha = .67$), emotional stability ($\alpha = .75$), and openness to experience ($\alpha = .75$). Possible causes of these varying internal consistency levels an insufficient number of items per subscale, application of the TIPI to a new sample, or that items on each trait measure something different. While Gosling and colleagues (2003) argued that low internal consistencies on the TIPI can be overlooked for reasons noted above, we suggest TIPI-based findings must be interpreted with caution.

Psychological Distress. The Depression, Anxiety and Stress Scale-21 item version (DASS-21; Antony, Bieling, Cox, Enns, & Swinson, 1998) was utilized to assess psychological distress symptoms depression, anxiety, and general stress. A total psychological distress score can also be obtained by summing all 21-items, and demonstrates superior model fit among U.K. adults (Henry & Crawford, 2005). We selected the total score in the present study because psychological distress was of interest as a general pre-motivational factor, and because the psychometric support for the total score applies to the present sample of interest. Internal consistency for the DASS-21 total score in the present sample was high ($\alpha = .95$).

IMV Motivational Factors

Defeat. The Defeat Scale (Gilbert & Allan, 1998) assessed defeat-related cognitions. The scale possesses 16 statements (several reverse-scored) summed for a total score. Internal consistency values across validation samples were good (α range = .93 to .94; Gilbert & Allan, 1998). Internal consistency for the present sample was high ($\alpha = .96$).

Entrapment. The Entrapment Scale (Gilbert & Allan, 1998) was used to quantify cognitions concerning Internal (α range = .86 to .93) and External (α range = .88 to .89) Entrapment. Containing 16 items, the measure has options for a summed total score or Internal and External Entrapment subscales. We opted for subscale scores because evidence exists suggesting these subscales may reflect conceptually distinct constructs (Forkmann et al., 2018). Cronbach's alpha scores for Internal ($\alpha = .95$) and External ($\alpha = .93$) subscales were high in our sample.

Suicidal ideation and intent. Suicide-related variables were measured with the items from the Suicidal Behaviors Questionnaire-Revised (SBQ-R; Osman et al., 2001). Functioning as a flexible screening tool, four SBQ-R items cover lifetime suicide-related behavior, suicidal ideation within the last year, lifetime communication of suicidal thinking, and perceived intent of enacting a future suicide attempt. Singular items concerning suicidal ideation and future intent, respectively, were used in the present study to fit O'Connor's (2011) IMV Motivational factors.

Statistical Analyses. Prior to hypothesis testing, several sexual orientation categories were collapsed into a larger "other" category due to low cell counts. Analysis of Variance (ANOVA) with Bonferroni post-hoc tests were used to evaluate sexual orientation-based variation in IMV Motivational factors. Cohen's d (small = .2, moderate = .5, large = .8; Cohen, 1988) was implemented to assess the magnitude of effects. To address RQ2, multivariate regression was selected to allow for multiple correlated criterion measures (i.e., defeat, internal entrapment,

external entrapment, suicidal ideation and suicidal intent; r s range = .56 to .82, all p s < .001), and run following guidelines in the statistical literature (Cohen, Cohen, West, & Aiken, 2003).

Demographic variables were coded for inclusion in a regression framework with the following reference groups: sexual orientation (other), gender (transgender), race (other racial minority), student status (non-student), and birth country (other birth country). Predictors in the regression model were main effects for sexual orientation (heterosexual, gay, lesbian, and bisexual), gender (Male, Female), race (White, Asian), birth country (Scotland, England, UK unspecified, Ireland/N. Ireland/Wales, Mainland Europe), student status (student), age, mental health symptoms, extraversion, agreeableness, conscientiousness, emotional stability, and openness to experience. Effect size was determined via R^2 at the univariate model level (small = .01, moderate = .09, large = .25; Cohen, 1988) and partial eta-squared at the multivariate model (small = .01, moderate = .06, large = .14; Cohen, 1988) and individual variable (small = .02, moderate = .13, large = .26; Cohen, 1988) levels. In line with preventing inflation of Type I error, we emphasize interpretation of significant univariate effects only for those regression model predictors displaying significant multivariate effects (Cohen et al., 2003).

Results

Suicide-related prevalence data. Prior to examining hypotheses concerning sexual orientation and pre-motivational factors, we examined SBQ-R items 2 (12-month suicidal ideation) and 4 (future likelihood of enacting a suicide attempt). Table 1 suggests a mean SBQ-R 12-month prevalence mean of 1-2 occurrences of suicidal ideation in the last year for the overall sample. Inspected further for any versus none, 225 of 413 (54.5%) surveyed participants indicated experiencing suicidal thinking in the last year. Also referring to Table 1, the mean sample score for future likelihood of a suicide attempt fell between “no chance at all” and “very unlikely”

(Osman et al., 2001; response options on SBQ-R). Broken down as a binary response, 251 of 413 (60.8%) of participants reported some degree of future willingness to enact a suicide attempt.

[Insert Table 1 about here]

Research Question 1: What differences exist in IMV motivational factors by young adult sexual orientation?

Table 2 contains full ANOVA results of sexual orientation category by IMV Motivational factors. In support of hypothesis 1, sexual orientation differences were observed for all five IMV outcomes. Heterosexual individuals reported significantly less defeat compared to bisexual (Cohen's $d = 0.55$) and other sexual minority (Cohen's $d = 0.97$) persons. Gay individuals also reported significantly less defeat compared to other sexual minority identifying persons (Cohen's $d = 1.00$). Heterosexual individuals also reported significantly less internal entrapment compared to bisexual (Cohen's $d = 0.72$) and other sexual minority (Cohen's $d = 0.92$) persons.

Heterosexual individuals reported significantly less external entrapment compared to other sexual minority (Cohen's $d = 0.96$) counterparts. Heterosexual individuals reported significantly less frequency of suicidal ideation compared to bisexual (Cohen's $d = 0.79$) and other sexual minority (Cohen's $d = 0.77$) persons. Finally, heterosexual persons reported significantly less suicidal intent compared to lesbian (Cohen's $d = 0.66$), bisexual (Cohen's $d = 1.08$), and other sexual minority (Cohen's $d = 0.86$) counterparts. Overall, where significant variation exists in IMV factors by sexual orientation, consistent with expectations, heterosexual participants display moderate-to-large protective patterns compared to primarily other sexual minority and bisexual persons. Put another way, bisexual and other sexual minority persons reported elevated levels of, and greater effect sizes than anticipated, for IMV-related outcomes.

[Insert Table 2 about here]

Research Question 2: Does sexual orientation predict IMV motivational factors above and beyond other pre-motivational factors (i.e., demographics, psychological distress, and personality)?

Table 3 contains multivariate statistics for the model predicting IMV Motivational Factors. Effect size in this analysis is assessed using partial eta squared. Consistent with hypothesis 2, sexual orientation, and specifically minority subgroups (see patterns below), displayed a significant, yet small, multivariate effect. It is noteworthy that sexual orientation was the only significant demographic variable in the model. Other significant multivariate pre-motivational predictors were psychological distress (largest effect), extraversion (moderate effect), conscientiousness (moderate effect), and emotional stability (small effect).

Full univariate effects for each IMV Motivational Factor Model can be seen in Table 4. Again, we interpret univariate effects only for those predictors for which the multivariate test was significant. Heterosexual persons displayed significantly less external entrapment, suicidal ideation, and suicidal intent compared to other sexual minority persons (small effects). Gay individuals demonstrated significantly less defeat, internal entrapment, and external entrapment compared to other sexual minority counterparts (small effects). Sexual orientation disparities in the overall model appear to focus on other sexual minorities (higher risk) compared to heterosexual individuals (lower risk).

Significant positive associations were observed for psychological distress with defeat, internal entrapment, external entrapment, suicidal ideation, and future suicidal intent (moderate-to-large effects). Significant negative associations were observed for extraversion with defeat, internal entrapment, suicidal ideation, and future suicidal intent (small-to-moderate effects). Significant negative associations were observed for conscientiousness with defeat, internal

entrapment, external entrapment, and suicidal ideation (small effects). Finally, significant negative associations were observed for emotional stability with defeat and internal entrapment (small effects).

[Insert Table 3 about here]

Discussion

Addressing the primary aim of this study, sexual minority persons, especially bisexual and other sexual minority individuals, appear to be experiencing the worst levels of IMV-related constructs. This clear, and often notable sized, pattern has implications on multiple levels. First, LGBQ+ risk for IMV constructs generally replicates LGBQ+ risk for suicide-specific outcomes (Hayes et al., 2011). Bisexual and other sexual minority unique risk furthers UK (Miranda-Mendizabal et al., 2017; Salway et al., in press) and American (e.g., Cramer, Mandracchia, et al., 2017; IOM, 2011) literatures highlighting within-LGBQ+ group risk for bisexual and other identifying persons. While several plausible reasons exist for this cross-cultural trend, Salway and colleagues (in press) proffered a potent explanation. Simply, they speculate “Within-sexual minority differences in suicide risk may be attributed to structural and interpersonal experiences of monosexism, bisexual erasure and invisibility, or lack of bisexual-affirming social support” (p. 1). As reviewed by Salway and colleagues (in press), erasure and invisibility for bisexual persons stems from unconscious attempts for both heterosexual and gay/lesbian subgroups to maintain sexual and gender binaries. Such patterns may drive negative states such as Joiner’s thwarted need to belong for bisexual persons, thereby impacting suicidal ideation and related constructs. We posit these same experiences may extend to persons endorsing less common ‘other’ (e.g., pansexual, asexual) sexual identities.

Findings concerning the central IMV motivational phase characteristics (O'Connor, 2011; O'Connor & Kirtley, 2018) of defeat and entrapment are new. With bisexual and other sexual minority persons displaying meaningfully higher levels of defeat and interpersonal entrapment, it is critical to begin to understand potential reasons why. With the possibility of erasure/invisibility already acknowledged, Minority Stress Theory (Meyer, 2013) and Herek's (2016) stigma-based framework may lend additional insight. Both perspectives emphasize internalization of negative social and cultural experiences as pathways to negative physical and mental health. Meyer's (2013) view may contextualize senses of defeat (e.g., feeling beaten down by life, powerless to change life circumstances; Gilbert & Allan, 1998) and internal entrapment (e.g., desire for escape from oneself) as unique manifestations of minority stress process resulting from the experience of general distress and prejudice/discrimination. Other types of motivation may include to conceal one's identity and internalized negative beliefs about being a member of the LGBTQ+ community. Herek (2016) posits that majority group prejudice can manifest as self-stigma, or "self-directed prejudice" (p. 398); in this instance, beliefs concerning defeat and internal entrapment would constitute types of self-stigma, especially in the instance one seeks to escape his or her own person and feels powerless to change things for the better. It is noteworthy that findings concerning bisexual and other sexual minority persons offer both partial theoretical validation of the IMV motivational phase (O'Connor, 2011), and fit a broader literature suggesting other suicide-specific theoretical constructs (e.g., perceived burdensomeness, social isolation) demonstrating utility in understanding LGBTQ+ suicide risk (e.g., Cramer, Mandracchia et al., 2017; Hill & Pettit, 2012).

Another key take-away from the present study is one of the first thorough simultaneous examinations of a set of IMV pre-motivational factors. Findings are largely consistent with

broader personality-suicide literature (see Cramer et al., 2014; Cramer et al., 2016 for review) with respect to extraversion and conscientiousness, but not for the primacy of neuroticism (now commonly referred to as emotional stability). That is, prior Big Five-suicide research often links emotional (in)stability and extraversion as the most consistent suicide-related factors, with conscientiousness also often implicated. In the present sample, trait-based social isolation (i.e., low extraversion) and low self-control (i.e., low conscientiousness) may drive suicidal ideation/intent more so than trait negative emotionality. Alternatively, low internal consistency values noted with use of a short FFM measure may explicate the unexpected neuroticism-related results.

Our personality-IMV model examination is the first to date of which we are aware. A critical observation concerns the debate about how entrapment should be conceptualized (Forkmann et al., 2018). From a construct validity point of view, Big Five patterns with internal versus external entrapment lend further empirical support to the notion internal and external entrapment are related yet distinct constructs. For example, internal entrapment was predicted by extraversion, conscientiousness, and emotional stability, whereas external was only predicted by conscientiousness. Viewed from a FFT (McCrae & Costa, 2003) of personality lens, internal entrapment may be a socially- and-emotionally-informed aspect of self-concept influenced by stress activation of introversion (low extraversion), trait negative emotions (e.g., stress vulnerability), and poor self-discipline (low conscientiousness). Individual, or the combination of, traits may contribute to subsequent beliefs about internal entrapment such as powerlessness (e.g., “I feel powerlessness to change myself”; Gilbert & Allan, 1998) and desire to flee (e.g., “I would like to get away from who I am and start again”; Gilbert & Alan, 1998).

Although not the primary goal of the present investigation, suicidality prevalence rates are worthy of comment as well. We observed troublingly high rates (more than 50% of the sample) of 12-month suicide ideation prevalence and willingness to enact a future suicide attempt. Our findings were similar to Rimes and colleagues (in press) who reported 45.2% 12-month suicide ideation prevalence for an LGB-specific sample. These suicide statistics add to a problematic picture of young adult suicide in the UK; for instance, recent data suggests that approximately 11% of young adults have made a suicide attempt and a higher rate have engaged in non-suicidal self-injury (O'Connor et al., 2018). Drawing on a social-ecological approach to suicide prevention (Cramer & Kapusta, 2017), young adult suicide prevention efforts should: (1) seek to identify population-specific risk and protective factors (e.g., sexual minority status in the present study) in order to (2) tailor public health prevention programs such as secondary and university health education and community-based public awareness campaigns. Future research is also necessary to track longitudinal impacts of risk and protective factors over the course of young adulthood in the UK.

Further comment is necessary concerning implications of the present findings. Suicide prevention and intervention programming may need to be tailored for bisexual and other sexual minority-identifying young adults in the UK. Specifically, strategies targeting empowerment and social connectedness may be of critical importance for these young adult subgroups in order to alleviate senses of defeat and internal entrapment. Promising approaches exist aimed at enhancing empowerment and connectedness. For example, the Centers for Disease Control (2017) provide an open source toolkit for community-based approaches to reduction of suicide through multi-level approaches to building connectedness. Furthermore, the American Psychological Association (2011) espoused clear psychotherapy practice guidelines in part aimed

at affirmative, empowering techniques and approaches to help bisexual and other sexual minority persons take control of concerns such as stigma and identity development. Application and adaptation of these and other examples may help address suicide among LGBQ+ young adults in the UK.

Finally, personality in the context of IMV pre-motivational pathways to suicide offers a promising new area for future research. The pre-motivational aspect of the IMV is currently very broad and under developed. Operating from a diathesis and pre-dispositional stance, the Big Five offers a lens by which we can begin to test pre-motivational factors leading to defeat. FFT theory (McCrae & Costa, 2003) would specifically support personality by environmental moderation effects leading to defeat, as well as longitudinal testing of the influence of personality and stress on IMV constructs.

A number of limitations exist in the present study. Methodologically speaking, the cross-sectional, self-report nature of the design, though allowing certain aspects of theory testing, do not facilitate causal conclusions. Moreover, we adopted an over sampling strategy to maximize the sexual orientation diversity of the sample. However, this approach, coupled with other sample demographics (e.g., primarily female, White and born in Scotland) limit generalizability of findings. Also concerning demography, transgender and gender non-conforming identities were low, precluding examination of the intersection of sexual and gender minority identities with the IMV. Finally, though we detected meaningful LGBQ+-related disparities, certain subgroups were small and therefore potentially underpowered. Future public health surveillance efforts in the UK should seek to incorporate sexual orientation identity in order to gather large enough samples to replicate and extend our findings.

To conclude, the current study lends support to the assertion that young people who identify as LGBT are at an elevated risk of suicidal thinking and behavior (Hass et al., 2010). Our findings therefore reinforce the need for strategies that raise awareness of the vulnerability of gay, lesbian and bisexual individuals to suicidal thinking and behavior. Importantly, the study also provides support for the IMV model of suicide, and highlights the importance of focusing on theoretical relevant psychological variables which are amenable to change. Indeed, those young people who identified as LGBT reported higher levels of IMV related constructs than did those who identified as heterosexual. A recommended next step in IMV work therefore concerns evaluation of sexual and gender minority identity and specific stressors, with a specific focus on entrapment.

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Table 1. Sample descriptive statistics.

Variable	N (%)	<i>M (SD)</i>	Skew	Kurtosis
Sexual Orientation				
Heterosexual	303 (72.5)	-	-	-
Gay	22 (5.3)	-	-	-
Lesbian	23 (5.5)	-	-	-
Bisexual	49 (11.7)	-	-	-
Not sure/Uncertain	10 (2.4)	-	-	-
Asexual	2 (0.5)	-	-	-
Bi-romantic	1 (0.2)	-	-	-
Pansexual	4 (1.0)	-	-	-
Queer	2 (0.5)	-	-	-
Declined to state	2 (0.5)	-	-	-
Gender				
Male	82 (19.6)	-	-	-
Female	325 (77.8)	-	-	-
Transgender: Male-to-Female	1 (0.2)	-	-	-
Transgender: Female-to-Male	5 (1.2)	-	-	-
Transgender: Not Male or Female	4 (1.0)	-	-	-
Not Sure	1 (0.2)	-	-	-
Race				
White	391 (93.5)	-	-	-
Asian	8 (1.9)	-	-	-
Other	18 (4.3)	-	-	-
Missing	1 (0.2)	-	-	-
Student Status				
Student	230 (55.0)	-	-	-
Non-student	188 (45.0)	-	-	-
Birth Country				
Scotland	295 (70.6)	-	-	-
England	36 (8.6)	-	-	-
United Kingdom (unspecified)	27 (6.5)	-	-	-
Ireland, Northern Ireland, or Wales	14 (3.3)	-	-	-
Mainland Europe	24 (5.7)	-	-	-
Other (e.g., USA, Canada)	22 (5.3)	-	-	-
Variable	N (%)	<i>M (SD)</i>		
Age	-	23.40 (4.15)	1.58	4.74
Defeat	-	25.39 (16.13)	0.47	-0.78
External Entrapment	-	13.77 (10.69)	0.41	-0.96
Internal Entrapment	-	9.19 (8.37)	0.45	-1.25
Suicidal ideation within last year	-	2.31 (1.48)	0.72	-0.95
Future suicidal intent	-	1.53 (1.68)	1.04	0.39
Mental health symptoms	-	25.59 (16.37)	0.38	-0.87
Extraversion	-	7.94 (3.07)	-0.08	-0.79
Agreeableness	-	9.79 (2.28)	-0.22	-0.46
Conscientiousness	-	9.59 (2.96)	-0.43	-0.59
Emotional Stability	-	7.15 (3.23)	0.26	-0.93
Openness to Experience	-	9.88 (2.40)	-0.49	-0.11

Notes: M = Mean; SD = Standard deviation

Table 2. Analysis of Variance (ANOVA) results for sexual orientation by IMV Motivational factor.

IMV Variable	<i>F</i> (df)	<i>p</i> -value	Heterosexual	Gay	Lesbian	Bisexual	Other
Defeat	7.15 (4, 408)	< .001	23.30 (15.79) ^{a,b}	23.94 (13.55) ^c	30.69 (17.66)	31.94 (15.60) ^a	37.63 (13.78) ^{b,c}
IE	8.56 (4, 408)	< .001	7.94 (8.13) ^{a,b}	8.00 (8.60)	11.87 (8.80)	13.49 (7.26) ^a	15.09 (7.34) ^b
EE	6.28 (4, 408)	< .001	12.43 (10.64) ^a	13.52 (10.07)	16.91 (10.45)	16.87 (9.27)	22.68 (10.80) ^a
SI	9.88 (4, 408)	< .001	2.07 (1.41) ^{a,b}	2.33 (1.20)	2.83 (1.56)	3.18 (1.39) ^a	3.32 (1.80) ^b
Intent	15.63 (4, 408)	< .001	1.18 (1.56) ^{a,b,c}	1.76 (1.41)	2.35 (1.94) ^a	2.76 (1.35) ^b	2.74 (2.05) ^c

Notes: Groups with matching superscripts differ at $p < .05$ based on Bonferroni post-hoc analysis; IMV = Integrated Motivational-Volitional Model; IE = Internal Entrapment; EE = External Entrapment; SI = Suicidal Ideation; Intent = Future Suicidal Intent; Values for each sexual orientation group are Mean (Standard deviation).

