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# Resilience model and reduction of suicidal inclinations among lesbians, gays, and bisexuals

**Katya Ben Efraim**[1] · **Yael Wilchek-Aviad**[1]

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**Abstract**
This study explores the association between three dimensions of resilience (internal locus of control, meaning in life, and optimism) and the mitigation of suicidal inclinations among LGB individuals, a demographic known for elevated suicidal predispositions. 231 Israelis, consisting of 92 heterosexuals and 139 LGB participants, between 19 and 58 years old. Assessment tools included the Locus of Control questionnaire, the PIL test, the Optimism test, and evaluation for the Index of Potential Suicide. We found a negative correlation between resilience dimensions and suicidal inclinations across all study participants. Notably, among the LGB subgroup, the negative correlation between internal locus of control and suicidality was less pronounced, suggesting that internal locus of control offered stronger protection against suicide for heterosexual individuals than for LGB individuals. The study underscores the importance of a multi-dimensional resilience model in tailoring interventions for LGB individuals to reduce suicidal inclinations. The key innovation of this study lies in recognizing the need for differential emphasis on specific measures in interventions for each group. For the LGB population, interventions and prevention efforts should prioritize dimensions such as meaning in life and optimism to effectively reduce suicidal inclinations.

**Keywords** Suicidal inclinations · Internal locus of control · Meaning in life · Optimism · LGB

## Literature review

### LGB and suicidal inclinations

The terms "homosexuality" and "lesbianism" denote sexual orientation and behavior manifested in a romantic relationship with a partner of the same sex. The term "bisexuality" pertains to the attraction or sexual behavior towards both men and women (Bailey et al., 2016). Sexual orientation is a distinctive pattern of sexual attraction, behavior, and identity expressed by an individual (Patterson & D'Augelli, 2013). The LGB orientation is not solely perceived as a sexual inclination; it is often embraced as a lifestyle and a social identity by many individuals within the homosexual demographic.

Despite the ongoing acceptance and normalization of the LGB orientation in contemporary Western society, it remains a phenomenon representing a minority within the overall population. Moreover, there persists a social stigma attached to LGB individuals (Valdiserri et al., 2019). This social stigma constitutes a collective belief system that condemns homosexuality, disapproves of it, and deems it abnormal (Patterson & D'Augelli, 2013). Meyer (2003) proposed the "minority stress model," which posits that stigma and prejudice create a hostile and stressful social environment that may lead to mental health issues among individuals belonging to a stigmatized minority group.

The model outlines a set of internal, individual pressures, such as a lack of acceptance of sexual orientation, coupled with external social pressures, including discrimination, harassment, and bullying from family members and peers, due to heterosexism and homophobia. According to Meyer, heterosexist social attitudes, viewing only heterosexual orientation as normal, and homophobia, expressing irrational aversion toward non-heterosexual individuals, legitimize exclusion, discrimination, and violence against LGBT people. These attitudes contribute to the internal (individual)

✉ Katya Ben Efraim
katyabenefraim@gmail.com

Yael Wilchek-Aviad
aviady@ariel.ac.il

[1] Department of Criminology, Ariel University, Ari'el, Israel

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and external (social and cultural) pressures faced by LGBT individuals. The psychological well-being of this population is vulnerable, as evidenced by the elevated incidence of depression, anxiety, suicidality, post-traumatic stress, and substance abuse among the LGBT population relative to the heterosexual population (Meyer, 2015).

Israeli society embodies a contrast of progress and challenges for LGB individuals, as indicated by studies conducted in Israel. Despite being a developed country with advanced legislation and increasing acceptance, particularly within the secular population (Shenkman & Shmotkin, 2010), the prevailing influence of strong family and religious values, alongside a patriarchal culture, contributes to the prevalence of a widespread homophobic mindset (Shilo et al., 2015). Notably, same-sex marriage remains illegal, and options for adoption and surrogacy are severely restricted, leading to persistent persecution and discrimination against Israeli LGB individuals. The experience of minority stress, encompassing verbal, sexual, and physical victimization, is closely tied to heightened levels of anxiety and depression. Additionally, the correlation between minority stress and the use of psychoactive substances, mediated directly and indirectly through experiences of sexual harassment, adds complexity to the multifaceted challenges faced by Israeli LGB individuals (Wilchek-Aviad & Oren, 2023).

Several meta-analyses (Hottes et al., 2016; Yıldız, 2018) have revealed a higher incidence of suicide attempts among sexual minorities compared to heterosexual individuals, with approximately 20% of gay individuals having reported attempting suicide. Another study identified a threefold higher risk of death by suicide in the LGBT population compared to the heterosexual population (Qin et al., 2003). These disparities in suicide rates between LGBT and heterosexual individuals are particularly pronounced at young ages (Ream, 2019). Additionally, individuals identifying as bisexual faced an elevated risk of suicide attempts compared to their homosexual and heterosexual counterparts (Figueiredo & Abreu, 2015). Notably, mental disorders alone do not seem to fully account for the elevated rates of attempted suicide in this population. As observed, social stigma, prejudice, and discrimination play crucial roles in contributing to the high suicide rates among gay individuals (Figueiredo & Abreu, 2015).

In contrast, countries with legislation endorsing same-sex marriage, fostering an environment of legitimacy, inclusion, and tolerance toward LGBT individuals, have shown lower rates of suicide attempts among LGBT youths (Raifman et al., 2017). In Israel, where social stigma notably influences suicidal inclinations, particularly among LGBTQ women, the promotion of open discourse about sexual identity emerges as a crucial means to alleviate mental distress (Levi-Belz et al., 2022). Kaplan and Ben-Ari (2000) highlight the unique challenges within Israel's socio-cultural context, where early recognition of minority status, combined with religious influences and masculine stereotypes, contribute to anti-LGBT social norms. Thus, the most effective way to reduce suicidal inclinations is through education promoting tolerance, inclusion, and acceptance of diversity. Meyer (2015) defined these dimensions as *community resilience* factors, which have proven significant in preventing pathological behavior among members of sexual minorities. However, despite significant social changes in the more than 50 years since the inception of the modern LGBT rights movements, stigma, prejudice, and discrimination persist, impacting the lives of LGBT individuals (Frost & Meyer, 2023), and the risk of suicide among this group remains high (Hottes et al., 2016; Yıldız, 2018). Therefore, identifying individual resilience factors for LGB individuals is likely to help reduce the risk of suicide among its members.

The primary goal of this study was to establish a resilience model capable of reducing the suicidal inclination of LGB individuals. As explained by Meyer (2015), the investigation into resilience is aimed at understanding how certain processes buffer the impact of stress on health outcomes. At its core, resilience is a process of stress buffering. The model upon which this study is based has proven to be a resilience factor in various populations, including the elderly, at-risk and non-at-risk youths, the mentally disabled, and more (Aviad & Cohen-Louck, 2021). However, it has never been tested on the LGB population, which is at a high risk for suicidality. This resilience model, predicting a reduction in suicidal inclinations, was initially based on two dimensions: internal locus of control and meaning in life. However, recognizing the limitations of a model based on two dimensions, a third dimension was added in the present study—an inclination toward optimism.

## The two-dimensional resilience model for suicide prevention

The pursuit of identifying resilience rather than pathogenic factors is not new, and numerous studies in the literature have explored this approach, including the works of Antonovsky (1987) and other researchers (Rossetti et al., 2017). However, efforts to pinpoint internal resilience factors within the LGBT population have been limited, with a predominant research focus on *community resilience factors* (Meyer, 2015), such as social support, family acceptance, and connection with the gay community (Fredriksen-Goldsen et al., 2017), and less emphasis on internal resilience factors. Surprisingly, no prior attempts have been made to assess the resilience model proposed in this study specifically on LGBT individuals.

The existing resilience model is founded on two dimensions: internal locus of control and meaning in life. The locus of control variable pertains to the manner in which an individual associates the outcomes of specific life events, whether positive or negative, with their actions (Rotter, 1966). Typically, a distinction is made between an internal and an external locus of control. Individuals with an internal locus of control attribute the causes of events in their lives to themselves, believing that their behavior directly influences the outcomes they experience. Conversely, those with an external locus of control attribute life events to factors beyond their control, such as fate or luck (Hovenkamp-Hermelink et al., 2019; Rotter, 1966).

Previous studies have consistently reported lower levels of anxiety and depression among individuals with an internal locus of control (Hovenkamp-Hermelink et al., 2019), coupled with higher levels of well-being (Aviad & Cohen-Louck, 2021) when compared to those with an external locus of control. Internal locus of control also emerges as a source of mental resilience during times of crisis (Hovenkamp-Hermelink et al., 2019). Additional findings suggest that an internal locus of control is associated with a decreased likelihood of experiencing suicidal thoughts. In essence, individuals who perceive control over their lives or influence over their environment are less prone to displaying suicidal ideation (Aydin et al., 2018; Montes-Hidalgo & Tomás-Sábado, 2016). Therapeutic interventions aiming to instill an internal locus of control have also shown promise in reducing the inclination towards suicide in treated individuals (Chang et al., 2018; Gewirtz et al., 2016). Finally, Carter and colleagues (Carter et al., 2014) discovered that an internal locus of control in LGBT individuals moderated the relationship between heterosexist discrimination in the workplace and psychological distress.

It appears, therefore, that locus of control can serve as a resilience factor. Other studies (Aviad & Cohen-Louck, 2021) have demonstrated that incorporating another resilience dimension, meaning in life, enhances the effectiveness of internal locus of control as a resilience factor. This combination results in a two-dimensional model of resilience.

The term "meaning in life" encompasses individuals' sense that their lives hold purpose and significance, making them worth living (Frankl, 2000). Frankl asserted that finding meaning in life is a universal goal that provides strength to navigate the various circumstances of life. According to this definition, meaning in life is a factor that fosters resilience against stressful situations (Lin & Shek, 2019) and encourages the perception of life experiences and stress as challenges rather than threats (Frankl, 2000). Consequently, a sense of meaning in life is directly linked to the desire to live. Previous studies have indeed revealed a negative relationship between meaning in life and suicidal inclinations (Aviad-Wilchek & Ne'eman-Haviv, 2018; Edwards & Holden, 2003). Additionally, it has been found that LGBT individuals with a higher level of meaning in life exhibited a moderation of distress in the face of heterosexist discrimination (Michaels et al., 2019; Szymanski & Mikorski, 2016).

As previously noted, studies (Aviad & Cohen-Louck, 2021) have identified a negative correlation between this resilience model and the inclination to commit suicide in populations with a high suicidal inclination. However, the combination of internal locus of control and meaning in life variables resulted in a limited resilience model. Therefore, in this study, we introduced another resilience factor: the inclination toward optimism. This dimension was selected because, as noted, individuals with an internal locus of control (Khanzadeh et al., 2019) and with a meaningful life (Elizabeth & Chang, 2019; Guerrero-Torrelles et al., 2017) tend to be more optimistic.Moreover, a previous study (Aviad-Wilchek, 2024) found that optimism contributes to the relationship between the limited resilience model (internal control focus mediated by the meaning-of-life variable) and the reduction of suicidal inclinations. However, this relationship was tested among a comorbid population and not as a triple mediation model. In the current study, the existence of this triple mediation model will be examined to assess its role in reducing the inclination to suicide among LGB individuals.

## Optimism as a resilience factor

Optimism is defined as a general expectation of positive outcomes (Scheier et al., 2001). This optimistic outlook fosters more effective problem-solving, the cultivation of positive emotions, and the ability to perceive the positive aspects of situations despite adversity. According to Bharti and Rangnekar (2019), optimism is perceived as an emotional, cognitive, and motivational structure. Numerous studies have demonstrated that optimism is correlated with better coping strategies, increased life satisfaction, career success, social support, and higher levels of physical and psychological well-being (Joo & Lee, 2017; Kwon & Hugelshofer, 2010). Additionally, optimism has been found to be associated with a reduced risk of suicidal thoughts, even mitigating the impact of depressive symptoms, across a broad spectrum of patients with clinical conditions at an elevated risk of suicide (Chang et al., 2018). It has also emerged as a buffer against suicidality in the face of loneliness (Chang et al., 2018).

In a sample of LGBT adults, optimism was discovered to have a negative relationship with depression and a positive relationship with self-esteem (Morrison, 2012). Furthermore, LGBT youths with higher levels of mental health were found to come from families with elevated levels of

optimism, and these young individuals reported fewer incidents of discrimination (Freitas et al., 2016). It appears, therefore, that optimism serves as a resilience factor that integrates well with the locus of control and meaning in life dimensions. However, no studies have explored the relationship between internal resilience factors and inclinations toward suicide in the LGBT population, nor has any study examined the aforementioned triple model in this high-risk group as a resilience model aimed at reducing suicidal inclinations. The purpose of this study is to address this gap.

Considering that resilience factors have been shown to mitigate the inclination towards pathological behaviors (Aydin et al., 2018; Montes-Hidalgo & Tomás-Sábado, 2016; Aviad & Cohen-Louck, 2021), coupled with findings from the literature indicating a heightened prevalence of suicidal inclinations among LGB individuals (Hottes et al., 2016; Yıldız, 2018), our hypothesis suggests that the level of resilience factors within LGB individuals may be lower compared to heterosexual individuals.

**Table 1** Participants' sociodemographic characteristics by group ($N=231$)

| | Total sample | Heterosexual | LGB | Difference |
|---|---|---|---|---|
| Age in years, mean (SD), range | 27.11 (6.56), 19–58 | 28.85 (8.33) | 25.96 (4.76) | t(130.49) = 3.01 ($p=.003$) |
| Gender, n (%) | | | | |
| Female | 135 (58.4) | 48 (52.2) | 87 (62.6) | Z = 1.57 ($p=.116$) |
| Male | 96 (41.6) | 44 (47.8) | 52 (37.4) | |
| Marital status, n (%) | | | | |
| Single | 187 (81.0) | 62 (67.4) | 125 (89.9) | Z = 4.27 ($p<.001$) |
| Married, intimate relationship | 44 (19.0) | 30 (32.6) | 14 (10.1) | |
| Children, yes | 32 (13.9) | 25 (27.2) | 7 (5.0) | Z = 4.77 ($p<.001$) |
| Education, n (%) | | | | |
| High school | 102 (44.2) | 33 (35.9) | 69 (49.6) | Z = 2.06 ($p=.039$) |
| Academic | 129 (55.8) | 59 (64.1) | 70 (50.4) | |
| Religiosity, n (%) | | | | |
| Secular | 170 (73.6) | 59 (64.1) | 111 (79.9) | Z = 2.65 ($p=.008$) |
| Partly religious, religious | 61 (26.4) | 33 (35.9) | 28 (20.1) | |

## Hypotheses

H1. Internal locus of control, meaning in life, and optimism are higher in heterosexual than LGB participants, whereas suicidal inclination is higher in LGB than heterosexual participants.

H2. Internal locus of control, meaning in life, and optimism are negatively related to suicidal inclination.

H3. Sexual orientation (heterosexual/LGB) moderates the relationships between locus of control, meaning in life, and optimism on one hand and suicidal inclination on the other, so that the negative relationship is stronger for heterosexual than LGB participants.

H4. Meaning in life and optimism mediate the relationship between locus of control and suicidal inclination.

# Method

## Participants

The study included 231 participants, comprising Israeli men and women. Of these, 92 participants identified as heterosexual (39.8%), while 139 identified as gay ($n=47$), lesbian ($n=44$), and bisexual ($n=48$) individuals, constituting 60.2% of the sample. The age range of the participants spanned from 19 to 58 years (M = 27.11, SD = 6.56), with heterosexual participants being slightly older than their LGB counterparts (refer to Table 1). There were no significant age differences observed among the three LGB groups ($p=0.060$, not displayed in the table). Approximately 60% of the heterosexual participants and the majority of bisexual individuals ($n=43$, 89.6%, not presented in the table) identified as female. The majority of participants across all groups were single and did not have children, with a higher prevalence in the LGB groups. Slightly over half of the participants had received an academic education, with a slightly higher proportion among heterosexual participants, and no significant difference among the three LGB groups ($p=0.794$, not included in the table). Around three-fourths of the participants identified as secular, with a higher prevalence in the LGB participants, and no significant difference among the three LGB groups ($p=0.136$, not featured in the table).

## Instruments

**Demographic and background characteristics** Participants were first asked to answer a demographic questionnaire that included data about their gender, age, marital status,

self-report sexual orientation, education, country of birth, level of religiosity, whether they had children, and whether they performed military or national service.

**Locus of control questionnaire** Rotter (1966) devised a test to gauge an individual's belief regarding the origin of rewards for their actions, whether stemming from their behavior (indicative of an internal locus of control) or determined by external forces beyond their influence (indicative of an external locus of control). The questionnaire comprises 18 statements encompassing faith in an external or internal locus of control across various situations, including interpersonal scenarios. Rotter (1966) reported the reliability of the questionnaire to be within the range of 0.49–0.83 across different tests, contingent on the nature of the sample. In a reliability test utilizing the split-half method, a correlation of 0.73 was achieved. The internal consistency of the tool fell within the range of 0.65–0.79. Rotter (1966) attributed the relatively lower internal reliability of the questionnaire to the diverse content universes from which the items were derived. Higher scores on the test indicate a stronger internal locus of control. Good internal consistency was reported ($\alpha = 0.72$).

**Purpose in Life test (PIL)** PIL, grounded in logotherapy theory, is a scale that measures attitudes towards the sense of purpose in life. This encompasses the perception of the world as coherent, understandable, and imbued with meaning. The questionnaire, formulated by Crumbaugh and Maholick (1981), comprises 18 items. It has demonstrated discriminant validity between psychiatric and normative populations. Each item is presented as a statement, and participants are tasked with indicating the extent to which each statement characterizes them. Responses are recorded on a 6-point Likert scale, ranging from 1 (associated with a low purpose in life) to 6 (associated with a high purpose in life). The overall purpose in life score for participants is computed as the mean of their rankings for the 18 items, with a higher score denoting a stronger sense of purpose in life. The internal reliability of the tool, assessed through analysis and Cronbach's alpha, was found to be high ($\alpha = 0.86$). In our study, we observed a similarly high internal consistency of $\alpha = 0.89$.

Optimism was assessed using the Life Orientation Test (LOT), initially developed by Scheier and Carver (1985) and later updated to the LOT-R edition by Scheier and colleagues (Scheier et al., 1994). The questionnaire comprises ten items designed to measure individuals' optimism or pessimism about the future. Participants express their agreement with ten statements concerning positive and negative predictions on a 5-point scale, ranging from 0 (completely disagree) to 4 (completely agree). The final index is computed as the average of the ten items. The internal consistency was deemed acceptable ($\alpha = 0.65$). A higher score on the index signifies greater optimism. (Note: Optimism items 3, 7, and 9 are reverse-scored. Items 2, 5, 6, and 8 serve as fillers and should not be scored. Scoring is continuous, with no specified benchmark for categorizing individuals as optimists or pessimists).

**Index of potential suicide** Zung's self-report questionnaire (1974) comprises 21 items, scored on a scale ranging from 1 to 6, where higher scores indicate a greater risk for suicidal behavior. The scale encompasses three dimensions: depression, anxiety, and emotional state (which includes a sense of guilt and anger). The index of Potential Suicide was chosen over more common scales (such as Suicidal behaviors questionnaire-revised (SBQ-R), etc. Lew et al., 2020) as it assesses the tendency to commit suicide rather than directly asking about committing suicide. Due to the political and military related circumstances in Israel, and the high incidence of PTSD, the issue of suicide is a very sensitive one. Studies that ask about suicide directly are seldom approved. Thus, the preference is to choose questionnaires that deal with suicide indirectly. Further, previous studies have shown that anxiety and depression are associated with suicide (Dai et al., 2021; Kanwar et al., 2013), and thus the choice was to use a questionnaire that addresses the topic from this angle. The internal consistency of the questionnaire was analyzed, resulting in high reliability: $\alpha = 0.85$ for the depression factors, $\alpha = 0.82$ for the anxiety factors, and $\alpha = 0.60$ for the emotional state factors. We observed a high internal consistency for the total scale ($\alpha = 0.91$) and good internal consistencies for the sub-scales: depression, $\alpha = 0.87$; anxiety, $\alpha = 0.71$; and emotional state, $\alpha = 0.70$. Scores were calculated as the means of the items, with higher scores indicating a heightened suicidal inclination.

## Procedure

The research questions and research tools underwent approval by the University Ethics Committee (AU-SOC-YA-20201122). All questionnaires were integrated into a unified Internet questionnaire format delivered through a Google form. Upon completion of the questionnaire, a compilation of telephone numbers for various support associations was provided. Uniformity was maintained across all participants who received the same questionnaire. The recruitment strategy involved a volunteer sampling method and word of mouth. This included reaching out to acquaintances, utilizing social networks, and sharing the questionnaire within online social groups. Additionally, direct contact

was established with individuals identifying as LGBT, who, in turn, not only responded positively but also disseminated the questionnaire among their network of friends.

### Data analysis

Data analysis was conducted using SPSS version 28. Descriptive statistics, including means and standard deviations for continuous variables, and frequencies and percentages for categorical variables, were employed to characterize background and study variables. Group differences in background variables were assessed using t-tests and Z ratios for the significance of differences between independent proportions. Pearson correlations were calculated between study variables for the entire sample, exploring relationships between background and study variables using Pearson correlations for continuous variables and t-tests for dichotomous background variables.

Multivariate analyses of covariance were employed to investigate group differences in study variables, controlling for age. Post hoc paired differences were examined with estimated marginal means. Multiple linear regressions were conducted for suicidal inclination and its dimensions, with age (standardized) entered as a control variable in the first step. The independent variables of locus of control, meaning in life, and optimism (standardized) were entered in the second step, the moderator variable of group (with two groups: 1-heterosexual, 0-LGB total) in the third step, and interactions between group and study variables stepwise in the final step.

Significant interactions were interpreted and graphed using simple slopes (Dawson, 2014). The mediating role of meaning in life and optimism was examined with the Process procedure, model 6, for serial mediation and a continuous dependent variable (Hayes, 2022). Controls for age and group (heterosexual, LGB total) were implemented, and continuous variables were standardized. The analysis utilized 5,000 bootstrap samples with a 95% confidence interval.

## Results

Participants were queried about the age at which they became cognizant of their sexual orientation. Responses ranged between birth and 26 years, with heterosexual participants citing a significantly lower age (M = 8.33 years, SD = 6.09) than LGB participants (M = 14.25 years, SD = 4.55) ($F(3,227) = 24.23$, $p < 0.001$, $\eta^2 = 0.243$). No difference was found between the three LGB groups ($p = 0.401$). The extent of identifying as LGB individuals ranged from 1 to 10 (M = 5.48, SD = 2.82) and did not differ between the four groups ($F(3,227) = 1.71$, $p = 0.166$, $\eta^2 = 0.022$).

Means for locus of control, meaning in life, and optimism all surpassed the mid-scale point, while means for suicidal inclinations and its dimensions were below mid-scale (refer to Table 2). Notably, all correlations between the study variables were moderate-to-high and statistically significant, indicating positive associations between locus of control, meaning in life, and optimism. Conversely, negative associations were observed between these variables and suicidal inclinations.

### Demographic control variables

To identify pertinent demographic control variables, we observed low but significant correlations between age and several study variables (optimism: r = 0.19, $p = 0.003$; suicidal inclinations—depression: r = -0.17, $p = 0.010$; suicidal inclinations—total score: r = -0.15, $p = 0.025$). Older participants tended to report higher optimism and lower suicidal inclinations. Although the level of education exhibited no association with the study variables ($p = 0.187$ to $p = 0.933$), it did differ by group (refer to Table 1).

Marital status and having children showed low variance and were significantly related to age (r = 0.50 and r = 0.47, $p < 0.001$, respectively), leading to age being considered as the control for these variables. The level of religiosity displayed low variance and was only related to locus of control (r = 0.21, $p = 0.001$), despite differing by group (see Table 1).

The age at which participants became aware of their sexual orientation and the extent of identification with LGB

**Table 2** Means, standard deviations, and inter-correlations for the study variables ($N = 231$)

| | M (SD) | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| 1. Locus of control | 3.51 (0.54) | .39* | .30* | -.46* | -.38* | -.51* | -.50* |
| 2. Meaning in life | 4.59 (0.69) | | .60* | -.80* | -.54* | -.65* | -.77* |
| 3. Optimism | 3.00 (0.62) | | | -.59* | -.44* | -.52* | -.60* |
| 4. Suicidal tendency—depression | 2.46 (0.78) | | | | .63* | .77* | .94* |
| 5. Suicidal tendency—anxiety | 2.60 (0.88) | | | | | .64* | .82* |
| 6. Suicidal tendency—emotional state | 2.43 (0.79) | | | | | | .89* |
| 7. Suicidal tendency—total | 2.48 (0.72) | | | | | | |

*$p < .001$. Ranges: locus of control 1–5, meaning in life 1–6, optimism 1–4, suicidal tendency 1–6

orientations exhibited no significant relationships with the study variables ($p = 0.072$ to $p = 0.972$). Consequently, the hypotheses were assessed while controlling for participants' age. It is worth noting that gender was inherently embedded within the LGB sub-group definitions and was not specifically controlled for. Attempts to control for gender in analyses using heterosexual vs. the total LGB group revealed non-significant contributions, and other results remained unchanged. Additional attempts to control for level of education and level of religiosity, despite their low variance, indicated non-significant contributions, and the results did not undergo alterations. Thus, the hypotheses were evaluated while controlling solely for participants' age (Table 3).

### Group differences

We conducted multivariate analyses of covariance twice, controlling for age: firstly, comparing the heterosexual group to the total LGB group, and secondly, comparing the four subgroups—heterosexual, gay, lesbian, and bisexual participants (T3). Notably, we identified significant differences. Heterosexual participants reported higher levels of meaning in life and optimism than LGB participants, alongside lower suicidal inclinations (specifically in depression, emotional state, and total score). A distinct difference emerged between heterosexual and bisexual participants, with the latter exhibiting lower meaning in life and optimism, coupled with higher suicidal inclinations. Gay and lesbian participants fell between the heterosexual and bisexual groups.

## Group as a moderator

We conducted four multiple regression models for suicidal inclinations and its dimensions. In the first step, the control variable of age (standardized) was entered, followed by the independent variables of locus of control, meaning in life, and optimism (standardized) in the second step. The third step introduced the moderator variable of group (two groups: 1-heterosexual, 0-LGB total), and in the final step, the interactions between group and the study variables were included (refer to Table 4).

All four regression models were statistically significant, explaining a substantial proportion of the variance (Adj. $R^2 = 0.35$ to 0.68). Notably, all independent variables demonstrated negative and significant associations with suicidal inclinations and most of its dimensions (except for locus of control with anxiety). This implies that lower internal locus of control (i.e., external), lower meaning in life, and lower optimism were correlated with higher suicidal inclinations, even after accounting for age and group. Remarkably, meaning in life emerged as the primary correlate of suicidal

**Table 3** Means, standard deviations, and F values for the study variables by group ($N = 231$)

| | Hetero-sexual | LGB total | Gay | Lesbian | Bi-sexual | Difference—two groups | Difference—four groups |
|---|---|---|---|---|---|---|---|
| | M (SD) | M (SD) | M (SD) | M (SD) | M (SD) | F(1, 228) (p) ($\eta^2$) | F(3, 226) (p) ($\eta^2$) |
| Locus of control | 3.59 (0.60) | 3.46 (0.49) | 3.51 (0.44) | 3.42 (0.50) | 3.44 (0.53) | 2.76 ($p = .098$) ($\eta^2 = .012$) | 1.12 ($p = .343$) ($\eta^2 = .015$) |
| Meaning in life | $4.75_a$ (0.72) | 4.48 (0.65) | $4.57_{ab}$ (0.64) | $4.55_{ab}$ (0.63) | $4.33_b$ (0.66) | **7.16 ($p = .008$) ($\eta^2 = .030$)** | **3.50 ($p = .016$) ($\eta^2 = .044$)** |
| Optimism | $3.15_a$ (0.58) | 2.90 (0.63) | $2.89_{ab}$ (0.59) | $3.06_{ab}$ (0.66) | $2.76_b$ (0.62) | **6.40 ($p = .012$) ($\eta^2 = .027$)** | **3.65 ($p = .013$) ($\eta^2 = .046$)** |
| Suicidal tendency—depression | $2.22_b$ (0.76) | 2.62 (0.75) | $2.53_{ab}$ (0.69) | $2.42_{ab}$ (0.63) | $2.88_a$ (0.84) | **11.78 ($p < .001$) ($\eta^2 = .049$)** | **7.01 ($p < .001$) ($\eta^2 = .085$)** |
| Suicidal tendency—anxiety | 2.47 (0.87) | 2.69 (0.88) | 2.61 (0.83) | 2.73 (0.79) | 2.75 (1.01) | **2.63 ($p = .106$) ($\eta^2 = .011$)** | **1.06 ($p = .368$) ($\eta^2 = .014$)** |
| Suicidal tendency—emotional state | $2.23_b$ (0.82) | 2.56 (0.73) | $2.54_{ab}$ (0.67) | $2.47_{ab}$ (0.72) | $2.67_a$ (0.80) | 8.90 ($p = .003$) ($\eta^2 = .038$) | 3.39 ($p = .019$) ($\eta^2 = .043$) |
| Suicidal tendency—total | $2.28_b$ (0.74) | 2.62 (0.68) | $2.55_{ab}$ (0.60) | $2.51_{ab}$ (0.61) | $2.79_a$ (0.78) | **10.17 ($p = .002$) ($\eta^2 = .043$)** | **4.65 ($p = .004$) ($\eta^2 = .058$)** |

Ranges: locus of control 1–5, meaning in life 1–6, optimism 1–4, suicidal tendency 1–6. Difference between two groups: between heterosexual and LGB total. Difference between four groups: heterosexual, gay, lesbian, and bisexual. Different letters (a,b) indicate significant group differences

**Table 4** Multiple regression models for suicidal tendency ($N = 231$)

| | Suicidal tendency | | | |
|---|---|---|---|---|
| | Depression β (p) | Anxiety β (p) | Emotional state β (p) | Total score β (p) |
| Age | -.04 (.261) | -.01 (.966) | .03 (.580) | -.01 (.739) |
| Locus of control | **-.15 (<.001)** | -.04 (.635) | **-.16 (.018)** | **-.12 (.033)** |
| Meaning in life | **-.63 (<.001)** | **-.38 (<.001)** | **-.43 (<.001)** | **-.57 (<.001)** |
| Optimism | **-.15 (.002)** | **-.14 (.040)** | **-.15 (.011)** | **-.16 (.001)** |
| Group—heterosexual | -.07 (.074) | .01 (.942) | -.06 (.185) | -.06 (.161) |
| Group × locus of control | – | **-.21 (.006)** | **-.18 (.007)** | **-.15 (.008)** |
| Adj. $R^2$ | .68 | .35 | .52 | .67 |
| F(df) (p) | F(5, 225) = 98.98 $p < .001$ | F(6, 224) = 21.63 $p < .001$ | F(6, 224) = 42.57 $p < .001$ | F(6, 224) = 78.89 $p < .001$ |

inclinations. It is noteworthy that once the independent variables were considered, age and group no longer remained significant.

Among the interactions between group (heterosexual, LGB total) and the dependent variables, a significant finding emerged specifically in the case of locus of control, concerning anxiety, emotional state, and the total score. Consequently, meaning in life and optimism demonstrated a negative relationship with suicidal inclinations for both heterosexual and LGB participants, exhibiting a similar extent of impact. In contrast, the association of locus of control with anxiety, emotional state, and the total score of suicidal inclinations varied by group. We utilized simple slopes (Dawson, 2014) to interpret these interactions, as depicted in Fig. 1.

Results of the simple slopes concerning anxiety revealed a significant negative relationship for the heterosexual group (coefficient = -0.30, t = -4.19, $p < 0.001$) and a non-significant relationship for the LGB group (coefficient = -0.03, t = -0.47, $p = 0.635$). Regarding emotional state, both slopes were significant, but the relationship was more pronounced for the heterosexual group (coefficient = -0.32, t = -5.99, $p < 0.001$) than for the LGB group (coefficient = -0.13, t = -2.39, $p = 0.018$). Similarly, for the total score of suicidal inclinations, the relationship was stronger for the heterosexual group (coefficient = -0.24, t = -5.73, $p < 0.001$) than for the LGB group (coefficient = -0.09, t = -2.15, $p = 0.032$). Consequently, a higher internal locus of control was more strongly associated with lower suicidal inclinations in heterosexual participants than in LGB participants. This suggests that internal locus of control had a more pronounced buffering effect on suicidal inclinations in heterosexual individuals compared to LGB individuals.

### Meaning in life and optimism as mediators

We conducted a mediation analysis using the Process procedure, model 6, for serial mediation (locus of control — meaning in life — optimism — suicidal inclinations) (Hayes, 2022). Age and group (heterosexual, LGB total) were controlled for in the analysis. Since the group was found to moderate only the relationship between locus of control and suicidal inclinations, the mediation model was examined as a case of serial mediation rather than moderated mediation.

The results of the serial mediation model were significant concerning suicidal inclinations and its dimensions (Fig. 2). The serial indirect effect for depression was -0.02 (SE = 0.01, 95% CI = -0.04, -0.01), for anxiety -0.03 (SE = 0.01, 95%CI = -0.06, -0.01), for emotional state -0.03 (SE = 0.01, 95%CI = -0.05, -0.01), and for the total score -0.03 (SE = 0.01, 95%CI = -0.05, -0.01). This implies that a higher internal locus of control was associated with higher meaning in life, which, in turn, was related to higher optimism, and the latter was associated with lower suicidal inclinations.

## Discussion

The suicide rate is elevated among individuals within the LGBT spectrum, including both adults and youth (Hottes et al., 2016; Yıldız, 2018) for many reasons, including incidents of discrimination, homophobia, and more (Meyer, 2015). The purpose of this study was to examine a two-dimensional model 0f resilience (internal locus of control mediated by meaning in life), which has been shown to be a model of resilience against suicidal inclinations in populations with a high risk of suicide. The novelty of this study lies in the expansion of the limited model by the addition of a third dimension, optimism, which was found in a previous study (Aviad-Wilchek, 2024), to contribute to the relationship between the limited resilience model and the reduction of suicidal inclinations. We examined the feasibility in an attempt to adapt it to LGB individuals and introduced a model that can help reduce suicidal inclinations in this population.

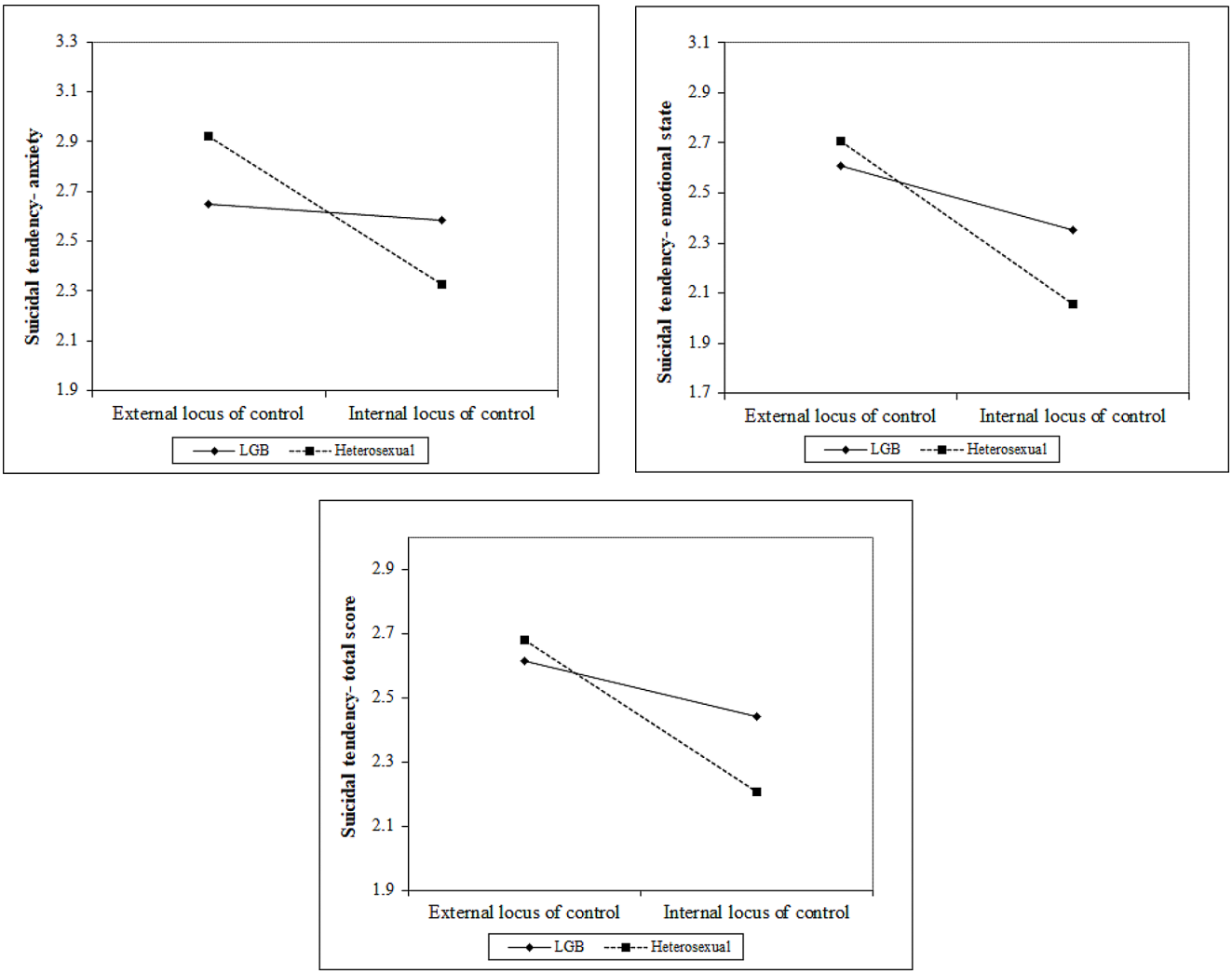


**Fig. 1** Simple slopes for group as a moderator between locus of control and suicidal tendency

Our main hypothesis, which postulates a relationship between high levels of resilience variables (internal locus of control, meaning in life, and optimism) and low levels of suicidality, was confirmed. As expected, meaning in life and optimism served as mediators between internal locus of control and suicidal inclinations, so that the higher internal locus of control was, the higher were the levels of meaning in life and optimism, and the lower the level of suicidality (on its various dimensions and the overall score). It appears, therefore, that the triple resilience model, as presented in this study, can be used as a factor in interventions to reduce suicidal inclinations.

Based on the theoretical review, which found that the LGB population suffers from many social stigmas (Patterson & D'Augelli, 2013), is subject to discrimination (Meyer, 2015), and has high suicidal inclinations, another research hypothesis in the present study was that LGB individuals display a lower level of resilience factors (internal locus of control, meaning in life, and an inclination to optimism) and a higher level of suicidal inclinations than the heterosexual population. This assumption is based on the understanding that individuals with greater mental resilience are better able to deal with stressful situations (Hovenkamp-Hermelink et al., 2019), display a higher level of wellbeing (Cohen-Louck & Aviad-Wilchek, 2020), and therefore have a lower suicidal inclination. We examined suicidal inclinations using three dimensions– depression level, anxiety level, and emotional state– as well as the total score, an average of these three dimensions.

The results of the study show that, indeed, resilience factors were higher among the heterosexual participants and the level of suicidal inclinations, both in its total score and in the level of depression and emotional state, was lower. But we found no differences between the two groups in the levels of suicidality-anxiety and locus of control. A possible explanation for not finding differences in the anxiety

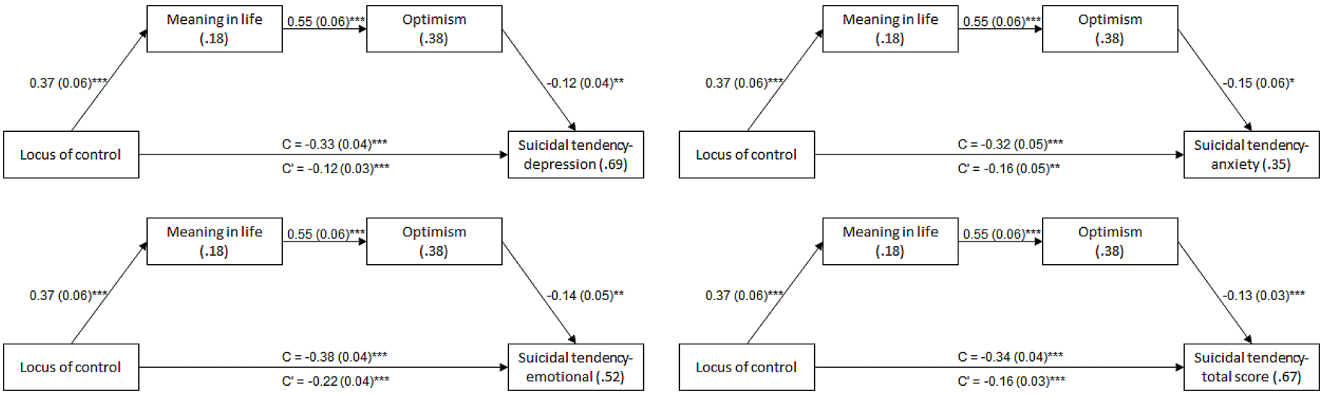


**Fig. 2** The mediating role of meaning in life and optimism in the relationship between locus of control and suicidal tendency. Note: Values on arrows: B(SE), values within rectangles: $R^2$, C = total effect, C' = direct effect. $*p < .05$, $**p < .01$, $***p < .001$

dimension may be the fact that the LGB participants have already disclosed their sexual orientation. The coming out process involves many conflicts and concerns (Alonzo & Buttitta, 2019), therefore studies examining the coming out stage are likely to find high levels of anxiety in this population. But after coming out, the level of anxiety decreases, although the process itself appears to expose the LGB population to harsh reactions. According to the literature, there is a connection between discrimination events and emotional states, depression, and suicidal inclinations (Meyer, 2015). This may explain the higher levels in the other three dimensions of suicidal inclinations: depression, emotional state, and general score. The literature also describes an anxiety response to discrimination events, but it is possible that because the anxiety level of this population was high before coming out, the level decreased by the time the data were collected for this study to that of the rest of the population. This explanation requires empirical confirmation in a follow-up study (below we explain the reasons for not finding differences in the internal locus of control variable).

The LGB group is a heterogeneous one, therefore we examined the research variables in each subgroup separately (gays, lesbians, and bisexuals). Our findings show that the group with the highest suicidal inclinations (depression, emotional state, and overall score) was the bisexual group, which also showed the lowest levels of dimensions of resilience: meaning in life and optimism. The group showing the lowest level of suicidality (depression, emotional state, and total score) and the highest resilience factors (meaning in life and optimism) was that of the heterosexuals. Between the two were situated the gays and lesbians.

The high suicidal inclinations and low level of resilience factors in bisexuals can be explained based on information available in the literature. The inclination of bisexuals to be attracted to both their own and the opposite sex (Bailey et al., 2016) appears to make it difficult for them to form a solid identity (Feinstein & Dyar, 2017). This is true even for bisexual individuals who have chosen one lifestyle (homosexual or heterosexual) because the choice was coerced and does not moderate the inclination and desire for the other lifestyle (See & Hunt, 2011). By contrast, individuals who understand that their sexual orientation is different from that of society at large, after a period of adjustment, appear to know and accept themselves and build their self-identity around this inclination.

To test the effectiveness of the current model, we examined whether it performed differently as a function of sexual orientation (heterosexuals or LGBs), that is, whether group (heterosexual, LGB total) moderates the relationship between locus of control, meaning in life, and optimism on one hand and suicidal inclinations on the other, with a stronger negative relationship in heterosexual than in LGB participants. This examination was based on the previous hypotheses according to which the level of resilience factors of LGB participants is lower and their suicidal inclinations higher than those of heterosexual participants. The results of the study indicate that, in principle, the model as a whole is not affected by sexual orientation and that it serves as a resilience model for individuals with different sexual orientations. But for suicidality in the dimensions of anxiety, emotional state, and total score, the negative correlation between internal locus of control and suicidality was stronger in heterosexual than in LGB participants. In other words, internal locus of control protected heterosexual participants more against suicidality than it did LGB participants. LGB participants were more vulnerable because internal locus of control was less effective in reducing the inclination to suicide.

Recent studies have illuminated distinctions between heterosexuals and LGBT individuals, particularly revealing that the latter, especially lesbians, often employ external locus of control strategies in dealing with stressors (Podder & Mukherjee, 2016). This dichotomy prompts a consideration, contingent on empirical validation, that within

LGBT individuals, a dissonance emerges. This dissonance is between the internal locus of control, where individuals attribute the causes of events in their lives to themselves, and the recognition that their sexual identity, accompanied by incidents of discrimination, lies beyond their personal control. This dissonance, in turn, contributes to a diminution in the internal locus of control dimension of resilience.

The robustness of the internal locus of control is not solely an individual matter; it is profoundly influenced by cultural and social climates. This influence is notably observed in countries like Israel, where the prevalence of family and religious values, combined with a patriarchal culture, fosters pervasive homophobic attitudes (Shilo et al., 2015). This socio-cultural milieu may potentially undermine the formation of an internal locus of control among LGBT individuals.

This last finding is especially important for treatment and prevention professionals who care for LGB individuals. The results of the present study and of previous ones (Aviad-Wilchek & Ne'eman-Haviv, 2018; Edwards & Holden, 2003; Cohen-Louck & Aviad-Wilchek, 2020) suggest that the treatment and prevention of suicidality in the general population should focus on resilience. But until now, it was not known that treatment or prevention program must be adjusted according to the target population. The present study stresses this understanding, and hence its importance and contribution.

This study found that the treatment and prevention professionals who work with the LGB population should place greater emphasis on helping to find meaning in life and adopt an optimistic outlook in trying to reduce suicidal inclinations and concentrate less on internal locus of control. Based on this finding, we suggest continuing to test the effectiveness of this three-dimensional model on other populations at risk, to place at the disposal of caregivers and prevention personnel a differential and more accurate toolbox.

The study faced challenges in recruiting participants within the LGBT demographic, particularly those in the transgender spectrum, who showed reluctance to engage. Another limitation was the absence of a representative sample, impacting the generalizability of findings. The study did not explicitly explore the gender variable, as it did not align with the primary focus. To address these limitations, future studies should have expanded participant numbers, especially including individuals from the transgender spectrum. The complexities of gender variables suggested the potential for a dedicated future article.

## Conclusion

In summary, this study uncovers a strong association between higher resilience factors and lower suicidality in both heterosexual and LGB individuals. The innovative three-dimensional resilience model, inclusive of optimism, proves effective, providing valuable insights for targeted interventions. Crucially, the differential impact of internal locus of control reveals a heightened protective effect for heterosexuals compared to diminished effectiveness among LGB individuals, emphasizing the urgent need for tailored interventions addressing the unique challenges faced by the LGB population in managing suicidality.

**Authors' contribution** All authors contributed to the study conception and design. All authors read and approved the final manuscript.

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**Data availability** The participants of this study did not give written consent for their data to be shared publicly, so due to the sensitive nature of the research supporting data is not available.

## Declarations

The authors have no relevant financial or non-financial interests to disclose.

Our manuscript do not contains any individual person's data in any form.

**Ethical approval** This study was performed in line with the principles of the Declaration of Helsinki. Approval was granted by the Ethics Committee of Ariel University (1.1.2021/ AU-SOC-YA-20210101.).

**Consent to participate** Informed consent was obtained from all individual participants included in the study.

**Competing interest** The authors declare that they have no competing interests. The material has not been published elsewhere and is not under review at another publication.

## References

Alonzo, D. J., & Buttitta, D. J. (2019). Is "Coming Out" still relevant? Social justice implications for LGB-membered families. *Journal of Family Theory & Review, 11*(3), 354–366.

Antonovsky, A. (1987). *Unraveling the mystery of health: How people manage stress and stay well*. Jossey-Bass.

Aviad-Wilchek, Y. (2024). The connection between the meaning of life, the focus on control and optimism, and the suicidal tendency among mental illness. *Israeli Criminology, 12*, 177–194 [Hebrew].

Aviad-Wilchek, Y., & Ne'eman-Haviv, V. (2018). The relation between a sense of meaning in life and suicide potential among disadvantaged adolescent girls. *International Journal of Offender Therapy and Comparative Criminology, 62*(6), 1474–1487. https://doi.org/10.1177/0306624X16684566

Aviad, Y., & Cohen-Louck, K. (2021). Locus of Control and Purpose in Life as Protective Factors against the Risk for Suicide in Older Adults. *Smith College Studies in Social Work, 91*(4), 295–308. https://doi.org/10.1080/00377317.2021.1968323

Aydin, I., Algin, A., Poyraz, M. K., & Kalenderoglu, A. (2018). An analysis with rotter internal-external locus of control scale, rosenberg self-esteem scale, and the Barratt impulsivity scale on patients who attempted to recurrent suicide. *Eurasian Journal Ofemergency Medicine, 17*(3), 109–112.

Bailey, J. M., Vasey, P. L., Diamond, L. M., Breedlove, S. M., Vilain, E., & Epprecht, M. (2016). Sexual orientation, controversy, and science. *Psychological Science in the Public Interest, 17*(2), 45–101.

Bharti, T., & Rangnekar, S. (2019). When life gives you lemons make lemonade: Cross-sectional age and gender differences in optimism. *Evidence– Based HRM, 7*(2), 213–228.

Carter, L. W., II., Mollen, D., & Smith, N. G. (2014). Locus of control, minority stress, and psychological distress among lesbian, gay, and bisexual individuals. *Journal of Counseling Psychology, 61*(1), 169.

Chang, E. C., Chang, O. D., Martos, T., Sallay, V., Li, X., Lucas, A. G., & Lee, J. (2018). Does optimism weaken the negative effects of being lonely on suicide risk? *Death Studies, 42*(1), 63–68.

Cohen-Louck, K., & Aviad-Wilchek, Y. (2020). Suicidal tendencies, meaning in life, family support, and social engagement of the elderly residing in the community and in institutional settings. *Israel Journal of Psychiatry*, *57*(1), 13–22.

Crumbaugh, J. C., & Maholick, L. T. (1981). PIL [Purpose in life test]. Viktor Frankl Institute of Logotherapy.

Dai, Z., Shen, X., Tian, S., Yan, R., Wang, H., Wang, X., & Lu, Q. (2021). Gradually evaluating of suicidal risk in depression by semi-supervised cluster analysis on resting-state fMRI. *Brain Imaging and Behavior, 15*, 2149–2158. https://doi.org/10.1007/s11682-020-00410-7

Dawson, J. F. (2014). Moderation in management research: What, why, when and how. *Journal of Business and Psychology, 29*, 1–19.

Edwards, M. J., & Holden, R. R. (2003). Coping, meaning in life, and suicidal manifestations: Examining gender differences. *Journal of Clinical Psychology, 59*(10), 1133–1150.

Elizabeth, A. Y., & Chang, E. C. (2019). Meaning in life as a predictor of optimism: How parents mattering matters to Asian and European Americans. *Personality and Individual Differences, 138*, 366–369. https://doi.org/10.1016/j.paid.2018.10.031

Feinstein, B. A., & Dyar, C. (2017). Bisexuality, minority stress, and health. *Current Sexual Health Reports, 9*(1), 42–49.

Figueiredo, A. R., & Abreu, T. (2015). Suicide among Lgbt individuals. *European Psychiatry, 30*(S1), 1–1. https://doi.org/10.1016/S0924-9338(15)31398-5

Frankl, V. E. (2000). *Man's search for meaning*. Beacon Press.

Fredriksen-Goldsen, K. I., Kim, H. J., Bryan, A. E., Shiu, C., & Emlet, C. A. (2017). The cascading effects of marginalization and pathways of resilience in attaining good health among LGBT older adults. *The Gerontologist, 57*(1), S72–S83.

Freitas, D. F., D'Augelli, A. R., Coimbra, S., & Fontaine, A. M. (2016). Discrimination and mental health among gay, lesbian, and bisexual youths in Portugal: The moderatingrole of family relationships and optimism. *Journal of GLBT Family Studies, 12*(1), 68–90.

Frost, D. M., & Meyer, I. H. (2023). Minority stress theory: Application, critique, and continued relevance. *Current Opinion in Psychology, 51*, 101579. https://doi.org/10.1016/j.copsyc.2023.101579

Gewirtz, A. H., DeGarmo, D. S., & Zamir, O. (2016). Effects of a military parenting program on parental distress and suicidal ideation: After deployment adaptive parenting tools. *Suicide and Life-Threatening Behavior, 46*(1), 23-S31.

Guerrero-Torrelles, M., Monforte-Royo, C., Rodríguez-Prat, A., Porta-Sales, J., & Balaguer, A. (2017). Understanding meaning in life interventions in patients with advanced disease: A systematic review and realist synthesis. *Palliative Medicine, 31*(9), 798–813.

Hayes, A. F. (2022). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach* (3rd ed.). The Guilford Press.

Hottes, T. S., Bogaert, L., Rhodes, A. E., Brennan, D. J., & Gesink, D. (2016). Lifetime prevalence of suicide attempts among sexual minority adults by study sampling strategies: A systematic review and meta-analysis. *American Journal of Public Health, 106*(5), 1–12.

Hovenkamp-Hermelink, J. H., Jeronimus, B. F., Spinhoven, P., Penninx, B. W., Schoevers, R. A., & Riese, H. (2019). Differential associations of locus of control with anxiety, depression and life-events: A five-wave, nine-year study to test stability and change. *Journal of Affective Disorders, 253*, 26–34. https://doi.org/10.1016/j.jad.2019.04.005

Joo, B. K., & Lee, I. (2017). Workplace happiness: Work engagement, career satisfaction, and subjective well-being. *A Global Forum for Empirical Scholarship, 5*(2), 206–221.

Kanwar, A., Malik, S., Prokop, L. J., Sim, L. A., Feldstein, D., Wang, Z., & Murad, M. H. (2013). The association between anxiety disorders and suicidal behaviors: A systematic review and meta-analysis. *Depression and Anxiety, 30*(10), 917–929. https://doi.org/10.1002/da.22074

Kaplan, D., & Ben-Ari, E. (2000). Brothers and others in arms: Managing gay identity in combat units of the Israeli army. *Journal of Contemporary Ethnography, 29*(4), 396–432. https://doi.org/10.1177/089124100129023954

Khanzadeh, M., Aminimanesh, S., Hadian, S. A., & Aliasgari, R. (2019). Role of locus of control on students happiness with the mediating of optimism and hope. *Positive Psychology Research, 5*(3), 29–38. https://doi.org/10.22108/ppls.2020.113941.1569

Kwon, P., & Hugelshofer, D. S. (2010). The protective role of hope for lesbian, gay, and bisexual individuals facing a hostile workplace climate. *Journal of Gay & Lesbian Mental Health, 14*(1), 3–18.

Levi-Belz, Y., Peleg, D., & Ifrah, K. (2022). An integrative psychological model of risk factors for suicidal ideation and behavior among Israeli LGBT individuals. *OMEGA - Journal of Death and Dying, 0*(0). https://doi.org/10.1177/00302228221087504

Lew, B., Chistopolskaya, K., Osman, A., Huen, J. M. Y., Abu Talib, M., & Leung, A. N. M. (2020). Meaning in life as a protective factor against suicidal tendencies in Chinese University students. *BMC Psychiatry, 20*, 1–9. https://doi.org/10.1186/s12888-020-02485-4

Lin, L., & Shek, D. T. (2019). The influence of meaning in life on adolescents' hedonic well-being and risk behaviour: Implications for social work. *The British Journal of Social Work,49*(1), 5–24.

Meyer, I. H. (2003). Prejudice, social stress, and mental health in lesbian, gay, and bisexual populations: Conceptual issues and research evidence. *Psychological Bulletin, 129*(5), 674–697. https://doi.org/10.1037/0033-2909.129.5.674

Meyer, I. H. (2015). Resilience in the study of minority stress and health of sexual and gender minorities. *Psychology of Sexual Orientation and Gender Diversity, 2*(3), 209–213.

Michaels, C., Choi, N. Y., Adams, E. M., & Hitter, T. L. (2019). Testing a new model of sexual minority stress to assess the roles of meaning in life and internalized heterosexism on stress-related growth and life satisfaction. *Psychology of Sexual Orientation and Gender Diversity, 6*(2), 204–216.

Montes-Hidalgo, J., & Tomás-Sábado, J. (2016). Self-esteem, resilience, locus of control and suicide risk in nursing students. *Enfermeria Clinica, 26*(3), 188–193.

Morrison, M. A. (2012). Psychological health correlates of perceived discrimination among Canadian gay men and lesbian women. *Canadian Journal of Community Mental Health, 30*(2), 81–98.

Patterson, C. J., & D'Augelli, A. R. (2013). *Handbook of psychology and sexual orientation*. Oxford University Press.

Podder, P., & Mukherjee, T. (2016). A study on cognitive emotion regulation and locus of control in LGBT. *IOSR Journal of Humanities and Social Sciences, 21*(12), 1–9. https://doi.org/10.9790/0837-2112010109

Qin, P., Agerbo, E., & Mortensen, P. B. (2003). Suicide risk in relation to socioeconomic, demographic, psychiatric, and familial factors: A national register–based study of all suicides in Denmark, 1981–1997. *American Journal of Psychiatry, 160*(4), 765–772.

Raifman, J., Moscoe, E., Austin, S. B., & McConnell, M. (2017). Difference-in-differences analysis of the association between state same-sex marriage policies and adolescent suicide attempts. *JAMA Pediatrics, 171*(4), 350–356.

Ream, G. L. (2019). What's unique about lesbian, gay, bisexual, and transgender (LGBT) youth and young adult suicides? Findings from the National Violent Death Reporting System. *Journal of Adolescent Health, 64*(5), 602–607.

Rossetti, M. C., Tosone, A., Stratta, P., Collazzoni, A., Santarelli, V., Guadagni, E.,... & Rossi, A. (2017). Different roles of resilience in depressive patients with history of suicide attempt and no history of suicide attempt. *Brazilian Journal of Psychiatry*, *39*(3), 216–219.

Rotter, J. B. (1966). Generalized expectancies for internal versus external control of reinforcement. *Psychological Monographs: General and Applied*, *80*(1), 1–28.

Scheier, M. F., & Carver, C. S. (1985). Optimism, coping, and health: Assessment and implications of generalized outcome expectancies. *Health Psychology, 4*(3), 219.

Scheier, M. F., Carver, C. S., & Bridges, M. W. (1994). Distinguishing optimism from neuroticism (and trait anxiety, self-mastery, and self-esteem): A reevaluation of the Life Orientation Test. *Journal of Personality and Social Psychology, 67*(6), 1063–1078. https://doi.org/10.1037/0022-3514.67.6.1063

Scheier, M. F., Carver, C. S., & Bridges, M. W. (2001). Optimism, pessimism, and psychological well-being. In E. C. Chang (Ed.), *Optimism and pessimism: Implications for theory, research, and practice* (pp. 53–75). American Psychological Association.

See, H., & Hunt, R. (2011). Bisexuality and identity: The double-edged sword: Stonewall research into bisexual experience. *Journal of Bisexuality, 11*(2–3), 290–299.

Shenkman, G., & Shmotkin, D. (2010). Mental health among Israeli homosexual adolescents and young adults. *Journal of Homosexuality, 58*(1), 97–116. https://doi.org/10.1080/00918369.2011.533630

Shilo, G., Antebi, N., & Mor, Z. (2015). Individual and community resilience factors among lesbian, gay, bisexual, queer and questioning youth and adults in Israel. *American Journal of Community Psychology, 55*(1–2), 215–227. https://doi.org/10.1007/s10464-014-9693-8

Szymanski, D. M., & Mikorski, R. (2016). External and internalized heterosexism, meaning in life, and psychological distress. *Psychology of Sexual Orientation and Gender Diversity, 3*(3), 265–274.

Valdiserri, R. O., Holtgrave, D. R., Poteat, T. C., & Beyrer, C. (2019). Unraveling health disparities among sexual and gender minorities: A commentary on the persistent impact of stigma. *Journal of Homosexuality, 66*(5), 571–589.

Wilchek-Aviad, Y., & Oren, L. (2023). Linking minority stress to substance abuse in LGB adults: The mediating effect of sexual harassment. *Current Psychology, 42*(30), 26535–26544. https://doi.org/10.1007/s12144-022-03636-4

Yıldız, E. (2018). Suicide in sexual minority populations: A systematic review of evidence-based studies. *Archives of Psychiatric Nursing, 32*(4), 650–659.

Zung, W. K. (1974). Index of potential suicide (IPS). A rating scale for suicide prevention. In A. T. Beck., H. L. Resnik., & D. J. Lettieri (Eds.), *The prediction of suicide* (pp. 221–249). Charles Press.

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