


**Research Article**

## Is Depression and Suicidality a Matter of Sexual Orientation? An Empirical Investigation in Greece

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### Abstract

**Background:** This research is based on previous literature concerning mental health conditions in sexual minorities. Taking this background into consideration, here, the role of sexual orientation and sexual orientation-related stress is examined.

**Aims:** The research aims to examine the predictors of depression and suicidality, focusing primarily on the role of sexual identity and sexual orientation-related stress.

**Methods:** A questionnaire was distributed to a sample of 112 participants, from which 64 of them belonged to the LGB community.

**Results:** The results showed that sexual orientation differentiated the median and distribution of depression and suicidality levels, but its effect was insignificant when adjusted with other demographic variables in regressions. Gay-related stress seems to be associated with higher levels of depression.

**Conclusion:** More research is needed to shed light on the risk factors of depression and suicide, especially for LGB participants. Finally, the role of gay-related stress needs to be validated by further studies as well.

**Keywords:** Depression; LGB; Sexual Orientation; Stress; Suicidality

### Introduction

Sexual orientation is associated with sexual attraction addressed to a person of the same or different or both genders. The term sexual orientation involves sexual attraction, emotional attraction, sexual behavior as well as the identity of the individual which is related to its position in a social group whose members have similar characteristics to the individual [1,2]. However, there is not yet consensus among researchers concerning the inclusion of multiple concepts (sexual attraction, sexual behavior, and sexual identity) in the central idea of sexual orientation [3,4]. Furthermore, although the development of sexual orientation is a linear process involving a series of stages [5], it has been supported that the movement from one stage to the next is not linear, leading to changes in sexual orientation over time [6]. Etiology, which deals with the configuration of sexual orientation, has accepted that biological factors are more prominent than social ones. A series of empirical findings support the latter. For instance, several cross-cultural types of research have found that homosexuality during adulthood is positively and strongly correlated with the manifestation of behaviors incompatible with gender during childhood [7]. Other studies focus on the sexual orientation of twins, and according to findings, it is related to genetic factors [8]. Additionally, birth order seems to affect sexual orientation since firstborns are

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less likely to demonstrate same-gender attraction or bisexual sexual orientation [9]. Notably, child-rearing and tolerance on the part of society towards non-heterosexuals, do not seem to affect sexual orientation [10,11]. Those variables are related to the behavioral expression of the characteristics of sexual orientation, not to their configuration. In heterosexual-dominant societies, non-heterosexuals may be stigmatized for their sexual orientation [12,13] and are subject to psychological distress [13,14]. Sexual minorities are more likely to develop mental disorders such as depression than heterosexuals [13,15,16]. Moreover, suicidal ideation and suicide attempts are more frequent in sexual minorities [17-19,13]. The fact that prejudice, stigma, and discrimination towards sexual minorities may cause psychological distress is involved in the Minority Stress Model [20-22]. In addition, the effect of sexual minority status on mental health may be studied along with demographic characteristics since different groups are subject to different discrimination levels in various settings [23,24]. Several studies supported that bisexuals experience significantly higher depression [25,26,13,27-30] and suicidal ideation levels compared to people with same-gender attraction and heterosexuals even after adjusting demographic characteristics [13,28,31-36]. In other studies, people with same-sex attraction are at a higher risk of depression [25,28,29,30,37,38] and have more suicidal thoughts compared to heterosexuals [31,32,33,28,35,36]. A strand of literature found that people with same-gender attraction and bisexuals are more likely to receive antidepressant medication than heterosexuals [39]. Higher levels of depression have been attributed to non-acceptance on the part of parents [38] and low quality of mother relationships [40]. The reason sexual minorities have increased levels of suicide ideation has been attributed to several factors, such as efforts to change their sexual orientation [41]. Previous studies also report that sexual orientation-related stress is related to depressive symptoms [42-45] and suicidal risk [46]. The present research examines the role of sexual orientation and sexual orientation-related stress in depression and suicidality, with the adjustment of other demographic data of participants. The originality of the research is that the factors affecting depression and suicidality were examined for the sample involving both heterosexual and non-heterosexual individuals and for the sample of non-heterosexual individuals separately. This separation allows for the involvement of sexual orientation-related stress as an explanatory variable. Furthermore, there are no relevant studies investigating the role of sexual orientation and sexual orientation-related stress in Greece, making a significant contribution to the existing literature.

## Material and Methods

### Sample

Participants were recruited from the Department of

Infectious Diseases beneficiaries in the General Hospital of Chania “*St. George*”, in the Psychological Centre of Chania- Field of Adult Psychological Therapy and of the European Institute of Education and Psychotherapy-Centre for Lifelong Learning. Furthermore, participants have been recruited from the “*LGBTQ Greek Community*” members on Facebook. Hence, the final sample comprises clinical samples as well as LGBTQ samples. The questionnaire was administered via Google Forms. Finally, the questionnaire was uploaded on social media pages. The final sample consists of 112 participants. Based on their socio-demographic characteristics, 56.3% were male, 37.5% female and 6.3% transgender. Regarding their sexual orientation, 47.3% of the participants reported same-gender attraction, 9.8% were bisexuals, while the rest 42.9% were heterosexuals. Moreover, most participants belonged to the over 25 age group (82.9%), while the average age is 36.81 and the standard deviation is 10.54. Furthermore, most participants had Greek nationality (93.8%), followed by those with Albanian nationality (5.4%) and those with Belgian nationality (0.9%). Regarding educational background, most participants had at least completed compulsory education. In detail, 1.8% had completed junior high school, 30.4% senior high school, 43.8% had a university degree, 20.5% had a master’s degree, and the rest 3.6% had a Ph.D. When it comes to the area of residency, 7.1% lived in rural areas, 42.0% lived in a small city, while almost half of the participants lived in a large city. Last but not least, regarding religious beliefs, 59.8% of the participants are Christian Orthodox, 34.8% of participants are atheists, 1.8% are not religious, while smaller percentages are Protestants, agnostics and Buddhists (0.9%). A small percentage of participants also declared that is not sure yet (0.9%).

### Measures

**Sexual Orientation Scale:** The self-assessment of sexual orientation was feasible with the use of four questions involved in the research of Rosario et al. (1996), as referred by Rosario et al. (2004) [Scale of Psychosexual Development]. Those questions focus on recent sexual fantasies of individuals and whether they address the same or the opposite gender while in public areas, during masturbation or during watching erotic content. Answers were given on a five-point scale and measured frequency (1=Always focused on the same gender-5=Always concentrated on the opposite gender). Rosario et al. (2002) showed that the internal consistency reliability of the scale is high ( $\alpha = .91$ ).

**Attitudes towards Lesbian and Gay Men (ATLG):** The original version of the scale was developed by Herek (1984) as referred by Herek (2002). In this study, the Greek version was used [47]. The scale involves 20 items on a five-point Likert scale (1=Totally disagree, 5=Totally agree). A higher score on this scale shows a more negative attitude towards

L.G. The scale has high internal consistency reliability ( $\alpha = .91$ ) and high repeated measurement reliability ( $r = .82$ ), while it has been weighted for the Greek population [47].

**Internalized Homophobia Scale:** The scale was developed by Szymanski and Chung (2002) and consists of 52 items on a five-point Likert scale (1=Totally disagree, 5=Totally agree). It measures five factors: ethical and religious attitudes to homosexuality, attitudes towards other individuals that demonstrate same-gender attraction, communication with the members of the LGB community, public coming out of homosexuality and personal feelings about homosexuality. The scale is addressed to LGB individuals. Szymanski and Chung (2002) showed high internal consistency reliability ( $\alpha = .94$ ). A higher score on the scale shows higher internalized homophobia.

**Gay-related Stressful Events Scale:** The scale was developed by Rosario et al. (1997) and is addressed to LGBTQ+ individuals. It measures the stressful events they experienced during the past three months due to their sexual orientation at work and with family and friends. The scale involves 12 stressful circumstances in which the participants had to report if they experienced them during the past three months (yes/no). A higher score shows higher levels of sexual orientation-related stress. Depression scale. Beck's Depression Inventory (BDI) was used to measure self-reported levels of depression as its psychometric qualities are empirically validated [48]. The scale comprises 21 items. According to the scoring instructions of the scale, a score higher than 19 indicates the presence of at least medium-level depression symptoms. Additionally, BDI has high internal consistency reliability ( $.81 \leq \alpha \leq .96$ ) in a series of empirical studies [49,50].

**Risk-Assessment Suicidality Scale (RASS):** It was developed by Fountoulakis et al. (2012) to assess the risk of the manifestation of suicidal behaviors. The scale involves 12 items on a four-point Likert scale (1=Not at all, 4= Very much). Internal consistency reliability is satisfactory ( $.72 \leq \alpha \leq .78$ ) [51]. Higher scores on the scale indicate higher suicidality levels.

**Perceived Stress Scale (PSS):** The scale was initially developed in 1983, as Cohen et al. (1994) refer. It is widely used to assess the perceived stress levels during the past month. It comprises 10 items on a five-point Likert scale (1=Never, 5=Very often). According to Cohen et al. (1994), a score higher than 13 indicates at least moderate stress levels. Lee's (2012) meta-analysis, including the findings of 19 studies, showed that the scale has high internal consistency reliability ( $.75 \leq \alpha \leq .91$ ) and satisfactory repeated measurement reliability ( $.55 \leq r \leq .85$ ).

## Data Analysis

The research was conducted during the Covid-19

pandemic, and the research instrument was distributed through Google Forms. When participants opened the form, they were informed about the questionnaire's content. Then, they were informed about the use of their answers and were ensured that their data would not be publicized without their consent. They were also informed about the anonymity of their responses. Finally, if participants were willing to participate in the research, they continued to the next stage of the questionnaire. In the first part of the questionnaire, participants were required to declare some demographic data concerning gender, age, nationality, marital status, educational background, area of residency and religious beliefs. Then, participants were required to answer the scale concerning sexual orientation, which indicated the number of questionnaires they fulfilled. In detail, heterosexual participants completed the Current Sexual Orientation Scale [52], the ATLG scale [47], Beck's Depression Inventory [53], RASS [51] and PSS [54]. People with same-sex attraction and bisexual participants completed the above-mentioned scales, the Internalized Homophobia Scale [55] and the Gay-Related Stressful Events Measure [56-62]. Non-parametric tests were performed to investigate the role of sexual orientation and other demographic characteristics in depression and suicidality. The choice of non-parametric tests was due to the non-normality of the variables above (see results section). Pearson's correlation coefficient was calculated to examine the relationship between depression and suicidality with gay-related stress. Finally, multiple linear regressions were performed for the total sample and the sample of LGB participants separately, involving possible predictors of sexual identity and gay-related stress.

## Ethical Considerations

The research deals with sensitive data of participants, and hence ethics were taken into consideration. In order to deal with those issues, first organizational consent was sought from the institutions from which participants were recruited. Managers from institutions were informed about the participants' anonymity of responses. Furthermore, they were informed about using the responses only for the purposes of the present research. Then, they gave consent about conducting the research in their organization. After ensuring access to the final sample of the organizations, potential participants received the informed consent letter and the questionnaire. They were informed about the use of their responses and were ensured that their data would not be publicized without their consent. They were also informed about the anonymity of their responses. After giving their consent, they fulfilled the questionnaire.

## Results

### Descriptive Statistics

This section presents the descriptive statistics for the

variables involved in the analysis. The descriptive statistics were calculated for the total sample and when categorized by the sexual identity of participants. Table 1 below includes the descriptive statistics:

The inspection of table 1 reveals that heterosexuals have both, on average (49,96) and median terms (45,50), more negative attitudes towards people with same-gender attraction than their non-heterosexual counterparts. However, since the maximum score on the scale is 100, almost half of the participants seem to have positive attitudes towards LGB. When it comes to mental health, non-heterosexual participants have more depression symptoms, higher suicidality risk and perceived stress than heterosexual participants. As regards internalized homophobia and gay-related stressful events, bisexual participants seem to experience lower levels of internalized homophobia, but higher levels of gay-related stressful events.

### Factors Affecting Depression and Suicidality

**Non-Parametric Test:** Both depression ( $p=0,001$ ) and suicidality ( $p<.001$ ) are not normally distributed according to the results of the Kolmogorov-Smirnov test. Hence, non-parametric tests were required to examine the effect of socio-demographic data and sexual orientation on depression

and suicidality. Two types of tests were performed. The independent median test checks the equality of medians across different groups and the Mann-Whitney U-test/Kruskal-Wallis test checks the similarity of distributions across different groups. To begin with gender, the independent median test ( $p=0,051$ ) and the Kruskal-Wallis test ( $p=0,073$ ) suggested no significant difference in depression among different gender groups. However, there is a significant difference according to both the independent median test ( $p=0,043$ ) and the Kruskal-Wallis test ( $p=0,019$ ) in the variable of suicidality. Based on the pairwise comparisons performed after the tests, median suicidality risk is significantly different between women and men ( $p=0,018$ ) and between women and transgender ( $p=0,036$ ). Specifically, women had a lower risk of suicidality than men and transgender. The distribution of suicidality is significantly different between women and transgender ( $p=0,007$ ) and between men and transgender ( $p=0,045$ ). Moving to the participants' educational background, both the independent median test ( $p=0,010$ ) and the Kruskal-Wallis test ( $p=0,008$ ) concluded that there is a significant difference in suicidality levels across different groups. However, again based on the independent median test ( $p=0,340$ ) and the Kruskal-Wallis test ( $p=0,200$ ) results, such a difference is not reported for depression levels. Pairwise comparisons for

Table 1: Descriptive Statistics.

Attitudes Towards Homosexual Women and Men							
Homosexuals		Bisexuals		Heterosexuals		Total sample	
Median	M (SD)	Median	M (SD)	Median	M (SD)	Median	M (SD)
30	31,28 (9,21)	30	36,36 (19,12)	45,5	49,96 (25,76)	32	39,79 (20,84)
Depression							
Homosexuals		Bisexuals		Heterosexuals		Total sample	
Median	M (SD)	Median	M (SD)	Median	M (SD)	Median	M (SD)
16	18,28 (10,80)	14	18,82 (9,35)	5	7,17 (5,86)	16	18,38 (10,49)
Suicidality							
Homosexuals		Bisexuals		Heterosexuals		Total sample	
Median	M (SD)	Median	M (SD)	Median	M (SD)	Median	M (SD)
23	23,19 (3,69)	25	25,09 (4,44)	20	20,67 (2,23)	23	23,52 (3,85)
Perceived Stress							
Homosexuals		Bisexuals		Heterosexuals		Total sample	
Median	M (SD)	Median	M (SD)	Median	M (SD)	Median	M (SD)
30	31,74 (7,61)	33	32,09 (8,89)	24	24,13 (6,13)	30,5	31,80 (7,77)
Internalized Homophobia							
Homosexuals		Bisexuals		Heterosexuals		Total sample	
Median	M (SD)	Median	M (SD)	Median	M (SD)	Median	M (SD)
127	138,83 (42,17)	113	130,73 (57,17)	-	-	126,5	137,44 (44,68)
Gay-Related Stressful Events							
Homosexuals		Bisexuals		Heterosexuals		Total sample	
Median	M (SD)	Median	M (SD)	Median	M (SD)	Median	M (SD)
6	5,19 (3,90)	7	6,36 (4,57)	-	-	6	5,39 (4,01)

differences in suicidality median levels showed a significant difference between the participants who have a university's degree and those who have a master's degree ( $p=0,002$ ) and between those who have a master's degree and those who have completed junior high school ( $p=0,049$ ). Specifically, participants with a master's degree have a higher suicidality risk than those with a university degree, but a lower suicidality risk than those who have completed junior high school. Moreover, there is a significant difference in the distribution of suicidality between Ph. D holders and those who have completed junior high school ( $p=0,024$ ), and between participants with a university degree and participants with a master's degree ( $p=0,005$ ). Accordingly, the distribution of suicidality is also significantly different between participants with a university's degree and those who have completed junior high school ( $p=0,013$ ), between those who have completed senior high school and participants with a master's degree ( $p=0,030$ ) and between those who have completed senior high school and junior high school ( $p=0,022$ ). Based on the results of independent median tests and Kruskal-Wallis tests, sexual orientation affects both depression and suicidality ( $p<.001$  in all cases). Pairwise comparisons showed that there is a significant difference in median levels of depression between heterosexuals and bisexuals ( $p<.001$ ) and between heterosexuals and people with same-sex attraction ( $p<.001$ ). The same applies to the pairwise comparisons performed after the Kruskal-Wallis test ( $p<.001$  in all cases). Individuals with same-sex attraction have the highest level of depression, followed by bisexuals.

Concerning suicidality, pairwise comparisons showed a significant difference in median levels between heterosexuals and bisexuals ( $p=0,007$ ) and between heterosexuals and people with same-sex attraction ( $p=0,005$ ). In addition, there is also a significant difference in the distribution of suicidality between heterosexuals and bisexuals ( $p<.001$ ) and

between heterosexuals and people with same-sex attraction ( $p=0,001$ ). When depression and suicidality levels were compared between the two groups of heterosexuals and LGB individuals, the independent median test showed a significant difference in medians for both variables ( $p<.001$  in both cases). Specifically, LGB individuals have higher depression and suicidality levels than heterosexuals. Mann-Whitney's U-test which tests for differences in distribution, showed a significant difference in the distribution for both depression and suicidality across the two sexual orientation groups ( $p<.001$  in both cases). Regarding the effect of nationality, the independent median tests' results suggested no significant difference in depression ( $p=0,578$ ) and suicidality ( $p=0,198$ ) levels. Kruskal-Wallis tests also concluded that nationality does not affect the distribution of depression ( $p=0,602$ ) and suicidality ( $p=0,072$ ). In the same vein, depression ( $p=0,141$ ) and suicidality ( $p=0,779$ ) were not affected by marital status according to the independent median test. The Kruskal-Wallis test corroborates the above-mentioned finding for depression ( $p=0,331$ ) and suicidality ( $p=0,883$ ). Accordingly, depression ( $p=0,853$ ) and suicidality ( $p=0,441$ ) were not affected by area of residency based on the independent median test. The Kruskal-Wallis test validates the above-mentioned finding for both depression ( $p=0,439$ ) and suicidality ( $p=0,633$ ). Finally, depression ( $p=0,076$ ) and suicidality ( $p=0,098$ ) were not affected by religious according to the independent median test. The Kruskal-Wallis test also did not find a significant difference for both depression ( $p=0,167$ ) and suicidality ( $p=0,070$ ).

**Correlations:** Pearson's correlation coefficient was calculated to study the relationship between depression, suicidality and the rest continuous variables, i.e. attitudes towards LGB, internalized homophobia, gay-related stress and age of participants. Beginning with age, there is a negative and significant correlation between age and depression ( $r=-0,300, p=0,001$ ). The correlation between age and suicidality is not significant ( $p=0,483$ ). Depression ( $r=-0,21, p=0,024$ ) and suicidality ( $r=-0,26, p=0,006$ ) are negatively related to attitudes, suggesting that higher levels of depression and suicidality are related to more positive attitudes towards LGB. There is positive correlation between depression ( $r=0,66, p<.001$ ) and suicidality ( $r=0,32, p=0,01$ ) with internalized homophobia. Finally, there is a positive correlation between depression and gay-related stress ( $r=0,54, p<.001$ ).

**Regressions:** The final step was to perform multiple linear regressions to assess the role of sexual orientation and gay-related stress in depression and suicidality. Regressions were performed for the total sample and the LGB participants separately. Internalized homophobia and gay-related stress were involved only in the regression for the LGB participants. Perceived stress was used as an explanatory variable in the regression for the total sample. Table 3 below presents the multiple linear regressions for the total sample:

Table 2: Correlations.

Correlations			
		Depression	Suicidality
ATLG	Pearson Correlation	-,213*	-,258**
	Sig. (2-tailed)	0,024	0,006
	N	112	112
Internalized homophobia	Pearson Correlation	,664**	,318*
	Sig. (2-tailed)	0	0,01
	N	64	64
Gay-related stress	Pearson Correlation	,538**	0,22
	Sig. (2-tailed)	0	0,081
	N	64	64

\*\*significant at 5% significance level \* significant at 10% significance level.

**Table 3:** Multiple linear regressions for the total sample.

	Depression				Suicidality			
	$\beta$	t	p	Adj. R <sup>2</sup>	$\beta$	t	p	Adj. R <sup>2</sup>
Constant term	14,423	1,256	0,212		28,237***	6,089	0,000	
Age	-0,148*	-1,773	0,080		0,002	0,056	0,955	
Gender <sub>woman</sub>	-3,136**	-2,205	0,030		-0,520	-0,906	0,367	
Gender <sub>transgender</sub>	-4,968	-1,236	0,220		-0,082	-0,051	0,960	
Nationality <sub>Greek</sub>	-9,820	-1,231	0,222		-9,598***	-2,979	0,004	
Nationality <sub>Albanian</sub>	-7,676	-0,928	0,356		-7,713**	-2,308	0,023	
Marital Status <sub>not married</sub>	-1,586	-0,722	0,472		-0,333	-0,375	0,709	
Marital Status <sub>married</sub>	1,854	0,873	0,385		1,225	1,428	0,157	
Educational Level <sub>junior high school</sub>	4,627	0,663	0,509		5,153*	1,827	0,071	
Educational Level <sub>senior high school</sub>	1,420	0,407	0,685		0,638	0,453	0,651	
Educational Level <sub>university</sub>	0,689	0,202	0,841		0,407	0,295	0,769	
Educational Level <sub>master</sub>	2,134	0,600	0,550		2,327	1,621	0,109	
Residency <sub>village</sub>	-2,736	-0,929	0,355		-1,075	-0,904	0,368	
Residency <sub>small city</sub>	-0,040	-0,025	0,980		0,403	0,631	0,530	
Religion <sub>Christian</sub>	-8,513*	-1,798	0,076		-0,804	-0,421	0,675	
Religion <sub>Protestant</sub>	-6,065	-0,765	0,446		2,202	0,688	0,494	
Religion <sub>Atheist</sub>	-7,492	-1,564	0,121		-0,847	-0,438	0,662	
Religion <sub>Not religious</sub>	-1,233	-0,182	0,856		6,684**	2,440	0,017	
Religion <sub>Agnostic</sub>	-7,438	-0,895	0,373		-0,095	-0,028	0,977	
Sexual Identity <sub>homosexual</sub>	-0,460	-0,179	0,858		-0,291	-0,281	0,779	
Sexual Identity <sub>heterosexual</sub>	-4,446	-1,659	0,101		-1,100	-1,016	0,312	
ATLG	0,027	0,750	0,455		-0,025*	-1,728	0,087	
Perceived Stress	0,838***	8,457	0,000	0,634	0,162***	4,051	0,000	0,473

\*\*\* significant at 1% significance level \*\*significant at 5% significance level \* significant at 10% significance level

The multiple linear regression with depression as a dependent variable is overall statistically significant [F(22,110) = 9,67,  $p < .001$ ]. The model explains 64% of the variability of depression. Women ( $\beta = -3,14$ ,  $p = 0,040$ ), older participants ( $\beta = -0,15$ ,  $p = 0,080$ ) and Christian Orthodox participants ( $\beta = -8,51$ ,  $p = 0,076$ ) seem to have lower depression levels. Higher perceived stress levels are associated with higher depression levels ( $\beta = 0,84$ ,  $p < .001$ ). The regression with suicidality as a dependent variable is also overall statistically significant [F(22,110) = 5,49,  $p < .001$ ], and the model explains 47% of the variability of suicidality. Greek ( $\beta = -9,59$ ,  $p = 0,004$ ) and Albanian participants ( $\beta = -7,71$ ,  $p = 0,023$ ) have a lower risk of suicide. Furthermore, participants who have completed junior high school ( $\beta = 5,15$ ,  $p = 0,071$ ) and not religious participants ( $\beta = 6,68$ ,  $p = 0,017$ ) have a higher risk of suicide. More negative attitudes towards LGB are related to a lower suicide risk ( $\beta = -0,025$ ,  $p = 0,087$ ), while higher perceived stress levels also indicate a higher suicide risk ( $\beta = 0,16$ ,  $p < .001$ ). The table below involves the regressions for the LGB sample:

The regression with depression as a dependent variable is overall statistically significant [F(22,63) = 6,14,  $p < .001$ ], and the model explains 64% of the variability of depression. Women ( $\beta = -7,06$ ,  $p = 0,020$ ), Christian Orthodox ( $\beta = -12,26$ ,  $p = 0,095$ ) and atheists ( $\beta = -11,77$ ,  $p = 0,096$ ) have lower depression levels. Participants in a relationship have higher depression levels ( $\beta = 9,99$ ,  $p = 0,015$ ). Higher internalized homophobia is related to higher depression ( $\beta = 0,11$ ,  $p = 0,013$ ), while the same applies to gay-related stress ( $\beta = 1,05$ ,  $p = 0,014$ ). As regards the regression with dependent variable suicidality, it is overall statistically significant [F(22,63) = 3,69,  $p < .001$ ]. The model explains 48% of suicidality's variability. Participants in a relationship ( $\beta = 4,21$ ,  $p = 0,019$ ), those who have completed junior high school ( $\beta = 9,15$ ,  $p = 0,015$ ) and who have a master's degree ( $\beta = 4,40$ ,  $p = 0,025$ ) have a higher risk of suicide. Higher internalized homophobia is also related to a higher risk of suicide ( $\beta = 0,06$ ,  $p = 0,001$ ).

**Table 4:** Multiple linear regressions for the sample of LGB.

	Depression				Suicidality			
	$\beta$	t	p	Adj. R <sup>2</sup>	B	t	p	Adj. R <sup>2</sup>
Constant term	20,955	1,148	0,258		23,854***	2,965	0,005	
Gender <sub>woman</sub>	-7,063**	-2,415	0,020		0,283	0,219	0,828	
Gender <sub>transgender</sub>	-4,816	-0,645	0,522		4,606	1,400	0,169	
Nationality <sub>Greek</sub>	-14,216	-1,078	0,287		-7,405	-1,273	0,210	
Nationality <sub>Albanian</sub>	-20,132	-1,622	0,112		-7,411	-1,355	0,183	
Marital Status <sub>not married</sub>	2,730	0,746	0,460		0,632	0,392	0,697	
Marital Status <sub>married</sub>	9,991**	2,546	0,015		4,210**	2,434	0,019	
Educational Level <sub>junior high school</sub>	10,507	1,283	0,207		9,148**	2,535	0,015	
Educational Level <sub>senior high school</sub>	1,282	0,283	0,779		1,012	0,506	0,615	
Educational Level <sub>university</sub>	2,044	0,453	0,653		1,472	0,740	0,463	
Educational Level <sub>master</sub>	2,182	0,509	0,613		4,396**	2,327	0,025	
Residency <sub>village</sub>	1,972	0,436	0,665		-0,114	-0,057	0,955	
Residency <sub>small city</sub>	-0,420	-0,172	0,864		-0,351	-0,327	0,745	
Religion <sub>Christian</sub>	-12,263*	-1,711	0,095		-0,838	-0,265	0,792	
Religion <sub>Protestant</sub>	-3,920	-0,406	0,687		3,975	0,933	0,356	
Religion <sub>Atheist</sub>	-11,772*	-1,706	0,096		-1,312	-0,431	0,668	
Religion <sub>Not religious</sub>	-1,689	-0,185	0,854		4,780	1,187	0,242	
Religion <sub>Agnostic</sub>	-11,791	-1,139	0,261		-1,395	-0,306	0,762	
Sexual Identity <sub>homosexual</sub>	0,020	0,006	0,995		0,454	0,325	0,746	
Age	-0,121	-0,954	0,346		-0,065	-1,165	0,251	
ATLG	0,114	0,795	0,431		-0,077	-1,216	0,231	
Internalized Homophobia	0,105**	2,612	0,013		0,063***	3,592	0,001	
Gay-Related Stress	1,049**	2,578	0,014	0,642	-0,070	-0,388	0,700	0,484

\*\*\* significant at 1% significance level \*\*significant at 5% significance level \* significant at 10% significance level.

## Discussion

The results from the empirical analysis and specifically from the non-parametric tests showed that sexual orientation affects both depression and suicidality levels. Participants with same-gender attraction have the highest median depression and suicidality levels. The latter is consistent with previous findings that suggest that sexual minorities are more likely to develop mental disorders and depression compared to heterosexuals [12-16] and the studies which found that suicidal ideation and suicide attempts are more frequent in sexual minorities [3,18,19,13]. The findings contrast those that concluded that bisexuals experience higher depression [13,25-30] and suicide risk levels compared to both people with same-sex attraction and heterosexuals [13,28,31-36]. The findings of the empirical research are in line with the strand of literature that supports that people with same-sex attraction are at a higher risk of depression [37,38,25,28,29,30] and have more suicidal thoughts than heterosexuals [28,31-36]. The results from the regressions for the total sample did not find sexual orientation as a significant predictor of

depression and suicidality. However, in the LGB sample, gay-related stress seems to increase the risk of depression and suicide, corroborating the few previous studies that examined the role of gay-related stress in depression [42-45] and suicidality [46]. As previous papers indicated, the involvement of demographic characteristics in the models led to the conclusion that different groups are subject to different discrimination levels and hence experience higher levels of depression and suicide risk [23,24].

## Conclusion

The non-parametric tests showed that several socio-demographic variables affect depression and suicidality levels. Those are gender, educational background and sexual orientation. People with same-gender attraction reported the highest levels of depression and suicidality, followed by bisexuals. Based on the results from correlations, older participants have lower depression levels. Furthermore, higher depression and suicidality are related to more positive attitudes towards LGB. In addition, higher internalized

homophobia levels are linked to higher depression levels and suicide risk. Finally, gay-related stress is associated with higher levels of depression but not suicidality. The results from the multiple linear regressions for the total sample showed that women, older and Christian Orthodox participants have lower depression levels. Higher perceived stress levels are associated with higher depression levels. Greek and Albanian participants have a lower risk of suicide. Additionally, participants who have completed junior high school and not religious participants have a higher risk of suicide. More negative attitudes towards LGB are related to lower suicide risk, while higher perceived stress levels also indicate higher suicide risk. Women, Christian Orthodox and atheists have lower depression levels for the LGB sample. Participants in a relationship have higher depression levels. Higher internalized homophobia is related to higher depression, while the same applies to gay-related stress. Participants in a relationship, those who have completed junior high school and those who have a master's degree, have a higher risk of suicide. Higher internalized homophobia levels are also related to a higher risk of suicide. The most important limitation of the research is that questionnaires were only distributed online. Hence, only those willing to participate in the research were included in the final sample. The latter led to a convenient sample that did not represent the population under examination. Therefore, the results cannot be generalized to the Greek population. Furthermore, although gay-related stress was found here to be a significant predictor of depression of LGB, the reason this relationship is observed is not clear. Perhaps semi-structured interviews would have helped in examining this relationship in depth. It would be interesting in the future to compare the predictors of depression and suicidality separately for heterosexuals and separately for the LGB participants. Such research could also assess the role of sexual orientation and sexual orientation-related stress in depression and suicidality. Additionally, mixed research can assist in understanding how gay-related stress is associated with depression and suicidality. However, as few types of research exist that involve the role of gay-related stress, more research is needed in this area in Greece.

## Declaration

Ethics approval and consent to participate,  
Consent for publication,  
Availability of data and materials

## Non Declaration

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## References

1. Grzanka P, Zeiders K, Miles J. (2016). Beyond “born this way?” reconsidering sexual orientation beliefs and attitudes. *Journal of Counseling Psychology* 63 (2016): 67-75.
2. Brotto L, Yule M. Asexuality: Sexual orientation, paraphilia, sexual dysfunction, or none of the above? *Archives of Sexual Behavior* 46 (2017): 619-627.
3. Cochran S, Björkenstam C, Mays V. Sexual orientation differences in functional limitations, disability, and mental health services use: Results from the 2013–2014 National Health Interview Survey. *Journal of Consulting and Clinical Psychology* 85 (2017): 1111- 1121.
4. Van Anders S. Beyond sexual orientation: Integrating gender/sex and diverse sexualities via sexual configurations theory. *Archives of Sexual Behavior* 44 (2015): 1177-1213.
5. Bosse J, Chiodo L. It is complicated: Gender and sexual orientation identity in LGBTQ youth. *Journal of Clinical Nursing* 25 (2016): 3665-3675.
6. Luoto S, Krams I, Rantala M. Response to commentaries: life history evolution, causal mechanisms, and female sexual orientation. *Archives of sexual behavior* 48 (2019): 1335- 1347.
7. Bogaert A, Skorska M. A short review of biological research on the development of sexual orientation. *Hormones and behavior* 119 (2020): 104659.
8. Diamond L, Rosky C. Scrutinizing immutability: Research on sexual orientation and US legal advocacy for sexual minorities. *The Journal of Sex Research* 53 (2016): 363-391.
9. Balthazart J. Fraternal birth order effect on sexual orientation explained. *Proceedings of the National Academy of Sciences* 115 (2018): 234-236.
10. LeVay S. *Gay, straight, and the reason why: The science of sexual orientation*. Oxford University Press (2016).
11. Sumontha J, Farr R, Patterson C. Children's gender development: Associations with parental sexual orientation, division of labor, and gender ideology. *Psychology of Sexual Orientation and Gender Diversity* 4 (2017): 438-450.
12. Herek, G. M. Hate Crimes and Stigma-Related Experiences among Sexual Minority Adults in the United States. *Journal of Interpersonal Violence* 24 (2009): 54-74.
13. Nam B, Jun HJ, Fedina L, et al. Sexual orientation and mental health among adults in four U.S. cities. *Psychiatry Research* 273 (2019): 134-140.
14. King M, Semlyen J, Tai SS, et al. A systematic review of



- mental disorder, suicide, and deliberate self-harm in lesbian, gay and bisexual people. *BMC Psychiatry* 8 (2008).
15. Bostwick WB, Boyd CJ, Hughes TL, et al. Dimensions of Sexual Orientation and the Prevalence of Mood and Anxiety Disorders in the United States. *American Journal of Public Health* 100 (2010): 468-475.
  16. Flentje A, Leon A, Carrico A, et al. Mental and Physical Health among Homeless Sexual and Gender Minorities in a Major Urban US City. *Journal of Urban Health* 93 (2016): 997-1009.
  17. Conron KJ, Mimiaga MJ, Landers SJ. (2010). A Population-Based Study of Sexual Orientation Identity and Gender Differences in Adult Health. *American Journal of Public Health* 100 (2010): 1953-1960.
  18. Fergusson DM, Horwood LJ, Ridder EM, et al. Sexual orientation and mental health in a birth cohort of young adults. *Psychological Medicine* 35 (2005): 971-981.
  19. Herrell R, Goldberg J, True WR, et al. (1999). Sexual Orientation and Suicidality. *Archives of General Psychiatry* 56 (1999): 867.
  20. Brooks VR. *Minority Stress and Lesbian Women*. Lexington Books, Lexington, MA (1981).
  21. Meyer IH. *Minority Stress and Mental Health in Gay Men*. *Journal of Health and Social Behavior* 36 (1995): 38.
  22. Meyer IH. Prejudice, social stress, and mental health in lesbian, gay, and bisexual populations: Conceptual issues and research evidence. *Psychological Bulletin* 129 (2003): 674-697.
  23. Roscigno VJ, Garcia LM, Bobbitt-Zeher D. Social Closure and Processes of Race/Sex Employment Discrimination. *The ANNALS of the American Academy of Political and Social Science* 609 (2007): 16-48.
  24. McGuire TG, Ayanian JZ, Ford DE, et al. Testing for Statistical Discrimination by Race/Ethnicity in Panel Data for Depression Treatment in Primary Care. *Health Services Research* 43 (2008): 531-551.
  25. Krueger EA, Meyer IH, Upchurch DM. Sexual Orientation Group Differences in Perceived Stress and Depressive Symptoms among Young Adults in the United States. *LGBT Health* 5 (2018): 242-249.
  26. Chaudhry AB, Reisner SL. Disparities by Sexual Orientation Persist for Major Depressive Episode and Substance Abuse or Dependence: Findings from a National Probability Study of Adults in the United States. *LGBT Health* 6 (2019): 261-266.
  27. Rimes KA, Ion D, Wingrove J, et al. (2019). Sexual orientation differences in psychological treatment outcomes for depression and anxiety: National cohort study. *Journal of Consulting and Clinical Psychology* 87 (2019): 577-589.
  28. Spittlehouse JK, Boden JM, Horwood LJ. Sexual orientation and mental health over the life course in a birth cohort. *Psychological Medicine* 50 (2019): 1348-1355.
  29. Argyriou A, Goldsmith KA, Tsokos A, et al. Psychosocial mediators of the relations between sexual orientation and depressive symptoms in a longitudinal sample of young people. *Psychology of Sexual Orientation and Gender Diversity* 7 (2020): 142-153.
  30. Nelson CL, Ansel R. Does Sexual Orientation Relate to Health and Well-Being? Analysis of Adults 50+ Years of Age. *The Gerontologist* 60 (2020): 1282-1290.
  31. Hirsch JK, Cohn TJ, Rowe CA, et al. Minority Sexual Orientation, Gender Identity Status and Suicidal Behavior: Serial Indirect Effects of Hope, Hopelessness and Depressive Symptoms. *International Journal of Mental Health and Addiction* 15 (2017): 260-270.
  32. Miranda-Mendizábal A, Castellví P, Parés-Badell O, et al. Sexual orientation and suicidal behaviour in adolescents and young adults: systematic review and meta-analysis. *British Journal of Psychiatry* 211 (2017): 77-87.
  33. Salway T, Plöderl M, Liu J, et al. Effects of Multiple Forms of Information Bias on Estimated Prevalence of Suicide Attempts According to Sexual Orientation: An Application of a Bayesian Misclassification Correction Method to Data from a Systematic Review. *American Journal of Epidemiology* 188 (2018): 239-249.
  34. Nystedt T, Rosvall M, Lindström M. Sexual orientation, suicide ideation and suicide attempt: A population-based study. *Psychiatry Research* 275(2019): 359-365.
  35. Bränström R, van der Star A, Pachankis JE. Untethered lives: barriers to societal integration as predictors of the sexual orientation disparity in suicidality. *Social Psychiatry and Psychiatric Epidemiology* 55 (2020): 89-99.
  36. Rasmussen S, Cramer RJ, McFadden C, et al. Sexual Orientation and the Integrated Motivational-Volitional Model of Suicidal Behavior: Results from a Cross-Sectional Study of Young Adults in the United Kingdom. *Archives of Suicide Research* 25 (2021): 439-457.
  37. Petterson LJ, VanderLaan DP, Vasey PL. (2016). Sex, Sexual Orientation, Gender Atypicality, and Indicators of Depression and Anxiety in Childhood and Adulthood. *Archives of Sexual Behavior* 46 (2016): 1383-1392.
  38. Mitrani VB, de Santis JP, McCabe BE, et al. The Impact of Parental Reaction to Sexual Orientation on Depressive Symptoms and Sexual Risk Behavior among Hispanic Men Who Have Sex with Men. *Archives of Psychiatric Nursing* 31 (2017): 352-358.

39. Bränström R. Minority stress factors as mediators of sexual orientation disparities in mental health treatment: a longitudinal population-based study. *Journal of Epidemiology and Community Health* 71 (2017): 446-452.
40. Tate DP, Patterson CJ. Sexual Orientation, Relationships with Parents, Stress, and Depressive Symptoms among Adults. *Journal of GLBT Family Studies* 15 (2019): 256-271.
41. Blossnich JR, Henderson ER, Coulter RWS, et al. Sexual Orientation Change Efforts, Adverse Childhood Experiences, and Suicide Ideation and Attempt among Sexual Minority Adults, United States, 2016–2018. *American Journal of Public Health*, 110 (2020): 1024-1030.
42. Randall AK, Tao C, Totenhagen CJ, et al. Associations between Sexual Orientation Discrimination and Depression among Same-Sex Couples: Moderating Effects of Dyadic Coping. *Journal of Couple & Relationship Therapy* 16 (2016): 325-345.
43. Charbonnier E, Dumas F, Chesterman A, et al. Characteristics of Stress and Suicidal Ideation in the Disclosure of Sexual Orientation among Young French LGB Adults. *International Journal of Environmental Research and Public Health* 15 (2018): 290.
44. Hall WJ. Psychosocial Risk and Protective Factors for Depression among Lesbian, Gay, Bisexual, and Queer Youth: A Systematic Review. *Journal of Homosexuality* 65 (2018): 263-316.
45. Kittiteerasack P, Matthews AK, Steffen A, et al. The influence of minority stress on indicators of suicidality among lesbian, gay, bisexual and transgender adults in Thailand. *Journal of Psychiatric and Mental Health Nursing* (2020).
46. Cramer RJ, Wright S, Long MM, et al. On hate crime victimization: Rates, types, and links with suicide risk among sexual orientation minority special interest group members. *Journal of Trauma & Dissociation* 19 (2018): 476-489.
47. Grigoropoulos I, Papacharitou S, Moraitou M. Adaptation of the scale of attitudes towards lesbian and gay men in Greek language (In Greek). *Archives of Greek Medicine* 27 (2010): 787-792.
48. Bumberry W, Oliver J, McClure J. Validation of the Beck Depression Inventory in a university population using psychiatric estimate as the criterion. *Journal of Consulting and Clinical Psychology* 46 (1978): 150-155.
49. Frazier C, Mintz L, Mobley M. (2005). A Multidimensional Look at Religious Involvement and Psychological Well-Being among Urban Elderly African Americans. *Journal of Counseling Psychology* 52 (2005): 583-590.
50. Smider N, Essex M, Ryff C. Adaptation to community relocation: The interactive influence of psychological resources and contextual factors. *Psychology and aging* 11 (1996): 362-372.
51. Fountoulakis K, Pantoula E, Siamouli M, et al. Development of the Risk Assessment Suicidality Scale (RASS): a population-based study. *Journal of affective disorders* 138 (2012): 449-457.
52. Rosario M, Schrimshaw E, Hunter J. Ethnic/racial differences in the coming-out process of lesbian, gay, and bisexual youths: A comparison of sexual identity development over time. *Cultural Diversity and Ethnic Minority Psychology* 10 (2004): 215-228.
53. Dozois D, Covin R. The Beck depression inventory-II (BDI-II), Beck hopelessness scale (BHS), and Beck scale for suicide ideation (BSS). *Comprehensive handbook of psychological assessment 2* (2004): 50-69.
54. Cohen S, Kamarck T, Mermelstein R. Perceived stress scale. *Measuring stress: A guide for health and social scientists*. New York: Oxford University Press (1994).
55. Szymanski D, Chung Y. Internalized homophobia in lesbians. *Journal of Lesbian Studies* 7 (2002): 115-125.
56. Rosario M, Schrimshaw E, Hunter J. Ethnic/racial differences in the coming-out process of lesbian, gay, and bisexual youths: A comparison of sexual identity development over time. *Cultural Diversity and Ethnic Minority Psychology* 10 (2004): 215-228.
57. Caplan Z. The Problem with Square Pegs: Sexual Orientation Concordance as a Predictor of Depressive Symptoms. *Society and Mental Health* 7 (2017): 105-120.
58. Herek G. Beyond "homophobia": A social psychological perspective on attitudes toward lesbians and gay men. *Journal of homosexuality* 10 (1984): 1-21.
59. Herek, G. Heterosexuals' attitudes toward bisexual men and women in the United States. *Journal of sex research* 39 (2002): 264-274.
60. Lee E. Review of the psychometric evidence of the perceived stress scale. *Asian nursing research* 6 (2012): 121-127.
61. Rosario M, Meyer-Bahlburg H, Hunter J, et al. The psychosexual development of urban lesbian, gay, and bisexual youths. *Journal of Sex Research* 33 (1996): 113-126.
62. Rosario M, Hunter J, Gwadz, M. Exploration of substance use among lesbian, gay, and bisexual youth: Prevalence and correlates. *Journal of Adolescent Research* 12 (1997): 454-476.