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Psychological factors and the use of psychoactive substances in relation to sexual orientation: A study on Israeli young adults

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Abstract
In the context of sexual minorities and the distress they may experience, recent years have witnessed a trend emphasizing the idea that protective factors may curb risk behaviors, while stressing that not all sexual minorities do experience distress. However, protective factors have been studied less frequently than have risk factors. To the extent that protective factors are identified among those at risk for psychological distress and risk behaviors, strategies can seek to address risk by enhancing these protective factors. The current study aimed to expand the knowledge in this area by simultaneously examining protective and risk factors as well as by examining the association between sexual orientation, psychological distress, sense of coherence (SOC), social support (e.g., parental and peer relationships), and alcohol and cannabis use among Israeli young adults. A self-reported questionnaire was distributed to 496 young adults: 254 heterosexual participants and 242 homosexual participants. As hypothesized, participants with a same-sex orientation reported higher psychological distress, lower SOC, a weaker relationship with their parents, and a greater use of alcohol and cannabis than did heterosexual participants. Regression analyses indicated that low SOC, low family support, and low peer support predicted higher psychological distress. However, sexual orientation was not found to predict distress levels among young adults in Israel. Similarly, no associations were found between alcohol and cannabis use and psychological distress. The results are discussed within the framework of resilience factors that can serve as a barrier to distress and to the use of psychoactive substances among young adults in general and sexual minorities in particular.

Keywords Sexual orientation · Young adults · SOC · Distress · Social support · Alcohol and cannabis use

Introduction

There are significant differences around the world when it comes to the rights of sexual minorities. For example, whereas there are countries that criminalize consensual same-sex conduct or gender expression (e.g., Afghanistan, Egypt), in other countries same-sex marriage and civil unions are legal (e.g., Argentina, Austria) (for more details see: Human Rights Watch, 2021). Generally, in Western countries sexual minorities have benefitted from various nondiscriminatory laws and regulations as well as services aimed at meeting their needs. Yet in all regions of the world, there are acts of violence and discrimination committed against individuals because of their sexual orientation or gender identity. Sexual minorities are disadvantaged and continue to contend with perceived stigmas and experiences of discrimination (Lyons et al., 2014).

Israel in this regard is similar to the rest of the Western world (Shenkman et al., 2020). Israel boasts a relatively open sexual minority community protected by nondiscrimination legislation (Shechory Bitton & Jaeger, 2020; Shilo & Savaya, 2011). Even so, sexual minorities are still considered more vulnerable to psychological distress (Bouris et al., 2010; Shenkman et al., 2020), and are still subjected to mistreatment as a result of their sexual orientation (The association for LGBT in Israel, 2020). Although Israel is considered a Western society, Israeli society contains conservative elements that make it difficult for sexual minorities to come out (Eick et al., 2016). For Jews in Israel, the reliance on Biblical prohibitions of same-sex relations (Slomowitz & Feit, 2015) bolsters stigmas toward homosexuals (Shenkman & Shmotkin, 2013). In addition, unlike their counterparts in most Western countries, Israeli

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Jewish young adults (men and women from the age of 18) must participate in mandatory military service where dominant masculine identity tropes are enforced. For sexual minorities, military service is a common stressor mainly because the army idealizes hegemonic masculinity (e.g., Shechory-Bitton & Jaeger, 2020; Shulman et al., 2006). As a result, they may be apprehensive about exposing their sexual orientation in the army, and delay coming out until post-military civilian life (Shilo & Pizmony-Levy, 2011).

To date, the bulk of the empirical research on sexual minorities has focused on various negative outcomes (e.g., suicide attempts, substance abuse, considerable psychological distress, and so on) resulting from prevailing discriminatory practices and attitudes toward them. That said, recent years have witnessed a trend emphasizing the idea that protective factors may curb risk behaviors, while stressing that not all sexual minorities experience distress (Lyons et al., 2014; Sandfort et al., 2009). The empirical research on this front is, however, still scarce, and protective factors are studied less frequently than are risk factors (Kronström et al., 2021). To the extent that protective factors are identified among those at risk for psychological distress and risk behaviors (e.g., psychoactive substance use), strategies can seek to address risk by enhancing these protective factors. Doing so is crucial, especially for young adults, given the sensitive and significant developmental stage they inhabit occupy (Arnett, 2003; Salvatore et al., 2012). Indeed, at this stage, young adults must handle the complex tasks of self-definition and self-acknowledgement of their sexual orientation, as well as reinforce and further establish meaningful social ties (Cass, 1979; Troiden, 1993). These tasks are even more difficult for lesbian and gay (LG) adolescents who are more exposed than are heterosexual youth to stressors originating from harassment, exclusion, negative labeling, and homophobic expressions (Mohr, 2008; Pachankis & Goldfried, 2010).

In the current study we aimed to expand the knowledge in this area by simultaneously examining protective and risk factors among Israeli Jewish young adults (aged 18–25) who identify as LG. The control group included young adults who defined themselves as heterosexual. We focused on individual and environmental variables, as we present below.

The salutogenic model developed by Antonovsky (1987) focuses to a great extent on a construct termed sense of coherence (SOC), which reflects the coping ability of people to deal with everyday life stressors. In this model, it is people's strengths and their capacity to successfully cope with tensions from various life stresses that are highlighted (Chen et al., 2020; Kotowska et al., 2020; Wilchek-Aviad & Ne'eman-Haviv, 2016). Sense of coherence is recognized as a key concept for understanding health as well as health behavior (Antonovsky, 1987, 1993; Eriksson, 2017; Kotowska et al., 2020) and, as such, SOC is one of the protective factors that we examined in the current study.

Sense of coherence is part of one's personal disposition, defined as an orientation that helps people perceive life as comprehensive, manageable, and meaningful. Higher SOC is purported to have a salutogenic effect as it promotes a sense of control and optimism, and therefore minimizes cognitive and emotional stress resulting from life challenges and protects one's physical and mental health (Antonovsky, 1987, 1993). Generally, SOC has been negatively associated with stress. Individuals with a stronger SOC have reported better mental health (e.g., Eriksson & Lindstrom, 2007; Moksnes et al., 2012) and a better ability to cope with daily stressors (e.g., Von Bothmer & Fridlund, 2003).

Most studies, however, have focused on SOC in the general population, and research on SOC among sexual minorities has been limited (Mahon et al., 2021). In fact, we found only three studies that related to this issue directly. One compared groups of women by sexual orientation and found that SOC levels were higher in women who were strictly heterosexual (Kotowska et al., 2020). The second examined SOC as a protective factor for psychological distress among gay men, and found that distress was significantly lower among those with stronger SOC and that SOC served as a protective factor for the mental health of gay men (Lyons et al., 2014). The third study (Mahon et al., 2021) examined a set of determinants of social anxiety among sexual minorities, including SOC. The study emphasized the potential ways that SOC might assist in navigating the challenges that arise from belonging to a stigmatized and marginalized population, such as a sexual minority.

In regard to young people, using the SOC lens to study their overall health during the transition-to-adulthood phase may be instructive. Sense of coherence is a construct that has been shown to be related to health in terms of mental health, family relationships (for a review, see Länsimies et al., 2017), and different health behavior risks (e.g., substance abuse). Good parent–child relationships and parental support play a significant role in explaining SOC and are pivotal in reducing levels of substance use in general and alcohol use in particular (for a review, see Ryan et al., 2010; Carver et al., 2017). Thus, parental and social support, as well as the use of psychoactive substances, were also examined in the current study.

A systematic literature review focusing on young adults showed that, overall, parents can buffer their child from sexual orientation-related stressors, and can be an important influence on the health and well-being of LG youth (Bouris et al., 2010). Contrary to parental support, which may facilitate a better experience for LG youth during emerging adulthood (Soler et al., 2018), familial rejection and lack of acceptance have been found to lead to high levels of psychological distress, depression, and suicide attempts

(D'Augelli, 2006; Ryan et al., 2009; Shenkman & Shmotkin, 2013). Similar findings have emphasized the significance of the peer group as a support factor that assists in the process of consolidating identity and sexual orientation as well as maintaining mental well-being (Diamond and Dubé, 2002; Floyd & Stein, 2002; Kerr et al., 2006). Many adolescents report coming out to their parents at a relatively late stage (LaSala, 2007), and thus having peers to confide in along the way is critical. In addition, peers can play an important role in the lives of LG youth given the challenges they may face at home (i.e., due to negative family reactions or intolerance of their sexual identity) (Doty et al., 2010; Ryan et al., 2009).

In the current study, the use of psychoactive substances – a risk factor – was defined as the use of alcohol and cannabis. Substance use is perceived as one of the most significant risk factors for youth and for young adults in general (Walsh et al., 2021), and particularly for individuals with a same-sex sexual orientation. A prominent explanation for substance use among sexual minorities is the minority stress hypothesis, which posits that minority-specific stressors, including stigma, feelings of discrimination, and rejection, put them at risk for negative outcomes (Baiocco et al., 2010; Bränström & Pachankis, 2018; Lea et al., 2014). However, it should be noted that a few studies have reported a shared set of values among LG individuals, including "normalizing" substance use (Hughes et al., 2016) and seeing it as a normative behavior in gay-identified venues (e.g., pubs, dance clubs, etc.) (Baiocco et al., 2010; Harawa et al., 2008).

Young adults with a same-sex orientation, more than heterosexual young adults, commonly report higher rates of substance use (e.g., Bonny-Noach & Shechory-Bitton, 2020; Graham et al., 2011; Kerr et al., 2014; Mor et al., 2015). A high prevalence has been found mainly in the context of cannabis use and binge drinking (i.e., heavy episodic drinking, or HED, defined as five or more units of alcohol during one event; Substance Abuse Mental Health Service Administration, 2014). A heightened risk of alcohol use and HED among sexual minority adolescents has already been found in several major studies focusing on alcohol outcomes (e.g., Caputi et al., 2018; Dermody et al., 2016).

Based on the literature review, we formulated two primary hypotheses: (1) LG young adults, in comparison with heterosexual young adults, will exhibit lower levels of SOC and higher levels of distress, and will report higher rates of problematic alcohol consumption and cannabis use, and (2) Belonging to the LG community, having higher levels of alcohol and cannabis use, and having lower levels of SOC, parental support, and peer support will predict higher levels of psychological distress. We specifically aimed to simultaneously examine protective and risk factors and sexual orientation as predictors of psychological distress. To the best of our knowledge, no studies have specifically examined the links between all of the variables together, as we did in the current study. None of the studies we found compared male and female heterosexuals to male and female homosexuals.

In addition, we also explored differences between the genders, as previous studies have found higher rates of problematic alcohol consumption and cannabis use among males than among females (Korn and Bonny-Noach, 2018; Mennis & Mason, 2012). Studies have also shown higher levels of SOC among young women than among young men (e.g., Moksnes et al., 2012).

Method

Participants

The sample included 496 Israeli young adults. Of them, 254 (56.2%) self-identified as heterosexual: 126 (25.4%) males and 128 (25.8%) females. The remaining 242 self-identified as homosexual: 131 (26.4%) males and 111 (22.4%) females. The mean age of all the participants was $M = 23.14$ ($SD = 2.48$). The heterosexual female participants were the youngest, $F(3, 492) = 9.42$, $p < 0.001$, $\eta 2 = 0.054$, yet all of the participants were in their twenties. In terms of demographics, 96% of the participants were Jewish and most were Israeli-born (89%), with others being from the Former Soviet Union/FSU (6%) and Ethiopia (3%). Most of the respondents were single (77.7%), with no children (98%). Most had a high school (69.7%) or higher education (30.3%). As for sexual orientation disclosure (SOD), 59.9% of the participants answered that everyone who knew them was aware of their sexual orientation, and 40.1% reported that only some of their acquaintances were aware of their sexual orientation. For the latter category, the breakdown was as follows in terms of who was aware of their sexual orientation – 6.1% parents and family, 21.9% friends, and 10.3% "others" (without specifying their identities) – and four respondents (1.7%) did not answer this question. An examination of the differences between participants who revealed their sexual orientation to everyone in their social milieu as compared to those who revealed their orientation only to some of their acquaintances yielded no differences in the research variables (alcohol and cannabis use, SOC, psychological distress, and relationships with parents and friends; $p = 0.079$ to $p = 0.644$).

Measurements

Sociodemographic Questionnaire A sociodemographic questionnaire was used to obtain data concerning gender, age, marital status, education, sexual orientation *(*"How would you define your sexual orientation?") and sexual orientation disclosure (SOD). Sexual orientation disclosure was measured by asking participants whether they had disclosed

their feelings of same-sex attraction to specific people in their social environment, and the choices included: everyone they knew, parents, siblings, other family members, friends, and others (see also Soler et al., 2018). Participants had the option of responding yes/no to each category. A score was calculated by dividing the number of categories in which disclosure had occurred by the total number of possible categories.

Alcohol and Cannabis Use To assess alcohol and cannabis use, questions were adapted from the 2009 National Epidemiological Survey carried out by the Israel Anti-Drug Authority (Ezrachi et al., 2009). The participants were asked to answer two yes/no questions: if they had ever used hard alcohol/spirits and if they had ever used cannabis. In addition, HED was measured via one item: "In the past 30 days, how many times did you consume five or more alcoholic drinks within several hours?" (1: never; 2: once; 3: twice; 4: three times; 5: four or more times). Cannabis use in the past 30 days was measured via one item: "In the past 30 days, how many times did you use cannabis? (1: never; 2: once or twice; 3: three-five times; 4: six–nine times; 5: more than 10 times).

In line with previous literature showing that substance use even once a month is related to additional risks for youth (De Looze et al., 2014; Walsh et al., 2021), a dichotomous variable was created: (1) once or more in the past month, or (0) not at all in the past month. Thus, cannabis use was defined dichotomously as used at least once in the past month (n = 150, 30.2%) vs. not at all. Heavy episodic drinking was defined as occurring at least once in the past month (n = 184, 37.1%) vs. not at all.

Sense of Coherence (SOC; Antonovsky, 1987) The sense of coherence questionnaire consists of 29 items divided into three SOC components: comprehensibility (e.g., "Were you ever surprised by the behavior of people whom you thought you knew well?" $\alpha = 0.78$); manageability ("Many people, even those with a strong character, sometimes feel like losers in certain situations. How often have you felt this way in the past?" $\alpha = 0.79$), and meaningfulness ("How often do you have the feeling that there's little meaning in the things you do in your daily life?" $\alpha = 0.75$). Items were rated on 5-point scales, with each scale requiring different responses, such as "very often" to "very seldom" and "never happened" to "always happened," depending on the question. High correlations were found between the subscales: $r = 0.46$, $r = 0.66$, $r = 0.73$, $p < 0.001$. The total SOC scale had an inter-item reliability of $\alpha = 0.90$. Thus, the total score was used.

Psychological Distress The presence and severity of psychological distress symptoms was measured using the Brief Symptom Inventory (BSI; Derogatis & Spencer, 1982). The BSI is a 53-item self-report scale designed to measure a wide range of symptoms associated with psychopathology (each of the 53 items on the BSI represents one symptom). Participants rated how much discomfort they felt as a result of each symptom over the past month on a 5-point Likert-type scale ranging from 0 (not at all) to 4 (extremely).

For the current study, we used the Global Severity Index (GSI) score as an indicator of current psychological distress ($\alpha = 0.97$).

Network of Relationships Inventory (NRI; Furman & Buhrmester, 1985; Furman, 1996a, b) Parental and peer relationships were assessed based on the NRI questionnaire designed to examine the relationship with significant figures: mother, father, and close friends. The questionnaire presents eight items that represent the quality of the relationship – for example, support, intimacy, providing help, etc. (e.g., "you can trust him/her"; "you are satisfied with the relationship with him/her"; "he/she makes you feel that you are equal"). Items were rated on a 5-point Likert-type scale ranging from 1 (a low level of contact) to 5 (a high level).

Procedure

The questionnaires were distributed to a sample of LG and heterosexual young adults. Participants were eligible if they were between 18 and 25 years of age. Owing to the difficulty of obtaining a representative sample of Israeli LG young adults (for example, Shilo et al., 2015; Shechory Bitton and Jaeger, 2020), four research assistants were recruited – two lesbians, one gay male, and one heterosexual female – and they distributed the questionnaire to young adults, including in LG social spaces on university and college campuses. Participants were asked to complete the questionnaire in Hebrew on a voluntary and anonymous basis. They were informed that they did not have to answer any question that made them uncomfortable, that they could stop answering at any point, and that their answers would be used for research purposes only. All participants gave their informed consent to participate in this study. The study was approved by the institutional review board (IRB) at the authors' institution of affiliation. The data were collected before the outbreak of the COVID-19 pandemic, during the first half of 2019.

Results

Alcohol and Cannabis Use

Most of the participants (93.7%) reported that they had used at least some hard alcohol/spirits in the past month, and 55.6% reported that they had used cannabis. A Z test

and chi-square (χ^2) test were used to assess the differences in substance use by sexual orientation and gender among heterosexual participants and LG participants, during the last month (Table 1).

Significant differences were found in HED in the previous month, via both sexual orientation and gender. A higher percentage of LG participants than heterosexual participants reported HED ($Z=3.20$, $p=0.001$) as well as a higher percentage of male participants than female participants ($Z=5.15$, $p<0.001$). Heterosexual female participants had the lowest rate of HED, $\chi^2(3)=38.78$, $p<0.001$, and lesbian participants reported lower percentages than did gay men ($Z=2.10$, $p=0.036$).

Significant differences were found in cannabis use in the past month, via both sexual orientation and gender. A higher percentage of LG participants than heterosexual participants reported cannabis use ($Z=3.87$, $p<0.001$) as well as a higher percentage of male participants than female participants ($Z=2.79$, $p=0.005$). Heterosexual female participants had the lowest rate of cannabis use, $\chi^2(3)=22.00$, $p<0.001$, and gay men reported higher percentages than did heterosexual men ($Z=2.37$, $p=0.018$).

Correlations Among the Research Variables and Differences Between Groups

Table 2 displays the correlations, means, and standard deviations for the main research variables. The mean psychological distress level was low, and the mean SOC level was moderate, with both being highly and negatively interrelated. A higher value was given to the relationship with one's mother and friends. The relationship with one's father was somewhat lower. All three were positively interrelated and were negatively related to psychological distress. Binge drinking and cannabis use were unrelated to psychological distress.

Analyses of covariance were used to assess differences in psychological distress, SOC, and relationships with parents and friends via sexual orientation and gender. Age and

Table 1 HED and cannabis use in the past month, by sexual orientation and gender ($N=496$)

	Total	Heterosexual		Same-sex orientation		$\chi^2(3)$
		Males	Females	Males	Females	
	N (%)	*N* (%)	*N* (%)	*N* (%)	*N* (%)	
HED	184 (37.1)	57 (45.2)	20 (15.7)	66 (50.4)	41 (36.9)	$\chi^2(3)=38.78$***
Cannabis use	150 (30.2)	36 (28.6)	21 (16.4)	56 (42.7)	37 (33.3)	$\chi^2(3)=22.00$***

Table 2 Means, standard deviations, and Pearson correlations among the main research variables ($N=452$)

	M (*SD*)	2	3	4	5	6	7	8	9
1. Psychological distress	0.79 (0.63)	-.69***	-.41***	-.33***	-.35***	.08	.09	-.17***	-.10*
2. SOC	3.51 (0.49)		.37***	.35***	.33***	-.11*	-.15***	.09	.11*
3. Relationship with mother	4.12 (0.92)			.39***	.27***	-.06	-.14**	.09	.11*
4. Relationship with father	3.77 (1.05)				.25***	-.01	-.11*	.08	.12**
5. Relationship with friends	4.27 (0.62)					-.03	-.06	.01	.04
6. HED	0.37 (0.48)						.21***	-.06	-.10*
7. Cannabis use	0.30 (0.46)							.12**	.04
8. Age	23.14 (2.48)								.41***
9. Education	0.32 (0.47)								

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

education (0-high school education, 1-higher education) were related to psychological distress and were therefore controlled for in the analyses. Table 3 displays means, standard deviations, and *F* values for psychological distress, SOC, and interpersonal relationships via sexual orientation and gender.

Significant differences were found. Psychological distress was found to be higher among LG participants than among heterosexual participants ($p = 0.001$). Further, an interpretation of the significant interaction revealed that psychological distress was higher among gay men than among heterosexual men ($p < 0.001$), whereas other differences were not significant.

Sense of coherence was found to be higher among heterosexual participants than among LG participants ($p < 0.001$). An interpretation of the significant interaction revealed that SOC was higher among heterosexual males than among LG participants ($p < 0.001$), and higher among heterosexual females than among gay men ($p < 0.001$).

The relationship with one's mother was found to be significantly better for heterosexuals than for LG participants ($p < 0.001$). The relationship with one's father was also found to be significantly better for heterosexuals than for LG participants ($p < 0.001$). An interpretation of the significant interaction showed that the relationship with one's father was perceived as better among heterosexual males than among gay men ($p < 0.001$) and lesbians ($p = 0.016$), and better among heterosexual females than gay men ($p < 0.001$). No differences were found regarding the relationship with friends.

Prediction of Psychological Distress (Global Severity Index/GSI)

A multiple hierarchical regression was used to assess the contribution of SOC, interpersonal relationships, and HED and cannabis use for the prediction of GSI, beyond group (0-homosexual, 1-heterosexual) and gender (0-female, 1-male), controlling for age and education (0-high school education, 1-higher education) (Table 4). The regression model was significant, with 52% of the variance in GSI being explained. Global severity index was negatively related mainly with SOC, such that the higher the SOC, the lower the GSI. Interpersonal relationships with one's mother and friends were negatively related to GSI as well, to a lower extent than SOC, while alcohol and drug use were non-significant. Age was negatively related to GSI, such that GSI was higher for younger participants.

Finally, all continuous independent variables were standardized, and their two- and three-way interactions with sexual orientation group and gender were defined. These interactions were entered in a step-wise manner in the final step of the regression analysis, in order to assess whether the relationships between the independent variables and GSI differed by group and/or gender. These interactions were found to be non-significant, showing that the relationships between SOC, interpersonal relationships, HED and cannabis use, and GSI did not differ by sexual orientation and/or gender.

Discussion

This study examined risk and protective factors for psychological distress among Israeli LG and heterosexual young adults. The key findings of the research will be discussed as they pertain to the differences between the groups in regard to the study variables and the associations between these variables. Our findings support the first main hypothesis. As hypothesized, LG participants reported higher levels of psychological distress, lower SOC, a weaker relationship with their parents, and greater

Table 3 Means, standard deviations, and *F* values for psychological distress, SOC, and interpersonal relationships, by sexual orientation and gender ($N = 496$)

	Heterosexual		Same-sex orientation				
	Males	Females	Males	Females	Group	Gender	Group × Gender
	M (*SD*)	*M* (*SD*)	*M* (*SD*)	*M* (*SD*)	*F*(1,490) (η^2)	*F*(1,490) (η^2)	*F*(1,490) (η^2)
Psychological distress	0.59 (0.45)	0.83 (0.55)	0.96 (0.71)	0.77 (0.74)	10.41** (.021)	0.05 (.001)	11.75*** (.024)
SOC	3.69 (0.44)	3.56 (0.45)	3.34 (0.48)	3.43 (0.53)	38.16*** (.072)	0.01 (.001)	5.95* (.012)
Relationship with mother	4.40 (0.66)	4.21 (0.89)	3.95 (0.95)	3.90 (1.09)	26.14*** (.051)	1.14 (.002)	0.35 (.001)
Relationship with father	4.08 (0.93)	3.90 (1.03)	3.40 (1.11)	3.68 (0.99)	27.63*** (.056)	0.83 (.002)	4.79* (.010)
Relationship with friends	4.23 (0.58)	4.22 (0.70)	4.33 (0.53)	4.30 (0.67)	2.22 (.005)	0.08 (.001)	0.03 (.001)

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

Table 4 Multiple regression predicting GSI (*N*

	B	*SeB*	β
Step1			
Group	-0.21	0.06	-0.16***
Gender	0.01	0.06	0.01
Age	-0.04	0.01	-0.16**
Education	-0.06	0.07	-0.04
Adj. R^2	.04***		
Step2			
Group	0.06	0.05	0.04
Gender	0.01	0.04	0.01
Age	-0.03	0.01	-0.11**
Education	0.07	0.05	0.05
SOC	-0.77	0.05	-0.61***
Relationship with mother	-0.10	0.03	-0.15***
Relationship with father	-0.03	0.02	-0.04
Relationship with friends	-0.09	0.04	-0.09*
ΔAdj. R^2	.48***		
Step3			
Group	0.06	0.05	0.05
Gender	0.01	0.04	0.01
Age	-0.03	0.01	-0.11**
Education	0.07	0.05	0.05
SOC	-0.77	0.05	-0.60***
Relationship with mother	-0.10	0.03	-0.15***
Relationship with father	-0.03	0.02	-0.05
Relationship with friends	-0.09	0.04	-0.09*
HED	0.02	0.05	0.02
Cannabis use	-0.02	0.05	-0.01
ΔAdj. R^2		.001	
Total Adj. R^2		.52***	
F (10, 399)		50.43***	

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

$N = 450$ due to participants who did not report relationships with parents

use of alcohol and cannabis than did the heterosexual participants. However, the second main hypothesis was partially confirmed. Specifically, the regression analyses indicated that low SOC, low family support (particularly from the mother), and low peer support predicted higher levels of psychological distress. However, contrary to the hypothesis, sexual orientation was not found to predict distress levels among young adults in Israel. Similarly, no associations were found between alcohol and cannabis use and psychological distress.

The results of this study are compatible with findings from previous research. Higher levels of psychological distress as well as higher usage of cannabis and HED have been found among LG individuals than among heterosexual individuals (e.g., Bonny-Noach & Shechory-Bitton, 2020; Bouris et al., 2010; Caputi et al., 2018; Kerr et al., 2014; Mor et al., 2015; Shenkman et al., 2020). In addition, in line with the current research findings, various studies have pointed to the complex relationships that exist between LG individuals and their parents (for a review, see Soler et al., 2018). Even in supportive families, it may be that LG young adults receive no sexuality-specific support within the home (Doty et al., 2010), a situation that may be related to the effect of the prevalent social outlook. Despite increased awareness, Israeli society is still influenced by conservative perceptions of sexual orientation (Bonny-Noach & Shechory-Bitton, 2020; Shechory Bitton and Jaeger, 2020; Slomowitz & Feit, 2015).

The study participants were asked to answer questions that indirectly referred to how open they were with their parents (for instance, the possibility of sharing secrets with their parents and of trusting them). Reports of a weaker relationship may also have been related to sexual orientation. Nonetheless, in the current study we did not directly ask about the parents' responses to their children's sexual orientation, and this point should be further clarified in future research.

The differences between the groups in regard to the SOC variable reinforce initial findings indicating an association between high distress and low SOC among lesbians (Kotowska et al., 2020) and gay men (Lyons et al., 2014). However, research on SOC among LG individuals is limited (Kotowska et al., 2020; Lyons et al., 2014). With the necessary caution, we might assume that LG individuals have less of a sense of control and optimism, and therefore a lesser ability to minimize the cognitive and emotional stress that emerges from life challenges and a lower ability to protect their physical and mental health. We arrived at this notion on the basis of the low levels of SOC that were found in the study; this notion also aligns with the salutogenic model developed by Antonovsky (1987, 1993).

Sexual orientation was surprisingly not found to be a predictor of psychological distress in any of the regression steps. As a rule, the regression analyses in this study were consistent with the findings of many studies that have pointed to the importance of SOC as a construct that moderates distress in various populations (e.g., Chen et al., 2020; Moksnes et al., 2012) and have indicated that social and family support are resilience factors that buffer distress (Soler et al., 2018). Interestingly, and contrary to expectations, the regression analyses in this study highlighted the potential importance of SOC as a protective factor, with scores on the SOC scale strongly linked to psychological distress across genders. To a lower extent than SOC, support by parents (mostly mothers) and friends was also negatively related to distress across genders.

Taken together, these findings suggest that SOC and family and social networks are critical for predicting psychological distress among both heterosexual and LG young adults.

However, it may be that these protective factors for mental health are not sufficient to explain the differences between the groups. Notably, the limited research on the association between distress and SOC has focused mainly on examining the associations among sexual minorities, sometimes even without distinguishing between various sexual minorities (e.g., Mahon et al., 2021). In the current study, we focused on comparing LG young adults with heterosexual young adults.

The lack of differences by sexual orientation may be related to the developmental stage and age of the research participants. By the time they reach their early twenties, regardless of their sexual orientation, many Israeli young adults have fulfilled their mandatory army service. For LG individuals, military service can be a common stressor, mainly because the army idealizes hegemonic masculinity. However, this experience also likely allows LG youth to become more independent adults (Shilo et al., 2015). Accepting responsibility for oneself, making independent decisions, and becoming financially independent are all attained gradually in the course of emerging adulthood (Arnett, 2003). Being in the army may accelerate this process.

In addition, as a basic developmental milestone, the emergence of sexual feelings and desires in general is unlikely to differ between sexual minorities and heterosexual youth (Calzo et al., 2011). This point may also serve to explain why sexual orientation did not predict distress. Among the majority of the study participants, their sexual orientation was known to their family and to their social acquaintances, and the decision to come out emerges when one is better able to avoid parental and peer rejection (Calzo et al., 2011). Being relatively "out" with one's sexuality appears to operate as an important protective factor against mental health problems (Cole et al., 1996; Matheson et al., 2010). Disclosing versus concealing a minority sexual orientation is particularly relevant for emerging adults, and concealment has been theorized as being anxiety-provoking (Cohen et al., 2016). Accordingly, in the present study, gender (as well as sexual orientation) was not found to be a predictor of distress, despite the differences found between the groups.

Other unexpected findings from the current study that contradicted findings in the existing literature (Baiocco et al., 2010; Bränström & Pachankis, 2018; Lea et al., 2014) were that HED and cannabis use were not related to psychological distress. These findings can perhaps be attributed to the self-medication theory which sees heavy substance use and addiction as compensatory means for modulating affect and self-soothing from distressing psychological states. Given that substance abusers use drugs/alcohol to manage emotional pain and anxiety, and to achieve emotional stability (Smith et al., 2017; Suh et al., 2008), perhaps it is not surprising that people who feel distress use such substances more often, to alleviate this distress, and therefore do not have higher levels of distress, as was found in the current study.

The current study findings may also be attributable to social changes that have taken place in Western society as well as in Israel specifically. Current social norms regarding heavy episodic drinking and cannabis use seem to suggest that it is not necessarily psychological distress that gives rise to their use. Many studies over the past decade have shown that substance use is a common behavior among young adults, primarily in the West (Dumbili, 2020; Measham & Shiner, 2009) as well as in Israel (Korn and Bonny-Noach, 2018; Lawental & Schori, 2011). In Israel, epidemiological data from the latest national epidemiological survey indicate a considerable rise in cannabis consumption among young people in recent years and provide support for the idea that the use of substances, especially alcohol and cannabis, has becoming increasingly normalized among young adults in Israel (Ezrachi et al., 2017). This rise in use is likely a result, among other things, of the liberal public discourse in Israel over the past decade regarding the decriminalization and legalization of cannabis as well as of the lesser perceived dangers of cannabis use (Bonny-Noach & Sagiv-Alayoff, 2020; Ezrachi et al., 2017).

The abovementioned national epidemiological survey (Ezrachi et al., 2017) does not ask participants about their sexual orientation, and there is thus a lack of data regarding the LG population in Israel. However, our results show that the evolving social norms described above are even more applicable to the LG community, confirming other studies that have reported a shared set of LG values, of which "normalizing" substance use is one (Hughes et al., 2016). Studies have also shown that substance use is seen as a normative behavior in gay-identified venues (e.g., pubs, dance clubs, etc.) (Baiocco et al., 2010; Harawa et al., 2008). Other findings from the current study lend further support to this assumption. In that almost no differences were found in the patterns of use between lesbians and gay men, and that the lowest rate of use was reported by heterosexual women.

In line with previous findings (Korn and Bonny-Noach, 2018; Mennis & Mason, 2012), men reported higher rates of HED and cannabis use than did women. These findings can perhaps be attributed to cultural expectations and social norms whose roots lie in patriarchal ideas about the way women and men should behave. As Israeli society is based on traditional family values (Berkovitch & Manor, 2019), women are more conventionalized and constrained by social norms (e.g., marriage and motherhood) that would limit alcohol and other drug use (Bonny-Noach and Shechory-Bitton, 2020). By contrast, men may feel more motivated to drink alcohol and use cannabis specifically as a means of demonstrating masculinity, facilitating aggression, exerting power, and taking risks (Hughes

et al., 2016). It would thus seem that cultural expectations reflecting gender roles continue to remain relevant in this context (Sasson-Levy, 2011). However, lesbians may be less likely to be constrained by these social norms (Bonny-Noach and Shechory-Bitton, 2020) as they may generally adhere less to conservative social norms (Shechory & Ziv, 2009). It may be reasonable to suggest that the use of these substances is more acceptable in the LG community.

This study is not without limitations. First, convenience sampling has the potential to lead to self-selection biases, especially toward LGs who are more open about their sexual identity. Further research is necessary to explore the associations between the variables among LGs who have not yet revealed their sexual identity, primarily in light of findings indicating higher distress among those with same-sex orientations who conceal their sexual identity (Cohen et al., 2016). Second, in the current study, we focused on a specific age group: young adults between the ages of 18-25. It is important to expand this research to include teenagers (i.e., those younger than 18). Many studies point to this latter age group as particularly vulnerable (Pengpid & Peltzer, 2020; Qin et al., 2021). Third, we explored differences only by participants' self-definition of their sexual orientation. Other variables unique to the LG community that have been found to be related to high distress, such as social rejection or parental rejection of one's sexual orientation (Cohen et al., 2016), should also be investigated. Finally, the research participants were young adults from Israel. Additional research should draw on populations from other countries to examine whether the results of the current study can be replicated in different geographical and cultural contexts.

Overall, the findings support the notion that LG young adults are at greater risk than are heterosexual young adults of psychological distress, lower SOC, higher usage of alcohol and cannabis, and less family support. However, in contrast to our expectations, sexual orientation was not found to be associated with or predictive of distress. Conceptually, we would suggest that factors such as SOC and family and social networks are important factors that need to be considered as similarly determining the extent of psychological distress and well-being of sexual minority and heterosexual young adults. The results reinforce the assumption that wide variations in mental health outcomes among sexual minorities can be found within and between groups, and that variations can be attributed to a range of personal and social protective and risk factors as well as being "out of the closet" with one's sexual orientation (see meta-analysis conducted by Lewis, 2009).

The current study extends the existing research on the association between pathogenic and salutogenic variables among LG young adults in their late teens and twenties. To the best of our knowledge, the current study is the first to jointly examine multivariate associations. Generally, SOC is viewed as being a protective factor for mental health. The current study sheds further light on the role of SOC in the lives of LG young adults and can help us potentially find ways for SOC to assist in navigating the many direct and indirect challenges that arise from belonging to a stigmatized and marginalized population (see also Lyons et al., 2014). The results of the present study stress the importance of exploring resilience factors that can serve as a barrier to distress among young adults in general and sexual minorities in particular. Researchers, therapists, parents, and policy makers need to work together to ensure that resources are available to encourage positive identity development and foster resilience.

Data Availability The datasets generated during the current study are available from the corresponding author upon reasonable request.

Declarations

Conflict of interest The authors declare no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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