B.Sc.
Department of Psychology

Depression and Anxiety among Sexual Minorities in Iceland

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Foreword

Submitted in partial fulfillment of the requirements of the BSc Psychology degree, Reykjavik University, this thesis is presented in the style of an article for submission to a peer-reviewed journal.

This thesis was completed in the Spring of 2020 and may therefore have been significantly impacted by the COVID-19 pandemic. The thesis and its findings should be viewed in light of that.

Abstract

Depressive symptoms and anxiety symptoms are significantly higher among non-heterosexual individuals compared to heterosexual individuals. Scholars have suggested that this is due to increased stressful social environment that non-heterosexual individuals experience. The current study aimed to explore the difference in depressive and anxiety symptoms between non-heterosexual adolescents and heterosexual adolescents in Iceland. The role of parental social support, peer social support and the experience of sexual abuse were examined as contributors to a higher level of depressive symptoms and anxiety symptoms among non-heterosexual individuals. Results indicated that the non-heterosexual adolescents showed significantly more depressive symptoms and anxiety symptoms compared to their heterosexual peers. Non-heterosexual adolescents were more likely to have experienced sexual abuse and they also experienced lower parental social support compared to their heterosexual peers. Regression analysis showed that higher levels of depressive symptoms and anxiety symptoms among the non-heterosexual sample was only significant when there was no history of sexual abuse. Results are discussed from a theoretical perspective. Longitudinal studies on the development of different sexual attraction patterns are suggested for future research.

Útdráttur

Þunglyndis- og kvíðaeinkenni eru mun hærri meðal þeirra sem skilgreina sig sem hinsegin einstaklinga samanborið við þá sem skilgreina sig sem gagnkynhneigða einstaklinga. Rannsakendur hafa lagt fram þá tilgátu að þessi munur á andlegri heilsu stafi af lakara félagslegu umhverfi sem hinsegin einstaklingar upplifa samanborið við gagnkynhneigða. Þessari rannsókn er ætlað að rannsaka muninn í þunglyndis- og kvíðaeinkennum milli hinsegin unglinga og gagnkynhneigðra unglinga. Áhrif foreldrastuðnings, vinastuðnings og saga um kynferðislegt ofbeldi á þunglyndis- og kvíðaeinkenni meðal hinsegin unglinga voru skoðuð. Niðurstöður leiddu í ljós að hinsegin unglingar sýndu meiri þunglyndis- og kvíðaeinkenni í samanburði við gagnkynhneigða jafnaldra þeirra. Hinsegin unglingar voru líklegri til að hafa orðið fyrir kynferðislegu ofbeldi og voru jafnframt líklegri til að hafa minni foreldrastuðning en gagnkynhneigðir unglingar. Aðhvarfsgreining sýndi að hærri þunglyndis- og kvíðaeinkenni voru aðeins marktæk á milli hópa þegar engin saga var um kynferðislegt ofbeldi. Niðurstöður eru kynntar og ræddar í fræðilegu samhengi. Langsniðsrannsóknir á þróun kynhneigðar eru lagðar til sem framtíðarviðfangsefni.

The term sexual minority group refers to all individuals whose sexuality differ from cultural norms, e.g. lesbians, gay, and bisexual men and women (Cochat Costa Rodrigues et al., 2017; Frost et al., 2015). A great deal of literature has looked into the general well-being of these groups from a psychological standpoint, where most of the focus has been on the mental health among these different populations that display different sexual attraction patterns (Johns et al., 2013; Kjaran & Jóhannesson, 2013; Lehavot & Simoni, 2011; Marshal et al., 2011; Wichstrøm & Hegna, 2003).

When it comes to the literature on different sexual attraction patterns, multiple studies suggest that sexual attraction patterns vary between countries and samples (Bostwick et al., 2010; Chandra et al., 2013; Wichstrøm & Hegna, 2003). In Britain, Chandra et al. (2013) indicate that non-heterosexuality is around 13% among women and 5.7% among men. Other scholars have found the non-heterosexual population to be considerably smaller, like in Australia where the non-heterosexual population is measured to represent 3.2% of the total Australian population (Wilson & Shalley, 2018). But there is a great fundamental problem to consider when estimating the population size of non-heterosexual individuals, which is the definition and measurement of sexual attraction (Cochran et al., 2003; Cramer et al., 2018; Sell, 2007). Despite methodological issues on defining sexual attraction, empirical findings suggest that individuals who self-identify as non-heterosexual in any sense experience mental health issues at a significantly higher rate compared to heterosexual people where the most common symptoms include increased depression and anxiety (Chakraborty et al., 2011; Grant et al., 2014; Marshal et al., 2008; McNeil et al., 2017).

According to Meyer (2013), one possible explanation for a higher rate of mental disorders among the non-heterosexual population is minority stress, which refers to the idea that sexual minorities experience a more stressful social environment because of stigma, prejudice and discrimination, compared to individuals that are heterosexual. Many research findings have confirmed this hypothesis where the social environment has been explored in

regard to general mental health, especially depressive and anxiety symptoms (McConnell et al., 2016; Puckett et al., 2017).

Social support can be viewed as the functional content of the relationship that the individual has with the people around that person, which consists of emotional-, instrumental-, informational- and appraisal support (Glanz et al., 2008). When it comes to the type of social support, past research has shown that relationship-specific support (support derived from a specific relationship) seems to have the greatest influence on the general mental health among people (Álfgeir L. Kristjánsson et al., 2011; Sarason et al., 1994; Stice et al., 2004). Frost et al. (2016) discovered that social support among non-heterosexual individuals tends to be lower compared to that of heterosexual individuals, and similar results have also been discovered by other scholars, which underlines the role of more stressful social environment among non-heterosexual individuals in Meyer's minority stress theory (Lehavot & Simoni, 2011; Williams et al., 2005).

Another variable that may contribute to more stressful environment within the sexual minority population is the history of sexual abuse (Balsam et al., 2005; Friedman et al., 2011). It is generally accepted that having experienced sexual abuse in the past plays a big role in explaining poorer mental health outcome among non-heterosexual individuals (Friedman et al., 2011). A meta-analysis conducted by Friedman et al. (2011) revealed that 40% of bisexual women, 32% of lesbians, 24% of bisexual men and 21% of gay men had some time during their lifetime experienced sexual abuse. Furthermore, on average, non-heterosexual individuals are 1.2 to 3.8 times more likely to experience sexual abuse, parental physical abuse or assault compared to heterosexual individuals in the United States (Friedman et al., 2011). The reason for these significant differences is not well understood and is currently understudied (McKay et al., 2017; Rothman et al., 2011).

Similar research regarding the mental- and general health among sexual minorities in Iceland has not been studied thoroughly (Gísladóttir et al., 2018). Furthermore, many of the

studies done worldwide on sexual minorities in general have methodological issues, e.g. relying on purposeful sample and self-identification of sexual orientation instead of sexual attraction (Gísladóttir et al., 2018). Iceland is considered to be a liberal Nordic country with societal acceptance towards different types of relationships between individuals and has progressed significantly in legislation and other measures to increase equality towards diverse relationship arrangements (Kjaran & Jóhannesson, 2013). With this positive societal acceptance towards different relationship arrangements, it would be interesting to investigate the mental health among sexual minorities in Iceland. It is also interesting to explore how the sexual minority theory applies to adolescents, since adolescents do not have as much experience with their social environment as adults have and therefore might not have as much negative social environmental experience as those who are adults, and they also rely more on relationship-specific social support from family and peers (Cox et al., 2010; Savin-williams, 2001; Steinberg & Morris, 2001).

The prevalence of non-heterosexual individuals is quite common in every society and therefore it is essential to investigate this minority group further. When taken together, the combination of peer social support, parental social support and history of abuse seem to have a significant effect on the mental health among sexual minorities. Peer social support, and especially parental social support, are very likely to play an important role when it comes to influencing mental health among non-heterosexual individuals. In the current study, the focus will be on the mental health among non-heterosexual Icelandic adolescents. The relationship between sexual attraction and depressive symptoms and anxiety symptoms will be studied where a possible confounding effect of history of sexual abuse, family social support and peer social support will be explored in the relationship. The following hypotheses will be put to the test: 1) Non-heterosexual individuals have more anxiety symptoms and depressive symptoms compared to their heterosexual peers. 2) Non-heterosexual individuals have lower parental social support than their heterosexual peers. 3) Non-heterosexual individuals are

more likely to have a history of sexual abuse compared to their heterosexual peers. 4) If depressive symptoms and anxiety symptoms are higher among the non-heterosexual sample, then the relationship is only significant for those who have experienced sexual abuse.

Method

Participants

A random sample of Icelandic adolescents (1066 women, 1021 men, M_{age} = 17.4 years, *SD* = 1,31, age range: 15-21 years) was drawn from a larger dataset that was collected by The Icelandic Centre for Social Research and Analysis (ICSRA) in 2016. The participants were 10,717 students that were present in secondary schools at a specific time and were willing to participate in the study. The response rate was 71% of the total adolescent population that attended secondary school (Pálsdóttir et al., 2016).

Measures

Sexual attraction. Sexual attraction was measured with two separate questions. The first question asked the participant "Where would you place yourself on a scale measuring sexual attraction to the other sex?" and "Where would you place yourself on a scale measuring sexual attraction to the opposite sex?". Both of these questions were answered on a 5-point ordinal rating scales with three of the ratings being defined as: 1 = “No attraction”, 3 = “Some attraction”, 5 = “Strong attraction”.

Scores from both scales were used to form three categories. The first category consisted of heterosexual individuals which were assembled by summing up every individual that scored three, four and five on the scale measuring attraction to the opposite sex and combined it with those who scored one or two on the scale measuring attraction to the same sex. The second category assembled non-heterosexual individuals by categorizing those who responded three, four or five on the scale measuring sexual attraction towards the same sex, combined with those who scored one or two on the scale measuring sexual attraction to the opposite sex. Individuals who scored two or lower on both scales were excluded from the

study because they did not have a clear attraction pattern to either sex and therefore hard to define from a methodological standpoint regarding this research. After categorizing the sample into two groups from their sexual attraction pattern, non-heterosexuals were 295 in total while heterosexual individuals were 1535, resulting the non-heterosexual individuals representing 19.22% of the sample. The same questions have been used in past research conducted by Gísladóttir et al. (2018), where similar methods were used for scoring. Measuring sexual attraction for both genders with two scales has been used in the past with success and is considered to show a more variety of answers because participants feel like they can comfortably report same-sex attraction to some extent, rather than labelling themselves with a specific sexual orientation and therefore not answering accurately (Johns et al., 2013; Austin et al., 2007).

Parental social support. Parental social support was measured using the main question that stated “How easy or hard is it to get the following from your parents?” followed by five claims that stated “Care and warmth”, “Discussions about personal matters", "Advice about school-related topics", "Advice about other work-related matters" and "Help with multiple tasks". The claims were answered on an ordinal scale with the answer possibilities ranging from 0 = “Very hard” to 3 = “Very easy”.

The scores were summed up from each item, where a higher score on social support indicated better social support. Reliability analysis showed good internal consistency (α = 0,89). The scale was based on a previous work conducted by Álfgeir L. Kristjánsson et al. (2008), Álfgeir Logi Kristjánsson et al. (2010) and Thorlindsson & Vilhjálmsson, (1991) about social-environmental measurements and was shown to have good validity and reliability.

Peer social support. The same survey response structure was used for the peer social support, except the main question replaced “parents” with “peers”. Scoring of the scale was calculated by summing up the scores for each item on the scale, where a higher sum indicated

higher social support. Reliability analysis showed good internal consistency ($\alpha = 0.89$) and therefore was well suited for the research. Like parental social support, peer support was also based on previous research (Álfgeir L. Kristjánsson et al., 2008; Álfgeir L. Kristjánsson et al., 2010; Thorlindsson & Vilhjálmsson, 1991).

Sexual assault. History of sexual assault was measured using questions that asked the participant about previous history of sexual assault during different age range. The questions were introduced by the following text: "People are sometimes convinced or forced to participate in a sexual act that they were not able to prevent. The next questions are about scenarios that apply to these circumstances" followed by a further explanation which stated: „Have you ever been involved in the following situations without your approval (If so, how old were you when it happened?)". Five questions that followed aimed to cover the most likely scenarios that could happen under these circumstances, and they were the questions "Someone exposed themselves in front of you in an inappropriate way?", "Someone groped you somewhere on the body, apart from the genitals, in an inappropriate way?", "Someone groped your genitals?", "Someone convinced you or forced you to touch his/hers genitals" and "Someone convinced you or forced you to have sex or intercourse with them". Each question could be answered with five different categories, which included the answers on the age of the participant when this happened: "Never", "12 years or younger", "13-15 years", "16-17 years" and "18 years or older".

The scoring of these scales was done by calculating the scores for each answer where the option "Never" equalled 0 and all the other options equalled 1. When the scores were calculated, the participants were split into two groups where participants who answered "Never" on all items were considered to have no history of sexual assault, while other participants that had answered other options were considered to have a history of sexual assault. The same questions have been used before with success and the scoring method has also been effective (Ásgeirsdóttir et al., 2010, 2011).

Depression. Depression was measured using eight items from the SCL-90 checklist constructed by Derogatis et al. (1973) and Derogatis & Cleary, (1977). The symptoms were assessed using a question that asked the participant whether he/she had experienced the following symptoms for the last week: “I was sad or had little interest in doing things”, “I felt lonely”, “I cried easily or wanted to cry”, “I had difficulty falling to sleep and staying sleeping”, “I felt sad or blue”, “I was dispirited”, “I had little energy and was slow” and “The future seemed hopeless”. Participants rated the severity of each statement from 0-3, where 0 = “Never”, 1 = “Seldom”, 2 = “Sometimes” and 3 = “Often”. The same items have been used in Icelandic research in the past to measure depressive symptoms (Sigfúsdóttir et al., 2013; Thorisdottir et al., 2017). The eight items that were used had good internal consistency ($\alpha = 0{,}91$) and were therefore considered to be a good fit for the statistical analysis.

Anxiety. Three items from the SCL-90 were used to measure anxiety symptoms (Derogatis et al., 1973; Derogatis & Cleary, 1977). The same items were used in research conducted by Thorisdottir et al. (2017) in Iceland using similar surveys from ICSRA. The participant was asked if he/she had experienced the following symptoms in the last week: "Nervousness", "Feeling suddenly scared for no reason" and "Feeling tense or overstrung". The participant had to rate each item on the scale 0-3, where 0 = Never, 1 = Seldom, 2 = Sometimes and 3 = Often. However, the internal consistency of these three variables was relatively low ($\alpha = 0.63$), but that could be explained by the sample size used in the current research.

Procedure

ICSRA had conducted a population study among Icelandic adolescents in the spring of 2016, where anonymous questionnaires were submitted to all secondary schools at the same time. Teachers were told to distribute the questionnaires to the students in class and were given special instructions for how to submit the questionnaires. Anonymity was emphasised to all students by instructing them not to write their names nor social id so their

answers could not be traced back to them. Furthermore, students were asked to answer the questions according to their best knowledge and to ask for help if any question was unclear (Pálsdóttir et al., 2016). The data collection and handling were done under regulations from the National Bioethics Committee and the Icelandic Data Protection Agency.

Data analysis

All the data were calculated and statistically analysed using SPSS version 26 (IBM SPSS Statistics for Mac, version 26.0). Descriptive statistics were generated for each variable used in the study to identify any abnormalities in the dataset. All data measured on continuous scales were examined for normality. As can be seen in Table 1, the least skewed variables were “depressive symptoms” and “anxiety symptoms”. However, “Parental social support” and “Peer social support” were more skewed, but all four variables met the criteria of Kline (2011), where he suggests that skewness should not exceed ±3,0 and kurtosis should not exceed ±10,0.

Then an independent samples t-test was conducted between heterosexual individuals and non-heterosexual individuals to analyse if there was any difference in depressive symptoms, anxiety symptoms and parental social support between the two groups. Following the independent samples t-test, a chi-square test was done between the non-heterosexual and heterosexual groups and its association with history of sexual abuse, to determine if there was a significant difference between the two groups in the history of sexual abuse. An additional add-on for SPSS called Process macro (Hayes, 2017) was installed on SPSS to perform moderation analysis where the history of sexual abuse was used as a moderator in the relationship between sexual attraction as independent variable, and depressive symptoms and anxiety symptoms as dependent variables. Peer social support and parental social support were used as covariates in the models. A mean centering was used for all variables in the models which were run in Process macro for standardization purposes.

Results

Descriptive analysis

A general descriptive table was made for the continuous variables used in the current study (see Table 1). The number of respondents ranged from N = 2003 to N = 2051, which results in a maximum of 2.39% in variation in valid answers between any two variables. Descriptive statistics of the variables used in the current study showed that depressive symptoms were on the lower end of the total score range, and the same applied to the anxiety symptoms. Parental social support and peer social support were on the higher end of the score range.

Table 1.

Descriptive statistics for continuous variables.

Variable	*N*	*M*	*Mdn*	*SD*	Skewness	Kurtosis	Min	Max
Depressive Symptoms	2003	7.37	6	6.40	0.74	-0.396	0	24
Anxiety Symptoms	2027	3.59	3	2.24	0.408	-0.433	0	9
Parental Social Support	2051	17.39	19	3.21	-1.35	1.545	5	20
Peer Social Support	2041	16.65	17	3.28	-0.861	0.437	5	20

When the general descriptive information was explored between heterosexual individuals and non-heterosexual individuals, both depressive symptoms and anxiety symptoms were higher among non-heterosexual individuals as can be seen in Table 2. Results furthermore showed that parental and peer support were both lower among non-heterosexual individuals as compared to heterosexual individuals. History of sexual abuse was more common among non-heterosexual individuals (40.8%) as compared to heterosexual individuals (20.2%).

Table 2.
Mean scores and standard deviation on scales categorized from sexuality.

	Heterosexual		Non-heterosexual	
Variable	*M*	*SD*	*M*	*SD*
Depressive symptoms	6.85	6.10	10.31	7.18
Anxiety symptoms	3.54	2.17	4.34	2.37
Parental Social Support	17.67	2.99	16.62	3.58
Peer Social Support	16.87	3.13	16.31	3.41

Correlational analysis was performed on all variables. As can be seen in Table 3, all variables were significantly correlated with sexual attraction. However, the correlations were relatively low. History of sexual abuse, depressive symptoms and anxiety symptoms had positive correlation with sexual attraction while parental social support and peer social support had negative correlation. The highest correlation was between history of sexual abuse, parental social support and depressive symptoms on sexual attraction and the lowest correlation was between peer social support and history of sexual abuse.

Table 3
Bivariate correlations between variables

Variable	1	2	3	4	5	6
1. Sexual attraction	1					
2. History of sexual abuse	0.179*	1				
3. Parental social support	-0.124*	-0.155*	1			
4. Peer social support	-0.069*	0.009	0.428*	1		
5. Depressive symptoms	0.201*	0.292*	-0.307*	-0.195*	1	
6. Anxiety symptoms	0.128*	0.283*	-0.115*	0.030	.604*	1

***Significant correlations* ($p < 0.01$)

Primary analysis

The first hypothesis in the current study aimed to answer if non-heterosexual individuals experienced greater depressive symptoms and anxiety symptoms as compared to their heterosexual peers. To test for this hypothesis an independent samples t-test was conducted between non-heterosexual individuals and heterosexual individuals on the scales measuring depressive symptoms and anxiety symptoms.

When the results for depressive symptoms were calculated, an equal variance was not assumed, F (1, 1533) = 32.834 ; $p < 0.001$ due to uneven samples in the groups. There was a significant difference between the two groups t (380.044) = 7.88 ; $p < 0.001$, where non-heterosexual individuals experienced greater depressive symptoms (M = 10.34; SD = 7.17) compared to heterosexual individuals (M = 6.82 ; SD = 6.10).

The same was true for anxiety symptoms, which differed significantly by sexual attraction, F (1, 1848) = 7.66 ; p = 0.006. Non-heterosexual individuals reported greater anxiety symptoms (M = 4.30; SD = 2.37) compared to heterosexual individuals (M = 3.50; SD = 2.18), (t (401.683) = 5.25 ; $p < 0.001$).

The second hypothesis aimed to answer if parental social support among non-heterosexual individuals was lower as compared to heterosexual individuals. To examine these differences, an additional independent samples t-test was performed. Results indicated significant difference between the two groups, F (1, 1857) = 17.12 ; $p < 0.000$, where equal variance was not assumed. Non-heterosexual individuals showed poorer parental social support (M = 16.62 ; SD = 3.57) compared to their heterosexual peers (M = 17.67 ; SD = 2.99), (t (378.634) = 4.77 ; $p < 0.001$).

To test for the third hypothesis, whether a history of sexual abuse was more common among non-heterosexual individuals, as compared to heterosexual individuals, a chi-square test was used. A significant difference was found between non-heterosexual individuals and heterosexual individuals (χ^2 (1, N = 1881) = 60.31; $p < 0.01$) where 40.8% of non-heterosexual individuals had some history of sexual abuse while 20.2% of heterosexual individuals had a history of sexual abuse.

The fourth hypothesis aimed to answer if a history of sexual abuse affected the relationship between sexual attraction and depressive symptoms and anxiety symptom. A moderation analysis was used to analyse a possible moderation effect in the model. Model 1 used depressive symptoms as a dependent variable, sexual attraction as an independent

variable, history of abuse as a moderator and peer social support and parental social support as covariates. Main effects were significant for all variables in the model. Non-heterosexual individuals had 2.36 times more depressive symptoms on average compared to heterosexual individuals (β = 2.36, $p < 0.001$). A history of sexual abuse was also related to greater depressive symptoms (β = 3.78, $p < 0.001$). Both peer social support (β = -0.44, $p < 0.001$) and parental social support (β = -0.18, $p < 0.001$) were connected with decreased depressive symptoms. Results showed significant interaction effect in the model, where a history of abuse was shown to have a moderating effect on depressive symptoms β = -1.787, 95% CI [-3.553, -0.020], t = -1,98, p = 0.0475, as can be seen in Table 4. Furthermore, the moderation explained 18.27% of the variance in depressive scores (R^2 = 0.1827).

Table 4.
Model 1: Results of moderation analysis on depressive symptoms.

Variable	*b*	*SE*	*t*	*p*	95% CI		
Sexual attraction	2.36	0.45	5.22	0.000	1.470	to	3.242
History of sexual abuse	3.78	0.38	10.04	0.000	3.039	to	4.514
Interaction	-1.79	0.90	-1.98	0.048	-3.553	to	0.020
Peer social support	-0.44	0.06	-7.93	0.000	-0.552	to	0.333
Parental social support	-0.18	0.05	-3.68	0.000	-0.283	to	0.086

R^2 = 0.1827

The relationship between sexual attraction and depressive symptoms was only significant when there was no history of sexual abuse, β = 2.776, 95% CI [1.700, 3.852], t = 5.060, $p < 0.001$, indicating more depressive symptoms among non-heterosexual individuals than heterosexual individuals. There was not a significant difference between non-heterosexual and heterosexual individuals when there was some history of sexual abuse, β = 0.989, 95% CI [-0.411, 2.389], t = 1.390, p = 0.166. A visualisation of the moderation effect can be seen in Figure 1.

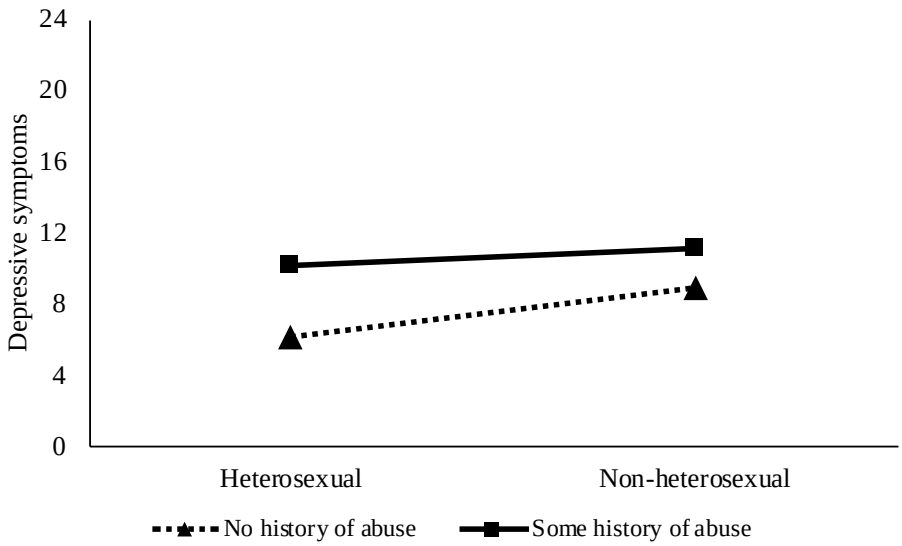

Figure 1. Moderation effect in Model 1, where depressive symptoms are defined as a dependent variable. Depressive symptoms are partially moderated by a history of sexual abuse.

When testing for the moderation of sexual abuse on anxiety symptoms between the non-heterosexual sample and the heterosexual sample, the same method was used as in Model 1, with depressive symptoms being replaced for anxiety symptoms. In Table 5, the moderation analysis can be seen for Model 2. Sexual attraction had a significant main effect ($\beta = 0.44$, $p = 0.003$) on anxiety symptoms. History of sexual abuse had a significant positive relationship with anxiety symptoms ($\beta = 1.30$, $p < 0.001$). Increased parental social support decreased anxiety symptoms significantly ($\beta = -0.09$, $p < 0.001$), but increased peer social support increased anxiety symptoms significantly ($\beta = 0.05$, $p = 0.014$).

Moderation was shown not to have a significant interaction effect, $\beta = -0.07$, 95% CI [-0.669, 0.535], $t = -0.22$, $p = 0.827$, and therefore indicated that the relationship between sexual attraction and anxiety symptoms was not moderated by a history of sexual abuse. Additionally, the moderation explained 9.65% of the variance in anxiety symptoms ($R^2 = 0.0965$).

Table 5.
Model 2: Results of moderation analysis on anxiety symptoms.

Variable	*b*	*SE*	*t*	*p*	95% CI
Sexual attraction	0.44	0.15	2.98	0.003	0.149 to 0.726
History of sexual abuse	1.30	0.13	9.96	0.000	1.043 to 1.555
Interaction	-0.07	0.31	-0.22	0.827	-0.669 to 0.535
Parental social support	-0.09	0.02	-4.36	0.000	-0.125 to -0.05
Peer social support	0.05	0.02	2.47	0.014	0.009 to 0.082

R_2 = 0.0965

Discussion

This study aimed to explore depressive symptoms and anxiety symptoms between different sexual attraction patterns. The current study shed some light on sexual minority mental health by analysing depressive symptoms as well anxiety symptoms among the Icelandic adolescent population. The study used large sample size and relied on psychological tests that have been used by other scholars earlier with good results (Ásgeirsdóttir et al., 2010, 2011; Gísladóttir et al., 2018; Álfgeir L. Kristjánsson et al., 2008, 2011; Álfgeir L. Kristjánsson et al., 2010; Sigfúsdóttir et al., 2013; Thorisdottir et al., 2017). Furthermore, non-heterosexual individuals and heterosexual individuals were identified by analysing sexual attraction patterns, which has been shown to be a successful way of categorising sexual attraction patterns (Johns et al., 2013; Austin et al., 2007).

The results were consistent with past research that have all showed that non-heterosexual individuals experience poorer mental health outcome as compared to heterosexual individuals (Chakraborty et al., 2011; Grant et al., 2014; Marshal et al., 2008; McNeil et al., 2017). However, these differences cannot be explained solely on sexual attraction – there are extra-personal variables that play a role in the relationship between sexual attraction and mental health. Regression analysis showed that there was a significant difference between non-heterosexual individuals and heterosexual individuals in depressive symptoms, but only when there was no history of sexual abuse. This indicated that the social

environment is significantly contributing in depressive symptoms among the non-heterosexual Icelandic adolescents which is consistent with Meyer (2013) sexual minority theory. As a result, lower parental and peer social support does explain higher levels of depressive symptoms and anxiety symptoms among sexual minority individuals, at least to some extent. But it is also important to note that parental social support and peer social support did not explain as much as sexual attraction in the degree of change in depressive symptoms and anxiety symptoms, making these two social support variables still relatively low in effect size compared to sexual attraction.

Sexual abuse is another factor that can significantly influence depressive and anxiety symptoms among non-heterosexual adolescents. The current study showed similar results as other scholars investigating the prevalence of sexual abuse in the non-heterosexual group (Balsam et al., 2005; Friedman et al., 2011). History of sexual abuse is much more common among non-heterosexual adolescents, as compared to their heterosexual peers, which also contributes to more depressive symptoms and anxiety symptoms among non-heterosexual adolescents in Iceland. With these results, it can be argued that the differences in depressive symptoms as well as anxiety symptoms go beyond the idea that the social environment plays a large part in the development of these symptoms – The relationship is much more complex and relies on numerous other variables.

It is also important to note that the current research had some limitations. First of all, the sample was drawn from a larger dataset, which may contribute to errors in the statistical analysis. Additionally, the most likely cause for bias could possibly be potential skewness and non-normality in the variables measuring depressive symptoms and anxiety symptoms. Furthermore, anxiety symptoms were measured using only three different questions and internal consistency was relatively low, and therefore Model 2 should be interpreted with caution. As the regression analysis indicated in model 2, sexual attraction, history of sexual abuse, parental social support and peer social support did have low beta coefficient despite

being significant. But model 1, however, had much higher beta coefficients and therefore could give more reliable results. Another thing that could possibly skew the results are the parental social support and peer social support variables. Both of these relied solely on self-perception of social support, which can easily be manipulated by various other variables, like cognitive factors, which as a result can give a false indication of actual social support (Florian et al., 1995; Lakey & Cassady, 1990; Sarason et al., 1986).

The current research was able to shed some light on the current mental health among non-heterosexual adolescents in Iceland. However, it is important to understand the difference in mental health between non-heterosexual individuals from a larger picture – the difference in mental health cannot be solely explained by the closest social environment. An idea for future research would be to explore the macro social environment and its effect on mental health. It is important to note that Meyer's Minority stress theory could possibly not explain the differences between different sexual attraction patterns and mental health at all. It is also important to understand the fundamental definition of social support and societal influence in general when it comes to research on the minority stress theory.

Future directions for research could be on longitudinal-design studies that identify variables that contribute to the development of different sexual attraction patterns. The development of sexual attraction is a complex process and understanding it from a longitudinal standpoint is crucial to understanding how the social environment and even cognitive factors contribute to these differences between non-heterosexual individuals and heterosexual individuals. By studying sexual attraction from a developmental standpoint, it is possible to identify variables that are linked with sexual attraction in the first place, and from there to see a possible confounding effect of those variables on mental health.

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