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### Abstract

The literature on sexual minority adolescents and young adults has highlighted a poor mental status among those groups compared to their heterosexual peers. Sexual minorities are also more likely to experience stress factors such as bullying and physical violence. However, sexual minority young adults have not been studied much in Iceland, a Nordic country renowned for a high degree of sexual equality. Given what the literature has shown to date, a noteworthy question is whether patterns of mental well-being of sexual minority adolescents and young adults in Iceland are comparable to other countries. The aim of the present study was to provide an assessment of mental well-being in sexual minority young adults in Iceland. We used population data to examine a selection of mental well-being indicators in 16–20 year-olds, both-sex-attracted and same-sex-attracted participants, and compared them to other-sex-attracted peers. Findings indicated that sexual minority young adults exhibited significantly greater levels of depressed mood, anger, and perceived stress than other-sex-attracted young adults. However, when stratified by gender and sexual attraction pattern, the analyses revealed that both-sex-attracted young women scored significantly higher on all indicators than any other group. We conclude that studies in this area should strive to distinguish between same-sex and both-sex attraction as well as to stratify analyses by gender. The well-being of both-sex-attracted young women is a compelling topic for future research.

*Keywords:* gender, bisexuality, sexual minority, young adults, mental well-being, depressed mood, anger, perceived stress

## Psychological Well-Being of Sexual Minority Young Adults in Iceland:

### Assessing Differences by Sexual Attraction and Gender

Studies have shown that sexual minority adolescents and young adults face a variety of challenges in everyday life above and beyond commonplace stressors faced by most young people. For example, sexual minority adolescents are faced with coping with stress associated with coming out (Rosario, Hunter, Maguen, Gwadz, & Smith, 2001), fear of family rejection (Ryan, Russell, Huebner, Diaz, & Sanchez, 2010), and various types of societal discrimination (Almeida, Johnson, Corliss, Molnar, & Azrael, 2009). Psychosocial stress factors such as those represent major risk factors for depression as one notable example.

The aim of the present study was to assess levels of depressed mood, anger, and perceived stress among same-sex-attracted and both-sex-attracted adolescent young adults in Iceland, a progressive country regarding sexual minority issues. Despite increased public awareness about sexual minority discrimination, little effort has been devoted to research into the health and well-being of this group in Iceland. Studies are needed to determine whether the high levels of acceptance in Iceland (Danish Institute for Human Rights, 2010) have resulted in comparable ranks of mental well-being among sexual minority youth compared to their heterosexual counterparts. A secondary aim of our study was to explore whether lifetime experiences of victimization (both physical and in the online environment) may explain differences in mental health indicators by sexual orientation.

### **Sexual Minority Mental Health**

A substantial body of literature, cumulating in the previous two decades, points to poorer mental and physical health of sexual minority people when compared with the heterosexual population (Dean et al., 2000; Mayer et al., 2008). The bulk of the literature on the mental health

of sexual minority populations has been devoted to suicidal behaviors (Mustanski, Garofalo, & Emerson, 2010), which are particularly prevalent among sexual minority youth (Almeida et al., 2009; D'Augelli, 2002; Mustanski et al., 2010; Russell & Joyner, 2001). Sexual minority youth are also at greater risk than their heterosexual peers are to suffer from depression (Bos, Sandfort, de Bruyn, & Hakvoort, 2008; Williams, Connolly, Pepler, & Craig, 2005) and anxiety (Hatzenbuehler, McLaughlin, & Nolen-Hoeksema, 2008), to engage in self-harm (King et al., 2008), have lower self-esteem (Bos et al., 2008), and to use illicit drugs (Corliss et al., 2010). Additionally, studies have found sexual minority students to perform poorer academically compared to heterosexual youth (Bos et al., 2008).

Although suicidal behaviors, depression, and stress have been quite extensively studied, several other emotions have received much less attention in the literature, anger being a noteworthy example. Anger has been associated with a variety of aversive outcomes in adulthood if left untreated in adolescence, such as elevated blood pressure, substance use, and suicidal behaviors (Daniel, Goldston, Erkanli, Franklin, & Mayfield, 2009; Kerr & Schneider, 2008). Also, anger has been found to be a key mediator in the relationship between bullying and delinquency among teens (Sigfusdottir, Gudjonsson, & Sigurdsson, 2010). However, little is known about levels of anger among sexual minority youth. Because anger and depressed mood have been shown to co-occur in children and adolescents (Compas, Grant, & Ey, 1994), it is reasonable to assume that sexual minority young adults will show higher levels of anger than their heterosexual peers will, although this difference is presently not known.

### **Sexual Attraction Patterns and Mental Health**

The distinction between homosexuality and bisexuality in research is relatively recent (Rust, 2002). However, the literature cumulating in the last two decades suggests that both-sex-

attracted people are at an even greater risk for poor mental health outcomes than same-sex-attracted people are (Galliher, Rostosky, & Hughes, 2004). The struggle with one's sexual orientation might be a risk factor, adding to an already challenging period in young people's lives. For example, a meta-analysis by Marshal et al. (2011) showed bisexual adolescents to be almost five times more likely to report suicidal behaviors compared with their heterosexual peers. The reasons for this pattern are unclear, but in addition to conventional challenges facing sexual minority individuals, bisexual people may face unique stressors. For example, some researchers have pointed out that biphobia may stem from both the hetero- and homosexual communities (Dodge & Sandfort, 2007; Rust, 2002). Both-sex-attracted people may therefore face "double discrimination" compared with same-sex-attracted people. Studies have suggested that bisexual individuals are less open about their sexuality and report a greater level of difficulty accepting their sexuality than lesbian and gay people do (Lewis, Derlega, Brown, Rose, & Henson, 2009; Warner et al., 2004). Additionally, in assessing the general population's view on bisexuality, Herek (2002) found that the American public has an overall less favorable view of bisexual people than of lesbian and gay people.

### **Cultural Comparison and Minority Stress**

Generally, societal acceptance of sexual minority people has improved in recent years in Western Europe (Horowitz, 2013). However, Iceland, an island country in the North Atlantic, enjoys a somewhat unique position concerning sexual minority rights. Sexual minority individuals enjoy the same legal rights as heterosexual individuals, and Icelanders overall have an accepting view of sexual minority individuals (Danish Institute for Human Rights, 2010). To demonstrate, in 2009, the first openly lesbian prime minister in the world took office in Iceland (Gunnarsson, 2009); in 2010 a bill which legalized same-sex marriage was unanimously passed

into law (Law in Respect of Marriage, 2010); and in 2016, the country's president was the first national head of state to formally address the Gay Pride Parade (Bjornsdottir, 2016). Of course, political inclusion does not equal full social inclusion of sexual minorities, and formal rights do not by themselves eradicate stigma, bullying, and other forms of victimization. There are still challenges facing sexual minorities in Iceland. For example, qualitative research conducted among Icelandic LGBT high school students indicated that the Icelandic school system is still heteronormative and not encouraging for students to "come out" (Kjaran & Kristinsdóttir, 2015).

This is evident in studies conducted on mental health of sexual minority people, even in progressive societies. For example, a recent study conducted in Norway, a country well known for its progressive view on sexual minority issues, showed that sexual minority adolescents reported higher levels of depression, suicidality, and substance use than their heterosexual peers did (Watson, Wheldon, Wichstrøm, & Russell, 2015). Furthermore, when compared to a sample of U.S. adolescents, Norwegian sexual minority adolescents exhibited similar levels of aversive health behaviors, like cigarette smoking and alcohol consumption, in addition to having similar levels of mental health problems.

One attempt to explain the health disparities between the heterosexual population and sexual minority populations has been the framework of minority stress theory (Lick, Durso, & Johnson, 2013). In short, the theory proposes that anti-gay stigma causes excessive stress that furthermore causes mental and physical health problems. Studies support the notion that sexual minority adolescents face various stress factors beyond those of their heterosexual peers; studies from North America and Europe show sexual minority youth to be more likely than their heterosexual peers are to experience being bullied in school (Almeida et al., 2009, USA; Williams et al., 2005, Canada), and being physically and sexually abused by peers or adults

(D'Augelli, 2002, USA, Canada; Donahue, Långström, Lundström, Lichtenstein, & Forsman, 2017, Sweden; Friedman et al., 2011, USA, Canada; Saewyc et al., 2006, USA, Canada) as well as report lower levels of social support (Bos et al., 2008, Netherlands; Jorm, Korten, Rodgers, Jacomb, & Christensen, 2002, Australia; Needham & Austin, 2010; Williams et al., 2005, USA). The accumulation of those factors could potentially weaken their capacity to cope with stress. In fact, one U.S.-based study by Bontempo and D'Augelli (2002) found that among youths who had experienced victimization at school, sexual minority students had higher levels of substance use and suicidality than did heterosexual youth, whereas this difference between sexual minority youth and heterosexual youth was not found among those that had not experienced victimization.

However, it is worth mentioning that minority stress as a main causal factor for LGB youth's mental health disparities has been challenged in recent years, especially in the light of findings in socially progressive countries. Twin studies have found genetic factors to be heavily associated with increased levels of depression (Zietsch et al., 2012) as well as neuroticism and psychoticism (Zietsch, Verweij, Bailey, Wright, & Martin, 2011) in adult samples. A Swedish study by Donahue et al. (2017) found that although sexual-minority adolescents experienced greater victimization and abuse as compared to their heterosexual counterparts, their non-sexual minority twins experience similar levels of victimization. The conclusion was that familial factors (genetic or environmental) may explain decreased psychological adjustment in this group. In fact, one American study by Rothblum and Factor (2001) on adult women found openly lesbian women to have significantly higher self-esteem than their heterosexual sisters. However, genetic and twin research is beyond the scope of the present study.

### **Gender Differences in Sexual Minority Mental Health**



Mental health indicators not only vary between people by sexual orientation, but gender also plays a significant role. The framework of intersectionality offers a helpful view on the interplay between sexuality and gender (Else-Quest & Hyde, 2016). From this perspective, all people fall in multiple, interconnected, dynamic social categories, each of them containing a dimension of inequality or power. Because women still face discrimination and challenges not faced by men, and bisexual individuals seem to face more challenges than lesbians and gay men do, findings on bisexual young women should come as no surprise. Bisexual female adolescents and bisexual young women have consistently been found to be at an especially elevated risk of aversive outcomes compared to other young women, such as increased substance use, depression, low self-esteem, suicidal ideation, being physically attacked, and using and selling drugs (Corliss et al., 2010; Galliher et al., 2004; King et al., 2008; Saewyc et al., 2007; Udry & Chantala, 2002). At present, both-sex-attracted women may therefore face multiple inequalities not necessarily faced by other sexual minorities. This is related to minority stress theory because both-sex-attracted women not only face challenges as women in a male-dominated society, but also may represent an “invisible” group within the sexual minority community. Studies are less clear on this relationship for the bisexual male population, but research into suicidal behavior, in which gay men and bisexual men are distinguished, point to increased suicide risk of the bisexual group compared to the gay group (Paul et al., 2002; Robin et al., 2002).

### **The Present Study**

One of the most critical limitations to much of the literature to date has been that studies into the mental well-being of sexual minority youth have operated primarily with purposeful samples from within the sexual minority community. Research on sexual minorities has also placed considerable focus on those who identify as non-heterosexual, assuming that identity is

linked to coming out to friends and family as lesbian, gay or bisexual. It is reasonable to assume that some young adults have not labeled themselves by coming out, even though they may do so later in life. It could therefore be important to look at sexual minority groups in terms of sexual attraction. In the present study, we use population data that has been collected with all accessible adolescents and young adults attending junior colleges in Iceland (typical age range is 16–20 years-old). The focus of our study was to assess key mental health indicators (i.e., depressed mood, perceived stress, and anger) among same-sex-attracted and both-sex-attracted adolescents and young adults and to compare those groups with their other-sex-attracted peers, as well as examine whether these effects differ by participants' gender.

Based on the previous literature reviewed, we hypothesized that we would find an Attraction Pattern main effect such that both-sex-attracted (BS) young adults would report significantly higher levels of depressed mood, anger, and perceived stress than would both the single-sex attracted groups (Hypothesis 1a). We further predicted that same-sex-attracted (SS) youth would report higher levels of depressed mood, anger, and perceived stress than would other-sex-attracted (OS) youth (Hypothesis 1b) [i.e.,  $BS > SS > OS$ ]. Although, we predicted that the both-sex-attracted group would show higher levels on all outcomes than the other two groups, we predicted that when looking at young men and women separately, this pattern would hold true for young women [i.e.,  $BS > SS > OS$ ] but in the male sample we expected a nonsignificant difference between both-sex and same-sex-attracted young men [i.e.,  $(BS = SS) > OS$ ], thus expecting a Gender x Attraction Pattern interaction (Hypothesis 2). Given the level of group differences observed to date, we further hypothesized (Hypothesis 3) that the relationship between sexual attraction patterns and depressed mood, anger and perceived stress would remain significant after controlling for hostility and victimization experiences in the forms of physical

abuse and cyber harassment. Because socioeconomic factors and prior experiences with violence are known predictors of our three outcome variables, we included these predictors as covariates in our analyses.

## Method

### Participants

The data we used in the present study come from the tri-annual 2013 *Youth in Iceland* junior college survey conducted by the Icelandic Centre for Social Research and Analysis (ISCRA) with support from the Ministry of Education in Iceland. Data from these surveys are used to monitor trends in health and well-being, substance use and abuse, and various risk and protective factors for health-related outcomes, as well as to inform policy and action at the local level, both within schools and geographic units. All junior college students (typically 16–20 years of age) who attended school on the day that the survey was administered completed the questionnaire inside their classrooms where teachers supervised their participation under a study protocol by ICSRA (Kristjansson, Sigfusson, Sigfusdottir, & Allegrante, 2013). All study procedures are in accordance with the Icelandic Privacy and Data Protection authority guidelines for the protection of human subjects. A total of 11,116 students from all 31 junior colleges in Iceland participated in the study, which represents 75.5% of all students in this age group enrolled into full-time studies. Of participants in the study, 48.3% ( $n = 5263$ ) were young women and 50.5% ( $n = 5501$ ) were young men; 1.2% ( $n = 128$ ) of participants did not specify their gender and were excluded from our analyses. The average age of participants in the sample was 17.4 years (Range = 16–20,  $SD = 1.2$ ). Fully 83.7% ( $n = 8,530$ ) were classified as other-sex-attracted, 8.1% ( $n = 822$ ) as both-sex-attracted, and 3.1% ( $n = 321$ ) as same-sex-attracted.

### Measures

**Independent variables: Sexual attraction pattern and gender.** Two questions on sexual attraction were used to identify different sexual attraction patterns. According to a review of various measurements of sexual orientation, including self-labeling and sexual behavior, measuring sexual attraction is likely the most reliable option available (Saewyc et al., 2004). The questions used were: (a) “Where would you place yourself on a scale measuring sexual attraction to the other sex?” and (b) “Where would you place yourself on a scale measuring sexual attraction to the same sex?” Both questions were answered on a 5-point scale, ranging from 1 (*no attraction*) to 5 (*strong attraction*). Participants who responded with a 3, 4 or 5 on the scale measuring attraction to the other sex combined with a score of 2 or lower on the scale measuring attraction to the same sex were defined as other-sex-attracted. Participants who scored a 3 or higher on the scale measuring attraction to the same sex combined with a score of 2 or lower on the scale measuring attraction to the other sex were defined as same-sex-attracted. Participants who scored 3 or higher on both the scale measuring attraction to the same sex and the scale measuring attraction to the other sex were defined as both-sex-attracted. Finally, participants that scored 2 or lower on both scales were excluded from the study because of the plausibility that the low attraction to neither gender could be attributed to a young age because close to 70% of that group was 17 years old or younger.

In the Youth in Iceland survey, gender is a binary variable, and participants were asked to indicate whether they were a boy [strákur] or a girl [stelpa]. In our analysis, participants' gender was coded as 1 for girls and 0 for boys. This limitation is addressed in the Discussion section.

**Covariates: Socioeconomic indicators and experienced violence.** *Family structure* was assessed by asking participants who lived with them in their home. The response options were: 1 = “both parents,” 2 = “mother and not father,” 3 = “father and not mother,” 4 = “mother and

partner,” 5 = “father and partner,” 6 = “I live on my own,” and 7 = “other arrangement.” The variable was dichotomized with 0 = “lives with both parents” (67.5%,  $n = 6135$ ) and 1 = “other arrangements” ( $n = 2998$ ).

*Parental education* was measured with separate questions about their fathers' and mothers' educational attainment. The responses to the questions were: 1 = “finished elementary school or less,” 2 = “started a school at the secondary level,” 3 = “finished secondary level,” 4 = “started university level,” 5 = “has a university degree.” The scores were combined into a single scale with a range from 2 to 10.

To assess *family financial status*, respondents were asked how well off financially they believed their family was in comparison to the average family in Iceland. The responses to the question were measured on a 7-point scale: 1 = “much worse off,” 2 = “quite worse off,” 3 = “somewhat worse off,” 4 = “similar,” 5 = “somewhat better off,” 6 = “quite better off,” and 7 = “much better off.”

Experience with violence included both physical victimization and cyber harassment. To assess *physical victimization*, participants were asked if they had ever been a victim of physical violence in the last 12 months. The responses were measured on a 7-point scale: 1 = “never,” 2 = “once,” 3 = “2–5 times,” 4 = “6–9 times,” 5 = “10–13 times,” 6 = “14–17 times,” and 7 = “18 times or more.”

*Cyber harassment* was measured with two questions “How often has the following happened to you?”: (a) “you received hateful or hurtful messages from an individual or a group on the internet”; (b) “you received hateful or hurtful messages from an individual or a group on your cell phone.” The responses to each question were measured on a 5-point scale: 0 = “never,”

1 = "once," 2 = "twice," 3 = "three to four times," and 4 = "five times or more." The two questions were combined to a scale with a range from 0 to 8 ( $r = .66$ ).

**Dependent variables: Mood, stress, and anger.** Three scaled measures were used to assess mental well-being. *Depressed mood* was measured with ten questions from the depression dimension of SCL-90, a multidimensional self-report symptom inventory (Leonard, Derogatis & Cleary, 1977; Derogatis, Lipman, & Covi, 1973). Respondents were asked how often during the previous week each statement applied to them: "you were sad or had little interest in doing things," "you felt lonely," "you had sleeping problems," "you cried easily or wanted to cry," "you felt sad or blue," "you were not excited in doing things," "you were slow or had little energy," "the future seemed hopeless," and "you thought about committing suicide." The responses to each question were measured on a 4-point scale from 0 (*never*) to 3 (*often*). Item responses were summed, with a range from 0 to 30 ( $\alpha = .92$ ), such that higher scores indicate higher depressed mood.

*Perceived stress* was measured with four questions from the Cohen Perceived Stress Scale (Cohen, Kamarck, & Mermelstein, 1983). Headed with how often during the last 30 days they experienced the following: "you felt that you were unable to control the important things in your life," "you felt difficulties were piling up so high that you could not overcome them," "you felt that things were going your way" (reverse scored), and "you felt uncertain about your ability to handle your personal problems." Responses were coded on a 4-point scale from 0 (*never/almost never*) to 3 (*almost always/always*). Item responses were summed, ranging from 0 to 12 ( $\alpha = .76$ ), such that higher scores indicated greater perceived stress.

*Anger* was measured with five questions from the SCL-90, a multidimensional self-report symptom inventory (Leonard et al., 1977; Derogatis et al., 1973). Participants were asked how

often during the previous week each statement applied to them: “you were easily annoyed or irritated,” “you experienced temper outbursts that you could not control,” “you had urges to break or smash things,” “you got into an argument,” and “you shouted or threw things.”

Responses were coded on a 4-point scale: from 0 (*never*) to 3 (*often*). Item responses were summed, ranging from 0 to 15 ( $\alpha = .85$ ), such that higher scores indicated higher levels of self-reported anger.

### Results

We conducted separate 2 x 3 ANCOVAs crossing Participants' Gender with Attraction Pattern (both-sex [BS], same-sex [SS], and other-sex [OS] attracted) and including Parental Education, Family Structure, and Family Financial Status as covariates for each of our three dependent variables: Depressed Mood, Anger, and Perceived Stress, while applying a Bonferroni correction ( $p < .017$ ). As predicted by our first hypothesis, we found a significant main effect for each outcome measure: Depressed Mood,  $F(2, 8539) = 86.66, p < .001, \eta^2 = .02$ ; Anger,  $F(2, 8643) = 18.21, p < .001, \eta^2 = .01$ ; and Perceived Stress,  $F(2, 8623) = 59.72, p < .001, \eta^2 = .02$ . Focusing in on cell comparisons, we predicted that all three groups would differ significantly, with both-sex-attracted youth scoring highest (Hypothesis 1a) and other-sex-attracted young women and men scoring lowest. We also predicted that the same-sex-attracted group would score higher than the other-sex-attracted group (Hypothesis 1b) [i.e.,  $BS > SS > OS$ ]. As can be seen in Table 1, this pattern was found for Depressed Mood and Perceived Stress, but not for Anger. For Anger, both-sex-attracted and same-sex-attracted youth scored similarly (i.e.,  $BS = SS; p = .157$ ), and there was not a significant difference in scores between the same-sex-attracted group and the other-sex-attracted group (i.e.,  $SS = OS; p = .194$ ) whereas the both-sex-attracted participants scored significantly higher than other-sex-attracted participants (i.e.,  $BS > OS; p$

<.001,  $d = .39$ ). Thus, Hypothesis 1a and Hypotheses 1b were largely, but not entirely, supported, with the exception being for anger.

Although we offered no specific hypotheses regarding the main effects for participants' gender, we found significant main effects across all outcome variables for Participants' Gender: Depressed Mood,  $F(2, 8539) = 114.01, p < .001, \eta^2 = .01$ ; Anger,  $F(2, 8643) = 76.91, p < .001, \eta^2 = .01$ ; and Perceived Stress,  $F(2, 8623) = 57.58, p < .001, \eta^2 = .01$ . As can be seen in Table 1, young men scored significantly lower than young women across all three outcomes. Each of the covariates across all three dependent measures was also significant ( $ps < .001$ ).

We predicted that a significant interaction effect would be found between Attraction Pattern and Gender for all outcome variables (Hypothesis 2). This proved to be true for all outcomes: Depressed Mood,  $F(2, 8539) = 7.75, p < .001, \eta^2 = .002$ ; Anger,  $F(2, 8643) = 11.26, p < .001, \eta^2 = .003$ ; and Perceived Stress,  $F(2, 8623) = 4.79, p = .008, \eta^2 = .001$ . When specifically looking at the main effect of Attraction Pattern within Gender for young women, we found a significant difference for all outcome variables: Depressed mood,  $F(2, 8592) = 112.35, p < .001, \eta^2 = .03$ ; Anger,  $F(2, 8592) = 112.35, p < .001, \eta^2 = .03$ ; and Perceived Stress  $F(2, 8677) = 78.98, p < .001, \eta^2 = .02$ . For young men, however, there was a significant main effect of Attraction Pattern within Gender for Depressed Mood,  $F(2, 8592) = 22.73, p < .001, \eta^2 = .01$ , and Perceived Stress,  $F(2, 8677) = 14.31, p < .001, \eta^2 = .001$ , but not for Anger  $F(2, 8697) = .33, p = .722$ .

Looking closer at the cell comparisons (see Table 1), Bonferroni post hoc tests showed that for Depressed Mood the difference between same-sex-attracted and both-sex-attracted young men was not statistically significant ( $p = 1.0$ ) whereas both the same-sex-attracted ( $p < .001, d = .46$ ) and the both-sex-attracted young men ( $p < .001, d = .47$ ) scored significantly higher than the



other-sex-attracted young men [i.e., (BS = SS) > OS for Depressed Mood for young men]. This pattern was different for young women. Specifically, both-sex-attracted young women had a significantly greater mean level of Depressed Mood than the same-sex-attracted ( $p < .001$ ,  $d = .51$ ) and other-sex-attracted young women ( $p < .001$ ,  $d = .70$ ) whereas there was a nonsignificant difference between same-sex attracted and other-sex-attracted young women ( $p = .169$ ) [i.e., BS > (SS = OS) for Depressed Mood for young women].

Cell comparison also showed a different pattern regarding Anger in the male and female sample. Specifically, there was a nonsignificant group difference in the male sample for Anger regardless of sexual attraction pattern [i.e., BS = SS = OS for Anger for young men]. However, same-sex-attracted young women had higher mean levels of Anger than other-sex-attracted young women ( $p = .012$ ,  $d = .21$ ), and both-sex-attracted young women had significantly greater mean levels of Anger than the same-sex-attracted ( $p < .001$ ,  $d = .23$ ) as well as the other-sex-attracted young women ( $p < .001$ ,  $d = .47$ ). Thus for women, all three groups differed significantly from each other [i.e., BS > (SS > OS) for Anger for young women].

For Perceived Stress, same-sex-attracted and both-sex-attracted young men had similar outcomes ( $p = 1.00$ ), whereas other-sex-attracted young men scored significantly lower than the same-sex-attracted ( $p < .001$ ,  $d = .34$ ) and the both-sex-attracted young men ( $p < .001$ ,  $d = .39$ ) [i.e., (BS = SS) > OS for Perceived Stress for young men]. In the female sample, both-sex-attracted young women reported a higher mean level of Perceived Stress than both the other-sex-attracted ( $p < .001$ ,  $d = .60$ ) and same-sex-attracted young women ( $p < .001$ ,  $d = .47$ ), whereas both groups in the female sample attracted to one gender showed similar outcomes ( $p = .114$ ) [i.e., BS > (SS = OS) for Perceived Stress for young women]. Cell comparison showed that Hypothesis 2 was largely supported where both-sex-attracted young women reported

significantly higher mean levels of Depressed Mood, Anger, and Perceived Stress when compared to the other two groups whereas same-sex-attracted and both-sex-attracted young men reported similar mean levels on all outcome variables.

Table 2 shows correlations for the covariates Cyber Harassment and Physical Victimization with the three outcome variables: Depressed Mood, Anger, and Perceived Stress. Both Cyber Harassment and Physical Victimization were associated with higher levels of Depressed Mood, Anger, and Perceived Stress for all three sexual attraction patterns. Our third hypothesis tested whether the associations between Cyber Harassment and Physical Victimization and the three outcome variables causes the effect of Attraction Pattern on the three outcome variables to become nonsignificant. Therefore, the covariates Physical Victimization and Cyber Harassment were added to the ANCOVA model. As predicted the analysis revealed that the main effect of Attraction Pattern remained significant for all three outcome variables: Depressed Mood,  $F(2, 8479) = 57.78, p < .001, \eta^2 = .01$ ; Anger,  $F(2, 8581) = 4.43, p = .012, \eta^2 = .001$ ; and Perceived Stress,  $F(2, 8554) = 36.88, p < .001, \eta^2 = .01$ , although the effect size for all three outcomes was reduced. We also found that the main effect of Participants' Gender remained significant across all outcome variables: Depressed Mood,  $F(2, 8479) = 86.40, p < .001, \eta^2 = .01$ ; Anger,  $F(2, 8581) = 57.45, p < .001, \eta^2 = .01$ ; and Perceived Stress,  $F(2, 8564) = 38.23, p < .001, \eta^2 = .004$ . The interaction effect remained significant for both Depressed Mood,  $F(2, 8479) = 4.15, p = .016, \eta^2 = .001$ , and for Anger,  $F(2, 8581) = 8.21, p < .001, \eta^2 = .002$ , but became nonsignificant for Perceived Stress,  $F(2, 8564) = 2.76, p = .064, \eta^2 = .001$ , indicating that the group differences found between sexual attraction pattern groups regarding Perceived Stress were no longer different in the male and female sample when Cyber Harassment and Physical Victimization were controlled.

### **Discussion**

In the present study we examined the psychological well-being of sexual minority young adults in Iceland, applying a unique population sample offering comparison to non-sexual minority peers. In summary, our results point to an overall poorer well-being among same-sex and both-sex- attracted young adults in Iceland, compared to their other-sex-attracted peers. Further analyses revealed prominent gender differences. Both-sex-attracted young women scored higher than other young women on all unfavorable outcomes. Furthermore, same-sex-attracted young women reported greater levels of anger than other-sex-attracted young women, and both-sex-attracted young women reported a greater level of anger than both the other groups. The same pattern was not observed for young men. Both-sex-attracted young men showed similar levels of depressed mood and perceived stress as same-sex-attracted young men, although both groups showed higher levels than other-sex-attracted young men. Anger did not differ significantly by sexual attraction patterns in the male sample. Furthermore, the relationship between sexual attraction patterns and the outcome variables remained significant after controlling for hostility and victimization. To the authors' best knowledge, our is the first study to examine levels of anger in such a diverse group of sexual minority youth.

#### **Both-Sex-Attracted Young Women and Intersectionality**

Our findings point to a concern with regard to both-sex-attracted young women because this group exhibited the poorest scores on all mental health indicators in our sample. Although physical victimization and cyber harassment appeared to play a role in these group differences, the differences persisted despite controlling for those variables. The findings regarding anger among both-sex-attracted young women is especially alarming because anger in young adulthood and adolescence has been found to promote poor mental health and maladjustment

(Kerr & Schneider, 2008). Both minority stress theory and the intersectionality approach offer possible explanations for the observed pattern. From an intersectional perspective (Else-Quest & Hyde, 2016; Parent, DeBlaere, & Moradi, 2013), people fall in multiple, interconnected social categories that can facilitate levels of power or inequality. From that standpoint, both-sex-attracted young women are especially vulnerable because they are young women in a society that is still dominated by middle-aged and older men, are part of a sexual minority in a society that is heteronormative, and are a part of a marginalized group within the sexual minority spectrum which may be dominated by same-sex-attracted people. Furthermore, both-sex-attracted women may face potential discrimination from their own families. Some authors have proposed that bisexual people face double discrimination (Dodge & Sandfort, 2007; Rust, 2002). Given the persistence of classical sexual norms in society, the interplay between gender and sexual attraction may be visible in its clearest form in young both-sex-attracted women. Careful attention should be devoted to the welfare of this group.

### **Acceptance, Minority Stress, and Mental Health**

Although Iceland is considered to be among the most progressive countries in regard to sexual minority people's rights and societal approval (European Parliament's Intergroup on LGBTI Rights, 2012), to date this high level of acceptance does not appear to have resulted in sexual minority young adults reaching the same level of well-being as their other-sex-attracted peers. Our findings harmonize with recent findings from Norway (Watson et al., 2015), another progressive country, which indicated poorer mental health and health behaviors of sexual minority youth, as compared to their heterosexual counterparts. Our findings also are in line with Watson et al.'s (2015) finding that health disparities persist, even after the implementation of supportive policies and high levels of acceptance toward sexual minorities. Shifting attitudes

may therefore not influence health and well-being of sexual minorities immediately, or not in ways we would expect. Furthermore, our findings are in line with the minority stress theory framework (Lick et al., 2013) because sexual minority young adults reported more hostility and victimization, in the form of cyber harassment and physical abuse, compared to their heterosexual peers. Our results indicate that the elevated level of anger exhibited by same-sex- and both-sex-attracted young adults is caused to some extent by experiences of physical victimization and other forms of harassment faced more frequently by sexual minority groups.

### **Practice Implications**

The present study suggested that more than 10% of young adults in Iceland identify as same-sex or both-sex-attracted, which means that a great effort to increase acceptance and understanding of non-heterosexual orientations is not only justifiable, but necessary. First, sex education concerning different sexual orientations should be taught from an early age. This could combat high levels of harassment sexual minority students may face from their peers. Because victimization and harassment were found to promote anger, at least in part, the prevention of anti-gay bullying should be made a priority. Second, for obvious reasons, education on sexuality should be included in university programs for professionals training to work with children and adolescents. Third, health education and promotion at the community-level, such as for parents and other stakeholders, should be enhanced. The positive and accepting atmosphere already present in Iceland should be a fertile soil for such an initiative. Fourth and finally, special attention should be given to sexual minority women in all initiatives.

### **Strengths and Limitations**

Hitherto, reliance on convenience sampling has been one of the limitation of the literature on sexual minority youth (Bouris et al., 2010). The strength of the present study is that it relies

on a population sample in a socially progressive country, outside of North America where most research on health disparities of sexual minority youth has taken place. The sample offers a comparison between same-sex-attracted and both-sex-attracted young adults and their other-sex-attracted peers. Both-sex-attracted people are a historically overlooked population, and our large sample generates important conclusions, especially because it allows for comparison with other sexual attraction groups. A valuable contribution of our study was to analyze same-sex-attracted and both-sex-attracted young adults separately as well as to stratify the analyses by gender, revealing different trends in psychological well-being of all six subgroups. Our ability to analyze both-sex-attracted young women may be of value to the further development of the psychology of women.

However, despite notable strengths, our study has several limitations. The data used in the present report included a measure on sexual attraction pattern (Mossige, Ainsaar, & Svedin, 2007) and not alternatives such as self-identified sexual orientation. Although sexual attraction pattern is likely the most reliable single measure of adolescents' sexual orientation (Saewyc et al., 2004), utilizing more than one measure would have been more valid. We are therefore unable to rule out the possibility that some respondents might have identified with a different sexual attraction than the one in which we categorized them. Also, the Youth in Iceland survey assumed gender as a binary variable. Gender is a social construct that is most often assigned to a biological, dichotomous narrative (Parent et al., 2013). It is especially important for sexual minority researchers to be aware of the fluidity and complexity of gender, but because of the dataset used in our study, we relied on gender as a dichotomous variable. Therefore, some sexual minority youth in the sample may identify as transgender or exert non-binary gender identities. The definitions of different sexual orientations, their nature, and their stability over time are still

debated. Although the popular stereotype that bisexuality is a “phase” or an transitional stage before moving on to homosexuality has mostly been dismissed, fluctuation in sexual identity can occur over time (Diamond, 2003, 2008). Human sexuality is a complex phenomenon and further research on its nature is still needed. Our data are limited to adolescents and young adults currently enrolled full-time in junior college and therefore do not include part-time students or those not enrolled in school. Furthermore, we employed cross-sectional data which precludes us from making conclusions concerning the temporal order of events. A final note should also be made concerning small effect sizes which raise concerns about the meaningfulness of some significant group differences, especially regarding interaction effects.

### **Future Research Directions**

Future studies should devote special attention to the mental and physical health of bisexual female adolescents and bisexual young women. An intersectional approach, using mediation and moderation analysis, would provide valuable additions to the current literature. Furthermore, because minority stress theory has been challenged by genetic and familial studies, including more variables on family history and biological data would be a logical next step in research in this area. Lastly, future research should include more diverse measures of gender than made possible in our study such as transgender and intersex status.

### **Conclusions**

The present study is the first known population study of sexual minority young adults' mental health that assess levels of anger, an important emotion, among this group. Overall, same-sex-attracted and both-sex-attracted young adults showed higher levels of anger, depressed mood, and perceived stress than their other-sex-attracted counterparts did. Both-sex-attracted young women displayed an especially high risk of poor mental health. This finding is in line with

previous studies, and it implies that although Iceland is considered progressive and approving of sexual minority people, more work is needed. As previous studies have suggested, gender played an important role in the interplay between sexual attraction patterns and mental health. The present results underscore that sexual minority individuals should not be viewed as a homogeneous group but rather as separate groups that face different challenges and may rely on different coping mechanisms.



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Table 1

*Descriptive Statistics for Study Variables by Participants' Sexual Attraction Pattern and Gender*

Attraction pattern	Depressed mood						Anger			Perceived Stress								
	Young Men		Young Women		Attraction main effect		Young Men		Young Women	Attraction main effect		Young Men	Young Women	Attraction main effect				
	<i>M</i>	<i>(SD)</i>	<i>M</i>	<i>(SD)</i>	<i>M</i>	<i>(SD)</i>	<i>M</i>	<i>(SD)</i>	<i>M</i>	<i>(SD)</i>	<i>M</i>	<i>(SD)</i>	<i>M</i>	<i>(SD)</i>				
Both-sex	9.15	(7.58) <sub>x</sub>	14.87	(8.01) <sub>x</sub>	13.29	(8.35) <sub>a</sub>	3.72	(3.70) <sub>x</sub>	5.95	(4.13) <sub>x</sub>	5.33	(4.13) <sub>a</sub>	4.02	(2.40) <sub>x</sub>	5.52	(2.27) <sub>x</sub>	5.11	(2.76)
Same-sex	9.05	(8.07) <sub>k</sub>	10.80	(7.40) <sub>y</sub>	10.04	(7.74) <sub>b</sub>	3.57	(3.27) <sub>x</sub>	5.01	(3.75) <sub>y</sub>	4.39	(3.62) <sub>ab</sub>	3.92	(2.80) <sub>x</sub>	4.39	(2.50) <sub>y</sub>	4.19	(2.64)
Other-sex	6.23	(6.00) <sub>y</sub>	9.77	(7.24) <sub>y</sub>	8.07	(6.90) <sub>c</sub>	3.42	(3.20) <sub>x</sub>	4.27	(3.53) <sub>z</sub>	3.86	(3.40) <sub>b</sub>	3.16	(2.23) <sub>y</sub>	3.99	(2.22) <sub>y</sub>	3.59	(2.41)
Gender main effect	6.47	(6.21) <sub>a</sub>	10.36	(7.51) <sub>b</sub>	8.55	(7.20)	3.44	(3.23) <sub>a</sub>	4.48	(3.64) <sub>b</sub>	4.00	(3.50)	3.22	(2.26) <sub>a</sub>	4.17	(2.59) <sub>b</sub>	3.73	(2.49)

*Note.* Subscripts (a, b, and c) are used to report the main effects for participants' gender (across a row) and attraction pattern (down a column) such that means with different subscripts within each main effect are significantly different ( $p < .017$ ). Within each matrix crossing Participants' Gender with Attraction Pattern, subscripts (x, y, and z) indicate significant cell differences within gender and across the three attraction patterns (i.e., down the column). Depressed mood is measured on a scale ranging from 0–30; anger, 0–15; and perceived stress, 0–12.

Table 2

*Correlations Among Continuous Study Variables*

Variables	Correlations					Correlations			
	1	2	3	4	5	1	2	3	4
1. Physical victimization	--	.41***	.28***	.31***	.25***	--			
2. Cyber victimization	.28***	--	.40***	.34***	.39***	.18***	--		
3. Depressed mood	.18***	.42***	--	.60***	.68***	.15***	.32***	--	
4. Anger	.20***	.38***	.64***	--	.42***	.22***	.29***	.56***	--
5. Perceived stress	.19***	.34***	.73***	.50***	--	.16***	.29***	.71***	.50***

*Note.* Correlations in the matrix to the left are for participants reporting same-sex attraction above the diagonal; those reporting both-sex attraction, below. Correlations in the matrix to the right are for participants reporting other-sex attraction.

\*\*\* $p < .001$ .