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Evidence of changing patterns in mental health and depressive symptoms for sexual minority adolescents

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ABSTRACT

Depression, sadness, low self-esteem, and self-harm affect a substantial number of young people in North America. However, the prevalence of these symptoms has been found to be consistently higher for sexual minority (i.e., lesbian, gay, bisexual) populations. In this study, we traced the trends and disparities in mental health, including self-harm, forgone mental health care, good feelings, feelings of sadness, and feeling good about oneself, with provincially representative data from Canada ($N = 99{,}373$; M age $= 15$). We reported whether the disparities have narrowed, widened, or remained the same for sexual orientation subgroups over time. We found that though sexual minorities report higher rates of all negative mental health indicators, the disparity in self-harm for gay adolescent males compared to their heterosexual counterparts has narrowed over time. However, some disparities have widened: the gap in feeling sad has widened for sexual minorities compared to their heterosexual counterparts. These findings have implications for the efficacy of interventions and the next steps in working to ameliorate mental health issues for vulnerable sexual minority adolescents in North America.

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According to the Canadian Mental Health Association (2015), an estimated 10–20% of youth in Canada are currently experiencing a mental health illness or disorder such as depression. Symptoms of depression include, but are not limited to, low self-esteem (Maddux, 2014) and self-harm (Klonsky, Oltmanns, & Turkheimer, 2014). Access and follow through with mental health care is also an important consideration when measuring the prevalence of mental health issues among adolescent youth. Mental health care is a means by which youth can seek services to improve their mental health issues (McNair & Bush, 2016; Meyer, Teylan, & Schwartz, 2015). However, some youth who need mental health care do not access services due to

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concerns about confidentiality, which can often complicate mental health issues and leave them more vulnerable (Ford, Bearman, & Moody, 1999; Lehrer, Pantell, Tebb, & Shafer, 2007).

In this article, we examine how depressive symptoms, such as sadness, low self-esteem, and self-harming behaviors, in addition to forgone mental health care (Peter & Roberts, 2010), have changed over time for sexual minority and majority adolescents. Disparities between sexual minority and heterosexual youth have been observed around the world—in the United States (Burton, Marshal, Chisolm, Sucato, & Friedman, 2013), New Zealand (Fergusson, Horwood, & Beautrais, 1999), Norway (Watson, Wheldon, Wichstrøm, & Russell, 2015; Wichstrom, 2009), and England (Chakraborty, McManus, Brugha, Bebbington, & King, 2012). Since research suggests that sexual minority youth are at an increased risk for mental health problems compared to heterosexual youth (Fergusson et al., 1999; Fish and Zavery, 2016; Lock and Steiner, 1999; Marshal et al., 2011), we examine whether these disparities persist for these vulnerable adolescent populations over time.

Depressive symptoms

Research indicates that sexual minority youth are at an increased risk for symptoms of depression, such as sadness, low self-esteem, and self-harm behaviors compared to their heterosexual peers (Fergusson, Horwood, & Beautrais, 1999; Galliher, Rostosky, and Hughes, 2004; Marshal et al., 2011; Safren and Heimberg, 1999; Almeida, Johnson, Corliss, Molnar, & Azrael, 2009). For instance, Marshal and colleagues (2011) conducted a meta-analysis on depression among sexual minority youth and found that sexual minority youth were at higher risk for depression than heterosexual youth. In another study, researchers found that lesbian, gay, and bisexual (LGB) youth were at higher risk for major depression compared to their heterosexual counterparts (Fergusson et al., 1999). There have been conflicting findings regarding sex differences; some studies have found no significant sex differences among sexual minority youth on measures of depression (Elze, 2002; Saewyc, Bearinger, Heinz, Blum, & Resnick, 1998), while other studies have suggested that the differences exist (Galliher et al., 2004; Russell & Joyner, 2001). For instance, Russell and Joyner (2001) discovered that sexual minority adolescent females were more likely to report depressive symptoms than sexual minority adolescent males. Further, Galliher and colleagues (2004) found that females, including sexual minority females, were at higher risk for depression than heterosexual and sexual minority males. Research also suggests that there are differences among LGB subgroups based on sexual orientation. For example, bisexual females are at higher risk for depression among female sexual minority youth, and gay males are at higher risk for depression among male sexual minority youth (Udry & Chantalia, 2002; Galliher et al., 2004). These data indicate that while LGB groups are often considered a homogeneous population (Velez, Watson, Cox, & Flores, 2017), there are unique characteristics among each sexual minority group that may contribute to a higher prevalence of depression.

Protective factors—such as higher self-esteem and self-acceptance—can help moderate depression in sexual minority youth (D'Augelli & Hershberger, 1993; Shilo & Savaya, 2011). However, sexual minority youth typically report lower levels of self-esteem (i.e., sense of self-worth) than their heterosexual peers, possibly attributed to chronic experiences of homophobic harassment and discrimination (Galliher et al., 2004; Kosciw, Greytak, Palmer, & Boesen, 2013). For instance, Kosciw et al. (2013) found that sexual minority youth who had experienced homophobic discrimination and bullying in school were more likely to report lower levels of self-esteem, as well as higher levels of depressive symptoms. Notably, 74.1% of sexual minority youth in the study reported being verbally harassed in the past year because of their sexual orientation, and 36.2% had been physically harassed for the same reason. In a study conducted by D'Augelli and Hershberger (1993), there were no sex differences on measures of self-esteem among sexual minority youth; however, Galliher and colleagues (2004) found that female respondents were more likely to report lower self-esteem than male respondents. Galliher and colleagues (2004) also found that, among sexual minority females, bisexual females were the most likely to report low self-esteem.

Self-harming behaviors

Sexual minority youth are at higher risk for self-harm behaviors compared to their heterosexual counterparts (Almeida et al., 2009; Deliberto & Nock, 2008; Gollust, Eisenberg, & Golberstein, 2008; Whitlock et al., 2011; Whitlock, Eckenrode, & Silverman, 2006; Wichstrom, 2009). Almeida and colleagues (2009) found that sexual and gender minority youth were significantly more likely to deliberately self-harm compared to heterosexual youth in their study (5% vs. 3%). Further, Deliberta and Nock (2008) found that 32.6% of youth who had self-injured in their study were non-heterosexual, while only 11.1% of youth who had not self-injured were non-heterosexual. This increased risk of deliberate self-harm also presents among sexual minority adults (Alexander & Clare, 2004; King et al., 2003, 2008; Skegg, Nada-Raja, Dickson, Paul, & Williams, 2003). Focusing on sex differences, research suggests that females are more likely to self-harm than their male counterparts (Liu & Mustanski, 2012; Madge et al., 2008; Whitlock et al., 2006, 2011). For instance, Whitlock and colleagues (2011) found that heterosexual (1.5 times), mostly heterosexual (2.1 times), bisexual (6.2 times), mostly gay (5.5 times), and lesbian females (2.4 times) were more likely than their male counterparts to report engaging in deliberate self-harm. Focusing on differences among LGB subgroups, research seems to suggest that bisexual youth are most likely to report deliberate self-harm (Whitlock et al., 2006, 2011). Whitlock and colleagues (2011) found that bisexual respondents (3.8 times) were more likely than mostly heterosexual (2.6 times), mostly gay/lesbian (2.3 times), and gay/lesbian (1.7 times) respondents to report higher levels of deliberate self-harm compared to heterosexual respondents. Further, Whitlock et al. (2006) found that respondents with repeat instances of deliberate self-harm

were 2.7 times more likely to be questioning their sexuality or 4.2 times more likely to be bisexual than to identify as heterosexual in their study.

Forgone mental health care

Other behaviors, such as accessing mental health care, might help decrease deliberate self-harm in sexual minority youth. However, research suggests that despite sexual minority youth accessing mental health care more often than heterosexual youth (Burgess, Lee, Tran, & Ryn, 2008; McGuire & Russell, 2007; Williams & Chapman, 2011), sexual minority youth are more likely to report that they have mental health needs that have not been met (Burgess et al., 2008; Williams & Chapman, 2011, 2012). For instance, Williams and Chapman (2012) found that, compared to heterosexual youth, sexual minority youth had a 48% higher chance of having a moderate to severe mental health condition, but did not access mental health services. In other words, despite sexual minority youth accessing mental health services more than heterosexual youth, research suggests that sexual minority youth are still more likely to forgo or abstain from seeking mental health care. Focusing on sex differences, Williams and Chapman (2012) found that males were more likely to have experienced an unmet mental health need compared to females in the same study (11% higher chance). However, in a study conducted by Samargia and colleagues (2006) using the Minnesota Adolescent Health Care Access Survey, females were significantly more likely than males to have forgone mental health care (65% vs. 44%).

Current study

In this study, we sought to answer three research questions: (1) Are there changes in trends of mental health from 1998 to 2013, separately for each sexual orientation subgroup, disaggregated by sex? (2) Is each LGB subgroup different from heterosexual youth in reports of mental health disparities between survey years? (3) Have the gaps in mental health disparities between sexual minority groups and heterosexuals narrowed or widened over time?

Method

Sample and procedures

Data were drawn from McCreary Centre Society's (MCS) British Columbia Adolescent Health Surveys (BCAHS); we merged four waves: 1998, 2003, 2008, and 2013. To collect the data from nearly 100,000 students, anonymous surveys were administered each survey year with the help of public health nurses in British Columbia schools (grades 7–12). MCS worked with Statistics Canada to create the cluster-stratified random sampling and weighting techniques. To read more about the BCAHS techniques and sampling, see Saewyc, Taylor, Homma, and

Table 1. Samples by sexual orientation and survey year in the British Columbia adolescent health survey.

	1998		2003		2008		2013	
	n	(%$_w$)	*n*	(%$_w$)	*n*	(%$_w$)	*n*	(%$_w$)
Males								
Heterosexual	10,223	(93.8%)	13,880	(95.3%)	11,573	(94.1%)	10,024	(93.2%)
Mostly Heterosexual	418	(4.2%)	432	(3.2%)	459	(3.9%)	463	(4.4%)
Bisexual	127	(1.1%)	122	(0.9%)	141	(1.2%)	153	(1.4%)
Gay	84	(0.9%)	89	(0.6%)	104	(0.9%)	118	(1.1%)
Females								
Heterosexual	10,829	(90.3%)	13,013	(87.4%)	11,268	(86.7%)	9,601	(85.6%)
Mostly Heterosexual	919	(7.6%)	1,304	(9.2%)	1,200	(9.6%)	1,019	(9.5%)
Bisexual	217	(1.9%)	428	(3.0%)	444	(3.2%)	468	(4.0%)
Females	41	(0.3%)	55	(0.3%)	65	(0.5%)	92	(0.9%)

Note: Percentages are weighted.

Ogilvie (2008) for 1998 and 2003; see Miller, Cox, and Saewyc (2010) for 2008; and see Saewyc, Stewart, and Green (2013) for 2013. In our merged dataset, we included schools that participated in three of the four surveys; this resulted in data from schools in 46 of 59 total school districts. We sampled 48,410 males and 50,963 females, most of whom identified as heterosexual (see Table 1).

Measures

Mental health-related variables included self-harm behaviors, forgoing mental health care, feeling good about oneself, feeling that one could do things as well as other people, and feeling sad. To measure self-harm among youth, respondents were asked, "Have you ever cut or injured yourself on purpose (but were not trying to kill yourself)?" In 2008, the question asked to youth about self-harm was, "How often have you cut or injured yourself on purpose (but were not trying to kill yourself)?" The categories included "Never," "1 to 2 times," or "3 or more times." In 2013, self-harm was measured using one item: "During the past 12 months, how often have you cut or injured yourself on purpose (but were not trying to kill yourself)?" Categories included: "0 times," "1 time," "2 or 3 times," "4 or 5 times," "6 or more times," and "I have done this, but not in the past 12 months." For the purpose of this analysis, the variable was recoded into a dichotomous variable, where all people who indicated that they had self-harmed were coded as "Yes" (1), and all people who indicated that they had never self-harmed coded as "No" (0). Questions about self-harm were not included in the 1998 and 2003 survey years.

To measure the use of mental health care, respondents were asked, "In the past 12 months, have you thought you needed emotional or mental health services but didn't get them?" The variable was dichotomous with categories "Yes" (1) or "No" (0). The question and categories were the same in 2013 and 2008. The 1998 and 2003 survey years did not include this question.

Self-esteem measures included feeling good about oneself and feeling that one can do things as well as other people. To measure feeling about oneself, respondents were asked, "How much do you agree with—I usually feel good about myself." In

2013 and 2008, the categories were "Disagree," "Mostly disagree," "Mostly agree," and "Agree." For the purpose of this study, the variable was turned into a dichotomy, where "Mostly agree" and "Agree" were coded into "Agree" (1), and "Mostly disagree" and "Disagree" were coded into "Disagree" (0). To measure the feeling that one can do things as well as other people, respondents were asked, "How much do you agree with—I am able to do things as well as other people." Again, in 2013 and 2008, categories were "Disagree," "Mostly disagree," "Mostly agree," and "Agree." For the purpose of this study, the variable was turned into a dichotomy, where "Mostly agree" and "Agree" were coded into "Agree" (1), and "Mostly disagree" and "Disagree" were coded into "Disagree" (0). Again, the 1998 and 2003 survey years did not include these questions.

To measure symptoms of depression, respondents were asked, "During the past 30 days, have you felt so sad, discouraged, hopeless or had so many problems that you wondered if anything was worthwhile?" In all survey years (1998, 2003, 2008, 2013), the categories for this variable included "Not at all," "A little," "Some, enough to bother me," "Quite a bit," and "Extremely so, to the point I couldn't do my work or deal with things." For the purpose of this study, the categories were recoded into a dichotomy, where the categories, "Not at all," "A little," "Some, enough to bother me," and "Quite a bit" were coded into "Quite a bit or less" (0), and the remaining category was coded into "Extremely so" (1).

Analysis

We used SPSS Complex Samples 22 to adjust for the complex sampling design, and adjusted logistic regression and interaction models for age, disaggregated by sex. We employed three different analytic techniques to answer our three research questions. First, we described the prevalence of mental health outcomes by using crosstabs on each survey wave across sex/orientation groups (presented in Table 2).

Second, we examined whether there were mental health disparities between heterosexual and sexual minority youth in each survey year using logistic regression (reference 1998). These models were adjusted for age and disaggregated by sex. To interpret these results, odds ratios (OR) that are above 1 indicate that a sexual minority subgroup was more likely to report negative outcomes compared to their heterosexual counterparts (referent group).

Third, we tested whether the gaps in mental health widened or narrowed over time by using age-adjusted logistic regressions with year-by-orientation interaction terms. Because odds ratios cannot be directly compared to make inferences in changes over time, we utilized a statistical method that adjusts for potential sample differences across survey years. Specifically, we examined main effects of sexual orientation (reference heterosexual) and year (reference 1998) and the product term of orientation∗year, adjusted for age. This product term compares the OR of a mental health outcome for a particular subgroup in a given year to the odds of the same behavior and subgroup of students in another survey year. We were able to examine changes in disparities over time using this method since we cannot directly compare

Table 2. Prevalence of mental-health-related measures within sexual orientation group (%).

	Females				Males			
	Het	MoHet	Bi	L	Het	MoHet	Bi	G
Self-harm								
2013	20.5	40.3	63.2	50.4	7.2	19.9	37.7	20.1
2008	18.1	41.6	66.7	62.6	10.6	25.8	46.4	44.6
Forgone mental health care								
2013	13.7	29.8	42.8	32.0	4.5	14.4	25.2	23.5
2008	15.0	36.7	46.5	38.2	6.4	22.3	31.2	29.7
Feel good about myself								
2013	74.2	60.4	43.3	44.8	90.8	76.0	63.3	61.7
2008	83.4	73.8	55.4	59.2	92.9	82.8	63.7	67.6
Felt so sad								
2013	8.4	18.3	28.6	26.3	3.4	9.1	19.4	18.1
2008	6.6	13.1	24.9	20.1	3.1	9.9	20.6	20.6
2003	8.1	16.6	25.1	30.4	5.1	9.0	14.1	6.9
1998	8.3	7.9	18.7	28.2	4.3	7.9	14.2	16.4
Do things well								
2013	83.5	75.4	58.6	69.1	91.8	84.0	73.9	79.5
2008	90.5	84.5	75.3	80.6	94.5	85.7	79.0	70.1

Note: All values presented are percentages. Het = Heterosexual, MoHet = Mostly Heterosexual, Bi = Bisexual, L = Lesbian, G = Gay.

ORs. An OR interaction term above 1, where original ORs (i.e., those from logistic regression models testing main effects) are above 1, indicates that the change in disparities in a given year has widened over time; likewise, an OR interaction term less than 1 (when corresponding original ORs are below 1) indicates that a disparity over time has narrowed compared to 1998. For outcomes where original ORs are below 1, the interaction that tests the trend in disparities is interpreted in the inverse, such that an OR interaction term greater than 1 indicates that the disparity has narrowed over time, and an OR interaction term less than 1 suggests that the gap has widened over time (for more information see Homma, Saewyc, and Zumbo (2016)).

Results

Research question 1: Prevalence within sexual orientation and sex groups

Table 2 displays the trends in mental health outcomes disaggregated by gender and sexual orientation. From 1998 to 2013, different orientation subgroups demonstrated varying trends in prevalence of mental health-related measures. In general, heterosexual and mostly heterosexual adolescent males and adolescent females reported consistent declines in negative indicators of mental health over time. For many of the bisexual and gay adolescent males, there were no significant declines or increases in trends of mental health over time. In some cases, trends in indicators of negative health, such as feeling sad, increased over time for sexual minority subgroups.

For self-harm behaviors, all groups of adolescent males and lesbian adolescent females exhibited significant decreases from 2008 to 2013. In the same timeframe, heterosexual adolescent females exhibited a significant increase in self-harm

behavior, but bisexual and mostly heterosexual adolescent females did not exhibit any significant changes in prevalence of self-harm behavior. Across the survey years, bisexual females reported the highest prevalence of self-harm compared to all other orientation groups. Self-harm was reported by up to 62.6% of lesbian and 66.7% of bisexual females (in 2008), compared to up to 41.6% of mostly heterosexual (in 2008) and 20.5% of heterosexual females (in 2013). Compared to females, up to 46.4% of bisexual and 44.6% of gay males reported self-harming, in contrast to 25.8% of mostly heterosexual and 10.6% of heterosexual males (all in 2008).

In regard to forgone mental health care, heterosexual and mostly heterosexual adolescent males and adolescent females demonstrated a significant decrease in forgoing mental health care from 2008 to 2013, but bisexual, lesbian, and gay adolescent males and females did not. Across both survey years, bisexual adolescent females reported the highest prevalence of forgone mental health care compared to all other orientation groups. Up to 38.2% of lesbian and 46.5% of bisexual females reported forgoing mental health care, compared to 36.7% of mostly heterosexual and 15% of heterosexual females (all in 2008; see Table 2). Among males, up to 31.2% of bisexual and 29.7% of gay males reported forgoing mental health care, compared to 22.3% of mostly heterosexual and 6.4% of heterosexual males (all in 2008).

For "feeling good about oneself," heterosexual and mostly heterosexual adolescent males exhibited an overall decrease from 2008 to 2013. In contrast, bisexual and gay adolescent males did not exhibit any significant changes in prevalence of feeling good about themselves. For adolescent females, all sexual orientation subgroups demonstrated a significant decrease in the prevalence of feeling good about themselves from 2008 to 2013. Heterosexual males consistently reported the highest prevalence of feeling good about themselves among all orientation groups. In 2008, up to 92.9% of heterosexual and 82.8% of mostly heterosexual males reported feeling good about themselves, compared to 63.7% of bisexual and 67.6% of gay males. Similarly, in 2008, 83.4% of heterosexual and 73.8% of mostly heterosexual females reported feeling good about themselves, compared to 59.2% of lesbian and 55.4% of bisexual females.

On the topics of feeling sad and doing things as well as other people, heterosexual adolescent males demonstrated a significant decrease in the prevalence of feeling sad and doing things as well as other people from 1998 to 2013, while gay adolescent males exhibited a significant increase in the prevalence of participants who felt sad from 1998 to 2008. Heterosexual adolescent females demonstrated a significant increase in the prevalence of participants who felt sad from 2008 to 2013, and mostly heterosexual females exhibited a significant overall increase in the prevalence of feeling sad from 1998 to 2013. Lesbian and bisexual females did not exhibit any significant changes in feeling sad, but all sexual orientation subgroups of adolescent females demonstrated a significant decline in the prevalence of respondents who believed they could do things as well as other people.

Table 3. Adjusted odds ratios of mental-health-related measure disparities between sexual orientation groups.

	Females			Males		
	MoHet	Bi	L	MoHet	Bi	G
Self-harm						
2013	2.7 (2.4–3.2)	6.9 (5.6–8.5)	4.1 (2.7–6.2)	3.2 (2.5–4.1)	7.7 (5.4–11.1)	3.2 (2.0–5.1)
2008	3.2 (2.8–3.7)	9.1 (7.2–11.4)	7.6 (4.3–13.4)	2.9 (2.3–3.7)	7.2 (5.0–10.3)	6.7 (4.3–10.5)
Forgone mental health care						
2013	2.5 (2.1–2.9)	4.4 (3.6–5.4)	2.8 (1.8–4.5)	3.2 (2.4–4.3)	6.4 (4.2–9.6)	5.7 (3.7–8.9)
2008	3.1 (2.7–3.6)	4.8 (3.8–5.9)	3.3 (1.9–5.8)	3.9 (2.9–5.1)	6.2 (4.1–9.4)	5.5 (3.4–8.9)
Feel good about myself						
2013	.53 (.47–.61)	.27 (.22–.32)	.28 (.18–.44)	.34 (.27–.43)	.19 (.13–.27)	.18 (.12–.26)
2008	.57 (.49–.66)	.25 (.20–.31)	.29 (.17–.49)	.37 (.28–.49)	.14 (.09–.21)	.16 (.10–.26)
Felt so sad						
2013	2.3 (1.9–2.8)	4.2 (2.2–5.3)	3.7 (2.3–6.0)	2.6 (1.8–2.8)	6.2 (3.9–9.6)	5.5 (3.4–9.0)
2008	2.1 (1.7–2.6)	4.7 (3.6–5.9)	3.5 (1.8–6.9)	3.2 (2.2–4.6)	7.6 (4.5–12.6)	7.2 (4.1–12.4)
2003	2.2 (1.8–2.6)	3.6 (2.7–4.9)	4.9 (2.3–10.6)	1.7 (1.1–2.8)	2.9 (1.4–5.9)	1.2 (.54–2.8)**
1998	1.6 (1.2–2.0)	2.3 (1.5–3.7)	4.3 (2.2–8.8)	1.8 (1.1–3.0)	3.7 (1.9–7.0)	4.2 (2.2–7.9)
Do things well						
2013	.60 (.51–.71)	.28 (.23–.34)	.44 (.27–.71)	.47 (.36–.63)	.26 (.17–.38)	.35 (.22–.57)
2008	.57 (.48–.68)	.32 (.25–.41)	.44 (.24–.78)	.34 (.25–.46)	.21 (.14–.33)	.13 (.08–.21)

Note: Age adjusted-odds ratio with heterosexual orientation as the reference group; 95% CI in parentheses. Starred (**) numbers are **not** significant at the $p < 0.05$ level.

Research question 2: Prevalence between sexual orientation and sex groups

Next, we compared the odds that sexual orientation subgroups would engage in study outcomes (e.g., self-harm) compared to heterosexual participants; Table 3 presents these comparisons for each study variable. The odds of self-harming among mostly heterosexual, bisexual, and gay adolescent males were consistently higher than heterosexual males in both 2008 and 2013. Among adolescent females, similar to adolescent males, mostly heterosexual, lesbian and bisexual females also reported higher odds of self-harming than heterosexual females across both survey years. Bisexual females had the highest odds of self-harming among female participants in 2008 and 2013.

Mostly heterosexual, bisexual, and gay males consistently reported higher odds of forgoing mental health care than their heterosexual peers. Bisexual adolescent males had the highest odds of reporting forgoing mental health care compared to heterosexual adolescent males across both survey years. Similar to adolescent males, mostly heterosexual, lesbian, and bisexual adolescent females steadily reported higher odds of forgoing mental health care than heterosexual adolescent females. Bisexual adolescent females had the highest odds of forgoing mental health care compared to heterosexual females in 2008 and 2013.

Mostly heterosexual, bisexual, and gay adolescent males consistently reported lower odds of feeling good about themselves than heterosexual adolescent males across both survey years. Similar to adolescent males, mostly heterosexual, bisexual, and lesbian adolescent females all reported lower odds of feeling good about themselves than heterosexual females in 2008 and 2013.

Last, consistently across all survey years, mostly heterosexual, bisexual, and gay adolescent males reported higher odds of feeling sad and doing things as well as

Table 4. Interactions (year by orientation) with heterosexual and 2013 as the reference group.

	Male OR (95% CI)	Female OR (95% CI)
Self-harm		
MoHet by 2013 (vs. 2008)	1.10 (.78–1.54)	**.82 (.67–1.00)**
Bisexual by 2013 (vs. 2008)	1.07 (.65–1.78)	.74 (.54–1.00)
Les/Gay by 2013 (vs. 2008)	**.48 (.25–.92)**	.52 (.26–1.06)
Forgone mental health care		
MoHet by 2013 (vs. 2008)	.85 (.57–1.26)	**.80 (.65–.98)**
Bisexual by 2013 (vs. 2008)	1.05 (.59–1.88)	.94 (.68–1.26)
Les/Gay by 2013 (vs. 2008)	1.07 (.55–2.07)	.85 (.42–1.74)
Feel good about myself		
MoHet by 2013 (vs. 2008)	.88 (.60–1.28)	.95 (.77–1.15)
Bisexual by 2013 (vs. 2008)	1.32 (.76–2.29)	1.07 (.80–1.43)
Les/Gay by 2013 (vs. 2008)	1.03 (.56–1.87)	.97 (.49–1.95)
Felt so sad		
MoHet by 2013 (vs. 1998)	1.46 (.79–2.71)	**1.41 (1.03–1.92)**
MoHet by 2013 (vs. 2003)	1.52 (.82–2.81)	1.08 (.83–1.41)
MoHet by 2013 (vs. 2008)	.82 (.48–1.38)	1.13 (.85–1.49)
Bisexual by 2013 (vs. 1998)	1.69 (.78–3.69)	**1.74 (1.05–2.88)**
Bisexual by 2013 (vs. 2003)	2.19 (.95–5.05)	1.16 (.80–1.67)
Bisexual by 2013 (vs. 2008)	.82 (.42–1.59)	.91 (.65–1.28)
Les/Gay by 2013 (vs. 1998)	1.39 (.62–3.17)	.86 (.37–1.99)
Les/Gay by 2013 (vs. 2003)	**4.66 (1.81–11.98)**	.75 (.31–1.83)
Les/Gay by 2013 (vs. 2008)	.77 (.37–1.58)	1.09 (.47–.2.5)
Do things well		
MoHet by 2013 (vs. 2008)	1.34 (.89–2.02)	1.07(.84–1.35)
Bisexual by 2013 (vs. 2008)	1.15 (.63–2.09)	.88 (.64–1.19)
Les/Gay by 2013 (vs. 2008)	**2.55 (1.30–4.99)**	1.02 (.48–.2.15)

Note: OR in bold indicates $p < .001$; reference group is 2013.

other people compared to heterosexual adolescent males. Bisexual adolescent males reported the highest odds of feeling sad across the majority of survey years, excluding 1998, when gay males reported the highest odds. Similar to adolescent males, mostly heterosexual, lesbian, and bisexual adolescent females reported higher odds of feeling sad than heterosexual adolescent females.

Research question 3: Interaction effects

Table 4 presents the interactions in ORs for all study variables, which elucidate whether there were any significant changes in disparities across survey years for certain sexual orientation subgroups compared to their heterosexual counterparts. Among gay adolescent males, there was a significant interaction across the years for self-harm. In other words, the gap in self-harm between gay and heterosexual adolescent males from 2008 to 2013 had narrowed. Among adolescent females, mostly heterosexual adolescent females demonstrated a significant narrowing of the gap in odds of self-harm compared to heterosexual females from 2008 to 2013.

For forgone mental health care, mostly heterosexual adolescent females exhibited a significant narrowing in the gap in odds of forgone mental health care compared to heterosexual adolescent females from 2008 to 2013. There were no significant interaction effects among either sex for feeling good about themselves.

From 2003 to 2013, there was a significant widening in the gap in odds of feeling sad among gay adolescent males compared to heterosexual adolescent males. For adolescent females, both mostly heterosexual and bisexual adolescent females exhibited a significant widening in the gap in odds of feeling sad compared to heterosexual females from 1998 to 2013.

Gay adolescent males were the only male orientation group to exhibit any significant changing of gaps in odds of believing that one could do things as well as other people. From 2008 to 2013, gay adolescent males exhibited a significant *narrowing* in the gap (interpreted opposite from other outcomes, as original ORs are below 1) in odds of believing that one could do things as well as other people compared to heterosexual adolescent males.

Discussion

This study examined trends and disparities in mental health for sexual minority and heterosexual adolescents from the Canadian province of British Columbia. We found that sexual minority youth displayed an increased risk of symptoms of depression (i.e., sadness and lower self-esteem) compared to their heterosexual counterparts. Moreover, sexual minority youth are at increased risk of exhibiting negative mental health-behaviors, such as self-harm and forgoing mental health care, compared with their heterosexual peers. For some sexual minorities, these disparities have narrowed over time. With these findings, we are able to distinguish whether clear disparities in mental health behaviors between heterosexual and sexual minority subgroups have been widening, narrowing, or remain unchanged.

Our findings suggest that current self-harm prevention measures might be reaching some sexual minority youth—in particular, gay adolescent males—in British Columbia. Though the disparity is closing, it is noteworthy that the prevalence of self-harm behavior among gay, bisexual, and mostly heterosexual adolescent males is more than twice that of their heterosexual peers. Among mostly heterosexual, bisexual, and lesbian adolescent females, self-harm behaviors were two to three times higher than that of their heterosexual peers. And despite the potential increase in the utilization of mental health care by gay and bisexual adolescent males (related to lower levels of self-harm over time), we found evidence that there may still be a higher level of avoidance of mental health care services in comparison to heterosexual males.

Unlike the decrease in the disparity of self-harm for sexual minorities in comparison to heterosexual youth, we found increased gaps in other mental health symptoms, such as feelings of sadness. There are several possible explanations for these growing disparities. One explanation may be due to the more pervasive negative attitudes and a general lack of acceptance towards bisexuality (D'Augelli, Hershberger, & Pilkington, 2001; Espelage, Aragon, Birkett, & Koenig, 2008; Espelage et al., 2008; Herek, 2002; Russell, Seif, & Truong, 2001). Data reflect that heterosexual individuals, as well as gay and lesbian individuals, are more likely to exclude bisexual peers

(Greene, 2003; Lucassen et al., 2011). It is possible that a general lack of acceptance contributes to bisexual individuals being less likely to disclose their sexual identity, experience internalized identity confusion, and feel more unsafe than gay and lesbian peers (Lewis et al., 2003; Friedman et al., 2011).

The overall prevalence of depressive symptoms in British Columbia seems relatively consistent over the years, with significant movement among gay and lesbian cohorts, possibly due to sociocultural influences over the 15-year span of time. One explanation for this increase in prevalence may be the higher risk of stigmatization, harassment, and/or abuse experienced by sexual minority youth, which research suggests can contribute to feelings of sadness, low self-esteem (Bontempo & D'Augelli, 2002; Kosciw et al., 2013; Toomey, Ryan, Diaz, Card, & Russell, 2010; Whitbeck, Chen, Hoyt, Tyler, & Johnson, 2004), and self-harm (Lytle, Luca, & Blosnich, 2014). Additionally, stigmatization has been linked as a contributing factor to forgoing mental health care (Farrand, Perry, Lee, & Parker, 2006). These results suggest that disparities in depressive symptoms remain relatively unchanged for lesbian youth, but among gay males and bisexual males and females the gap is widening, and thus getting worse. Considering the features of the current study, it is difficult to describe these trends. It is quite possible that the nature of socio-cultural factors (i.e., LGB rights, social stigma) may have various implications for LGB youth. Future research might include studies that specifically address symptoms of depression, anxiety, self-esteem, and self-harm that can consider and differentiate the impact of minority stress and current socio-cultural supports for the LGB community.

Strengths and weaknesses

We utilized a very large representative sample of young people based in Canada; because of this, many of our findings can be generalized among school-aged youth in British Columbia. We disaggregated our sample by gender and sexual orientation, which allowed for nuanced understandings of trends in behavior—that is, we were able to more closely examine mental health as it uniquely relates to LGB young people.

Though we used a strong sample and new methodologies, our study is not without limitations. Given that we only sampled youth in school, we can only generalize to the school environment. Since some sexual minority youth are at risk for academic achievement (Pearson, Muller, & Wilkinson, 2007), social alienation (Berlan, Corliss, Field, Goodman, & Austin, 2010; Olsen, Kann, Vivolo-Kantor, Kinchen, & McManus, 2014; Ueno, 2005), and thus may drop out of school entirely (Smith, Saewyc, Albert, MacKay, & Northcott, 2007; Taylor et al., 2011), these data may be missing a representative sample of sexual minority youth respondents. Other vulnerable groups of sexual minorities include homeless young people, who disproportionally represent the youth homeless population in North America (Rosario, Schrimshaw, & Hunter, 2012).

Another limitation of the study is the inability to quantify or measure the changes in social climates between the initial and final survey reports. Specifically, due to the

length of time between surveys (15 years in some cases), the change in social stigma for the mental health care field and for sexual minority status between the late 1990s and the year 2013 should be considered as that which would have an impact on data. With regard to mental health care, recent emphasis in the media on school-related bullying, school shootings, and suicides prompted by bullying have introduced a social dialogue emphasizing the importance of seeking help for anxiety, depression, trauma, and the negative effects of peer relational stress. Additionally, the change in the legal, social, and cultural environment of sexual minority protections, as well as the inclusion of sexual minority social programs (i.e., gay-straight alliances) into schools, has grown considerably from the early 1990s to 2013. Several previous studies suggest that the inclusion of a gay-straight alliance (GSA) at school may enhance feelings of school belonging, decrease feelings of isolation, and help sexual minority students to identify safe adults (Fischer, 2011; Garcia-Alonso, 2004; Heck, Flentje, & Cochran, 2013).

Recommendations for research and practice

Despite the dramatic growth in the understanding of LGB adolescent mental health issues over the past decade (Saewyc, 2011), there is still a need for school-based and clinical support. This study builds on areas of research that include self-harm prevention, ensuring safety and community within school systems to identify and protect vulnerable populations, and promoting the need for school-based and clinical interventions for depression.

Research consistently identifies school policies and practices that promote a positive school environment and student well-being as important factors in supporting the safety and positive mental health of LGB youth (Hatzenbuehler & Keyes, 2013; Russell & Fish, 2016; Russell, Kosciw, Horn, & Saewyc, 2010). Due to the increasing disparity of self-harm, forgoing mental health care, and sadness among bisexual youth, promoting the practice of educating teachers and students about LGB-specific issues could continue to prove to be beneficial (Snapp, Burdge, Licona, Moody, & Russell, 2015a, 2015b). When considering the individual LGB student experience in school, the presence and promotion of school-support and student-lead clubs (i.e., gay-straight alliances) have been positively correlated with increased academic adjustment (Poteat et al., 2013, 2015; Toomey, Ryan, Diaz, & Russell, 2011).

Specific and applicable LGB-focused clinical interventions may increase the efficacy of mental health-related practices addressing symptoms of depression. A recent study utilizing adapted cognitive-behavioral therapy (CBT) for gay and bisexual males showed decreased depressive symptoms and reduced sensitivity to rejection (Pachankis et al., 2015). Additionally, an emphasis on increasing the communication between mental health clinicians and LGB-oriented social groups (i.e., gay-straight alliances) may close the gap between theory and practical applications. Further, while clinicians are able to meet the mental health care needs of individuals who attend therapy, the consistency with which LGB individuals forgo

mental health care is alarming when considering the prevalence of depression in LGB youth. Increasing the degree of communication between LGB-specific community and school supports and the mental health field may help to reduce the disparity between LGB youth with depression and those who seek mental health services.

Additionally, preventative strategies that enhance public focus on bisexuality as a unique sexual orientation could promote social support to a sexual minority population who are often expected to identify as simply heterosexual or lesbian/gay. By increasing public awareness of the mental health disparities that exist specifically among bisexual youth, we can reinforce interventions that aim to increase self-esteem and decrease social alienation.

Conclusion

This study explored the trends and disparities of symptoms of depression among LGB and heterosexual adolescents in British Columbia. Further, we aimed to determine the degree to which these trends and disparities changed over time (i.e., widened, narrowed, remained constant). Our findings build on the multitude of work that identifies sexual minority youth as being at greater risk for self-harming behaviors, forgoing mental health care, as well as exhibiting feelings of sadness and inadequacy in relation to the heteronormative population. By way of repeated data collection, we can observe trends over time that help to identify improving or worsening social environments for sexual minority youth. It seems that while gay males are faring better for certain measures, there is a decline in the quality of mental health for much of the sexual minority, with an emphasis on bisexual youth.

Disclosure

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