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Sexual orientation, peer relationships, and depressive symptoms: Findings from a sociometric design

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ABSTRACT

Sexual minority youth report poorer mental health than heterosexual youth. According to the minority stress framework, this results from sexual minority individuals being societally marginalized, which for sexual minority youth may include being poorly integrated in the peer context. A sociometric approach was used to test whether peer relationships, measured broadly as friendship, acceptance, disliking, and bullying relationships, mediated the link between a sexual minority orientation and depressive symptoms in adolescence. Analyses were conducted across three samples from the Netherlands and Belgium (N = 352; N = 1848; N = 263). Sexual minority respondents reported higher levels of depressive symptoms than heterosexual respondents, yet sexual orientation differences in peer relationships were small. Moreover, no link between peer relationships and depressive symptoms was found. Consequently, indirect effects were small too.

Introduction

Sexual minority adolescents (i.e., adolescents reporting at least some form of same-sex desire, identity, or behavior) experience more mental health problems than their heterosexual counterparts, signaled for instance by higher levels of suicidality (Peter et al. 2017), depressive symptoms (Marshal et al. 2011; Plöderl & Tremblay 2015), and other mood and anxiety disorders (Plöderl & Tremblay 2015; Russell & Fish 2016). According to the minority stress framework, this vulnerability of sexual minority in comparison to heterosexual youth is rooted in the stigmatization of a sexual minority status in society (Meyer 2003). More precisely, the framework outlines a number of stigma-related stressors that sexual minority people experience because of their marginalized sexual identity, which are thought to operate as the intermediate link between a sexual minority orientation and impaired mental health.

Prior research has pointed to the peer context as a potential source of stress for sexual minority adolescents (Russell & Fish 2016). For adolescents, the peer context is an important life domain (Bukowski, Laursen, & Rubin 2018) and integration in it is important for adolescents' mental health (e.g., Modin, Östberg, & Almquist 2011). Stigmatization might, however, obstruct the development of conducive peer relationships for sexual minority adolescents, which could explain higher risks for mental health problems compared to heterosexual adolescents. In other words, studying differences in peer relationships may be of importance for furthering our understanding of sexual orientation disparities in adolescent mental health.

Prior research has found that in comparison to heterosexual youth, sexual minority adolescents reported lower quality of peer interactions

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(e.g., Bos, Sandfort, de Bruyn, & Hakvoort 2008) and higher levels of peer victimization (e.g., Collier, van Beusekom, Bos, & Sandfort 2013; la Roi, Kretschmer, Dijkstra, Veenstra, & Oldehinkel 2016; Robinson, Espelage, & Rivers 2013), which partly explained sexual orientation disparities in mental health. Yet, these studies relied on self-reports, and thus cannot rule out that shared method variance confounded associations. Tackling this limitation, we employed a sociometric approach and used information from adolescents themselves *as well as* their peers, thereby answering a recent call for multiple informant research to map the social experiences of sexual minority youth (Baams 2019).

To date, only two US based studies on the topic at hand have used sociometric information. Our study expands this narrow empirical basis by studying the role of peer relationships as an intermediate link for explaining mental health disparities between sexual minority and heterosexual adolescents in two Dutch and one Belgian sample.

Social relationships and mental health

Social relationships fulfill various functions linked to mental health, including providing social support and informal social control, and buffering against stress (for a review, see Umberson, Crosnoe, & Reczek 2010). They may promote positive mental health in several ways. First, the mere existence of positive relationships may produce positive psychological states, including a sense of purpose or belonging, security, and recognition of self-worth. In addition, positive social relationships might also offer social support and thereby play a buffering role in the face of stress, either by reducing the negative emotional reaction to a stressful event, or by dampening the physiological behavioral responses to stress (Kawachi & Berkman 2001).

In line with this, being well-integrated in the peer context has been found to be important for adolescents' mental health (Bukowski et al. 2018). This effect may extend beyond adolescence, with some researchers showing that peer integration in adolescence predicted anxiety and depression later in life (Modin et al. 2011). Theoretical studies have argued that it is important to consider the multifaceted nature of social relationships when examining their effects on health outcomes (Berkman, Glass, Brissette, & Seeman 2000; Gest, Graham-Bermann, & Hartup 2001; Umberson et al. 2010). Responding to this suggestion, we outline below how both positive peer relationships, in the form of friendships and peer acceptance (referring to being liked), and negative peer relationships, in the form of disliking and bullying, might be linked to mental health and why differences between sexual minority and heterosexual adolescents might be present. Moreover, we discuss whether the extent to which friendships, peer acceptance, disliking, and bullying relationships are related to mental health outcomes could depend on the popularity and gender of peers, thereby acknowledging that not all peers may be equally important in affecting the mental health of adolescents.

Friendships and peer acceptance

A long line of research has shown a link between positive social bonds and mental health (Berkman et al. 2000; Kawachi & Berkman 2001). As alluded to above, friendships are thought to promote mental health, for instance by producing positive psychological states or by offering social support in the face of stress (Kawachi & Berkman 2001). In line, friendships and likeability (peer acceptance) in adolescence has been found to relate to lower levels of depressive symptoms (Ueno 2005b) and higher self-esteem (Birkeland, Breivik, & Wold 2014; Gorrese & Ruggieri 2013), whereas the absence of positive peer relationships can be detrimental to wellbeing, as social isolation has been linked to higher levels of depressive symptoms and even suicidality, in particular in girls (Bearman & Moody 2004; Pachucki, Ozer, Barrat, & Cattuto 2015). Not all research on adolescence, however, provides evidence for a promotive role of friendships on mental health: having many friends can lead to excessive demands on being a good friend, which might result in poor self-assessment of one's success in enacting that role, thereby negatively affecting mental health (Falci & McNeely 2009). Moreover, some studies employing a longitudinal design suggest that over time, depressive symptoms may actually be predictive of friendship instability, peer acceptance, and social isolation, in addition to or even instead of peer relationships predicting depressive symptom development (Chan & Poulin 2009; Kochel, Ladd, & Rudolph 2012; Schaefer, Kornienko, & Fox 2011).

For sexual minority youth, having friends or being accepted by your peers may be of particular importance, as friends might provide social support or help build resilience in the face of minority stress (e.g., Russell & Fish 2016). Research employing a minority stress perspective (Meyer 2003) suggests that sexual orientation differences in friendships and peer acceptance may mediate sexual orientation differences in mental health, by showing that a relative lack of positive peer relationships in sexual minority youth mediates mental health differences with heterosexual youth. For instance, a lack of peer support is associated with suicidal ideation in sexual minority youth (Mustanski & Liu 2013) and sexual minority youth report lower quality of peer interactions (e.g., Bos et al. 2008), which partially explained sexual orientation differences in depressive symptoms and self-esteem. In sum, friendships and peer acceptance seem to be conducive to better mental health, whereas lower levels and absence of such positive peer relationships put adolescents at risk for compromised mental health. A small body of research, cited above, suggests that this mechanism partly explains sexual orientation discrepancies in mental health.

Disliking and bullying

Negative peer relationships and their consequences for the psychosocial development of adolescents have been studied extensively, showing, for example, that being disliked by peers is related to poorer mental health outcomes such as social withdrawal, nervousness, and depressive symptoms (Abecassis, Hartup, Haselager, Scholte, & van Lieshout 2002; Pope 2003; Witkow, Bellmore, Nishina, Juvonen, & Graham 2005). A reason for this association might be that being disliked may be informative of low social status (Abecassis et al. 2002; Berger & Dijkstra 2013; Betts & Stiller 2014). However, others argue that status discrepancies between peers rather than a marginalized position in the peer context might be the driving force behind dislike relationships (Berger & Dijkstra 2013; Fujimoto, Snijders, & Valente 2017).

Bullying-victimization is another type of negative peer relationships that is associated with mental health problems including depressive symptoms in adolescence and later in life, signaling the negative impact that bullying-victimization can have on mental health (e.g., Arseneault, Bowes, & Shakoor 2010; Takizawa, Maughan, & Arseneault 2014). Notably, not only victims may suffer: bullying perpetration can be perceived as an unsuitable way of reacting to a lack of fit between adolescents and their peer groups, or as an antisocial strategy to achieve peer status (Sijtsema, Veenstra, Lindenberg, & Salmivalli 2009), which could negatively affect mental health. In line with this, bullies appear to be at elevated risks of developing both internalizing and externalizing problem behavior, or even of reporting suicidal ideation and attempting suicide (Brunstein Klomek, Marrocco, Kleinman, Schonfeld, & Gould 2007; Holt et al. 2015; Ttofi, Farrington, & Lösel 2012). Some research, however, questions the universality of these findings, for instance by showing that over time bullying perpetration is linked to psychosocial maladjustment for girls only (Kretschmer, Veenstra, Deković, & Oldehinkel 2017) and that negative mental health outcomes such as depression and panic disorder occurred primarily in bullies that were also victimized (Copeland, Wolke, Angold, & Costello 2013).

Similar to research on positive peer relationships, some studies suggest that negative peer relationships operate as an intermediate link in the association between a sexual minority orientation and mental health. In this respect, most research focuses on bullying-victimization,

showing that sexual minority youth report higher levels of peer victimization than heterosexual youth, which partly explained sexual orientation disparities in various mental health outcomes, including depressive symptoms (Collier et al. 2013; la Roi et al. 2016; Robinson et al. 2013; Toomey & Russell 2016; van Bergen, Bos, van Lisdonk, Keuzenkamp, & Sandfort 2013). To sum up, negative facets of peer relationships such as bullying and being disliked might put adolescents at risk for mental health problems. Some studies suggest that these negative features explain the link between sexual orientation and mental health.

Moderation by gender and popularity of peers

The gender of peers is an important factor to consider when examining the association between peer relationships and mental health, both for positive and negative peer relationships. Furthermore, the extent to which peer relationships might explain links between stress and mental health likely varies as a function of the social status of these peers. Popularity is a component of social status that has been found to act as such a moderator (Bukowski et al. 2018). For instance, if one's friends are more popular, they might be more successful in offering social support or protecting against stress, such as peer victimization or harassment. Reversely, it might be particularly aggravating to be bullied or disliked by popular peers, because of the extent to which these peers are able to exert control over others and set behavioral norms (Dijkstra, Lindenberg, & Veenstra 2008).

For sexual minority adolescents, the gender of peers might play a role when examining the effects of negative peer relationships on mental health. Compared to other youth, heterosexual boys are relatively prejudiced towards sexual diversity and display homophobic behavior comparably often (Poteat & Rivers 2010; Poteat, Rivers, & Vecho 2015). Consequently, the socially marginalized position of sexual minority youth might largely be a consequence of negative peer relationships with heterosexual boys. Moreover, sexual minority adolescents, most prominently boys, report more cross-gender friendships than heterosexual adolescents (Gillespie, Frederick, Harari, & Grov 2015; Ueno 2010). The friendship and acceptance relationships of sexual minority youth might thus predominantly consist of relationships with girls. What the role is of popularity in sexual orientation differences in peer relationships and mental health, is as of yet an open question.

Limitations of existing research and possible solutions

Most prior research on the interplay between sexual minority status, peer relationships, and mental health relied on self-reports. The shared method variance in these studies might bias results in that sexual minority respondents with low levels of mental health might have a negative perception of the quality of their peer relationships because of their depressed mood (Oldehinkel 2018). Consequently, researchers might have overestimated the role that peer relationships play in the link between sexual orientation and mental health.

Turning to sociometric methods alleviates these concerns. Dating back to the 1930's (Moreno 1934), sociometric methods are by now a very popular tool within adolescent research for mapping peer relationships. Peer nomination procedures, where adolescents can nominate all peers in a specific social setting such as the school on a number of relationships (e.g., “Who are your best friends?”, “Who do you like?”, “Who do you not like?”), comprise the most popular tool for doing so. Sociometric methods have proven vital for recent developments in research on peer status, popularity, rejection, and bullying, but also for the study of network-behavior dynamics (for reviews see Cillessen & Bukowski 2018; Veenstra, Dijkstra, Steglich, & van Zalk 2013).

Of particular interest for the goals of this study is that a sociometric approach resolves shared methods concerns, as it maps peer relationships as perceived by adolescents *and* their peers. Such an approach is not only of methodological, but also substantive merit for the goal of this study. It could help explaining in what way peer relationships differ between sexual minority and heterosexual youth in explaining mental health disparities between groups. That is, it can disclose whether sexual minority youth differ from heterosexual youth only in the subjective evaluation of their peer relationships, or whether their more marginalized position in the adolescent context is also observed and acknowledged by their peers.

Only a few researchers have adopted a sociometric approach to examine whether peer relationships operate as an intermediate link between a sexual minority orientation and mental health. These studies made use of a single sample, Add Health, and provided mixed results. In one study, sexual minority youth did not differ from heterosexual youth in terms of the size of their friendship network (Ueno 2005a), whereas another asserted that sexual minority youth had fewer friends and occupied less central roles in school friendship networks than heterosexual youth (Hatzenbuehler, McLaughlin, & Xuan 2012), which partly explained sexual orientation disparities in depressive symptoms, in particular in boys. Additional work from other samples is needed to reconcile these ambiguous findings.

The present study

This study employed a sociometric perspective to improve insights in the potentially mediating role of peer relationships in the association between sexual orientation and adolescent mental health. Depressive symptoms were the mental health indicator of focus in this study in order to guarantee similarity in outcomes with the earlier studies on this topic employing a sociometric method (Hatzenbuehler et al. 2012; Ueno 2005a) as well as much of the larger literature on sexual orientation disparities in mental health (Marshal et al. 2011). We examined the mediating role of friendship and acceptance as positive peer relationship features and disliking and bullying victimization as negative peer relationship features in the association between sexual orientation and adolescent depressive symptoms. In line with the literature, we expected that, compared to heterosexual youth, sexual minority youth to have fewer friends and be less liked, yet be more disliked and bullied (*hypothesis 1*). Furthermore, we expected that having more friends and being liked by more peers would be associated with less, whereas being disliked or being bullied would be associated with more depressive symptoms (*hypothesis 2)*. Consequently, we expected peer relationships to mediate depressive symptom disparities between heterosexual and sexual minority youth (*hypothesis 3)*.

In addition, we examined whether sexual orientation differences in peer relationships and the effects of peer relationships on depressive symptoms depended on the popularity and gender of peers. A graphical overview of our theoretical model is provided in Fig. 1. Based on the arguments summarized above, we expected the gender of peers to moderate the association between sexual orientation and peer relationships, whereas we expected the popularity to moderate the association between peer relationships and depressive symptoms, such that the associations between peer relationships and depressive symptoms are stronger for popular peers. In addition, we also explored whether the gender of peers moderated the association between peer relationships and depressive symptoms and whether the popularity of peers moderated the association between sexual orientation and peer relationships, as indicated by the grey lines in Fig. 1.

The sociometric approach allowed us to contrast the effect of friendship, acceptance, dislike, and bullying relationships as perceived by adolescents themselves, as well as relationships as perceived by their peers. We explored the effects of each type of peer relationships separately, because research emphasizes that they might relate differently to depressive symptoms (e.g., Gest et al. 2001). Together, these extensive examinations provide detailed information on which types of peer relationships function as a distal source of minority stress (Meyer 2003),

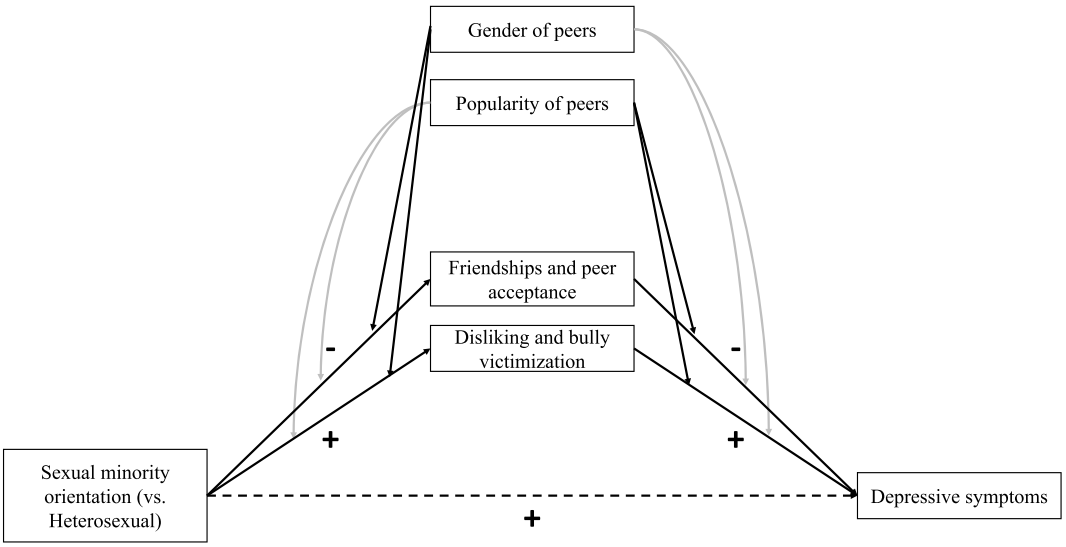

Fig. 1. Graphical overview theoretical model.

extending existing work in this area.

The scarcity of studies on this topic that used a sociometric perspective is likely due to the fact that this approach places high demands on data, requiring the combined measurement of sociometric information, sexual orientation, and depressive symptoms. Furthermore, the percentage of respondents identifying as sexual minorities in population samples is often less than 10%, leading to small comparison groups (Gates 2011). Responding to these problems, we gathered data with information on sexual orientation, peer relationships, and depressive symptoms, conducted in the Netherlands and Belgium. Consequently, we were able to analyze data from two Dutch samples and one Belgian sample. Using three samples has several advantages in this case. First, with all previous work on this topic using a sociometric perspective coming from a single sample (Add Health), analyzing data from multiple sources is important for widening the empirical basis.

Furthermore, our data is collected more recently than the Add Health studies referred to above and derived from a different cultural context. In particular the Netherlands is generally thought of as a liberal country with regard to sexual diversity (e.g., Lubbers, Jaspers, & Ultee 2009; Takács & Szalma 2013; van den Akker, van der Ploeg, & Scheepers 2013). However, recent research on Dutch adolescents found that sexual minority youth experience disparities in health and well-being that are comparable to those found in other Western countries (Kuyper 2015), and that same-sex attracted youth suffer from homophobic name-calling, with negative effects for mental health (e.g., van Beusekom, Baams, Bos, Overbeek, & Sandfort 2016). Together, these findings do not lead to clear expectations on whether differences in depressive symptoms and peer relationships between sexual minority and heterosexual youth would be smaller in our data than Add Health.

Although the included studies were of high quality, there were differences between datasets in terms of operationalizations of measures, nesting of data, number data waves, and time lags between data waves. Therefore, it was decided to analyze each sample separately, instead of combining results in a meta-analysis. A benefit of this empirical strategy is that differences in results across studies may provide insight as to whether results were sensitive to differences in study methodology. Results did however not strongly differ between samples. For clarity, we therefore only present results of the Peers and the Emergence of Adolescent Romance-study (PEAR), the largest of the three samples, in detail in the main text. Methodological details and results for all three samples are provided in Appendix A.

Method

Data

Data for this study came from two Dutch samples (The TRacking Adolescents' Individual Lives Survey (TRAILS); the Peers and the Emergence of Adolescent Romance-study (PEAR)) and one Belgian sample (the Studying TRansactions in Adolescence: TEsting Genes in Interaction with EnvironmentS (STRATEGIES)-project). All studies sought informed parental and participant consent before including potential participants in the study. Exact methods of data collection differed somewhat across studies. Across all studies however, one or more researchers were present to oversee the parts of the data collection collected at schools to safeguard data quality. We extracted subsamples that had peer nomination data and describe data, operationalization of variables, analytical, and missing data strategy for PEAR below. Details for TRAILS and STRATEGIES can be found in Appendix A.

PEAR is a two-wave longitudinal study on adolescent romantic and sexual development. The sample consisted of all students of four high schools located in two municipalities in the north of the Netherlands. Wave 1 was collected in fall 2014 and Wave 2 in spring 2015. Of the 2159 students in the schools, 2029 participated in either Wave 1 or Wave 2, yielding a response rate of 94% (M_{age} = 14.9, 50% girls).

All students of participating schools provided sociometric information at both waves. As the two highest grades from one school did not participate in wave 2 and thus were missing for this occasion, we excluded these cases from analyses. Furthermore, 27 respondents were excluded because they were from small classrooms (making popularity measures unstable), and 9 because they entered school after Wave 1. Analyses thus included all remaining respondents (n = 1848, of which 110 sexual minority respondents).

Measures

Sexual minority orientation

Sexual orientation was measured using items on romantic attraction and sexual self-identification. Romantic attraction was based on two questions: "Have you ever been in love with a boy?" (*yes/no*) and "Have you ever been in love with a girl?" (*yes/no*). Self-identification was based on the question "What do you think you are?", with answering

Table 1
Descriptive statistics.

Variable	PEAR (n = 1848)		
	M(SD)/ % (n)	Range	% missing
Sexual orientation			6%
Heterosexual	94% (1621)		
Sexual minority	6% (110)		
Depressive symptoms (w1)	1.74 (0.58)	1–4	18%
Depressive symptoms (w2)	1.72 (0.61)	1–4	18%
Friendship indegree (w1)	3.01 (1.92)	0–15	0%
Friendship indegree (w2)	2.96 (1.98)	0–15	0%
Friendship outdegree (w1)	3.36 (2.56)	0–20	12%
Friendship outdegree (w2)	3.44 (2.49)	0–20	15%
Dislike indegree (w1)	1.16 (1.53)	0–10	0%
Dislike indegree (w2)	1.09 (1.48)	0–10	0%
Dislike outdegree (w1)	1.32 (1.89)	0–13	12%
Dislike outdegree (w2)	1.28 (1.90)	0–13	15%
Sex			1%
Boy	51% (935)		
Girl	49% (902)		
Age (w1)	14.51 (1.38)	11.25–18.42	1%
Ethnicity			7%
Ethnic majority	86% (1474)		
Ethnic minority	14% (242)		
Relative family affluence:			8%
1-We have a lot less money than other families	3% (47)		
2-We have a little less money than other families	12% (208)		
3-We have as much money as other families	54% (910)		
4-We have a little more money than other families	26% (434)		
5-We have a lot more money than other families	6% (99)		
Family holiday frequency			6%
1-Seldom or never	9% (163)		
2-We go, but not every year	22% (380)		
3-We go every year	37% (648)		
4-We go once or several times per year	31% (546)		
Pubertal development (w1)	2.57 (0.79)		19%

options being 1 = *heterosexual*, 2 = *homosexual*,[1] 3 = *bisexual*, 4 = *don't know*, and 5 = *no answer*. These questions were asked in both waves of the study. Respondents were coded as sexual minority if they indicated to be same-sex attracted in either wave, or when they self-identified as homosexual or bisexual in either wave.

Depressive symptoms

The 6-item Short Depression-Happiness scale (Joseph, Linley, Harwood, Lewis, & McCollam 2004) assessed how respondents felt in the previous seven days (e.g., "I felt dissatisfied with my life") on a 4-point scale (1 = *never*, 2 = *rarely*, 3 = *sometimes*, 4 = *often*). Reliability was sufficient ($\alpha = 0.78$). The measure has shown convergent validity with other established mental health measures (Joseph et al. 2004).

Peer relationships

Peer relationships were measured by asking respondents to nominate schoolmates with regard to a number of peer relationships. To facilitate the nomination procedure, participants were provided a numbered alphabetic list of schoolmates ordered by class and grade. Table 1 provides an overview of the peer relationship measures available in PEAR. Sums of outdegrees (nominating others) and indegrees (being nominated by others) were calculated for friendship, acceptance, and dislike nominations. Moreover, sums of indegree nominations of bullying-victimization and perpetration were used. Unlimited school-level nominations were used for measuring peer nominations in PEAR. Friendships were assessed using the question: "Who are your best friends?" Disliking relationships were measured as follows: "Whom do you not like?". Acceptance and bullying relationships were only measured in TRAILS and STRATEGIES (see Appendix A).

Friendship, acceptance, and dislike relationships taking into account the gender and popularity of peers were created as follows: Boy-versions of the outdegree measures summed all nominations given to male peers, whereas girl-versions of the outdegree measures summed all nominations given to female peers. For indegree measures, boy-versions summed all nominations received from male peers, whereas girl-versions summed all nominations received from female peers. Outdegree versions of friendship, acceptance, and disliking were weighted by the popularity of peers by multiplying each nomination that respondents gave by the perceived popularity of peers that respondents nominated. For the indegree versions of these measures, we multiplied the nominations that respondents received by the perceived popularity of the peers that nominated them. Perceived popularity was operationalized as a classroom proportion score of popularity nominations received. Perceived popularity peer nominations were measured as follows in PEAR: "Who are popular?"

For all peer relationship measures, we winsorized responses with z-scores of 3 or higher (based on the total sample standard deviation) to the first integer number below a z-score of three in order to avoid bias through extreme outliers. Peer characteristics were not taken into account for bullying relationships as bullying relationships were relatively scarce, such that further breaking down existing ties by peer characteristics would have led to estimation difficulties.

Covariates

Gender of respondents

Respondents were coded as boy or girl. Using gender as a covariate controls for gender differences in depressive symptoms, which have been repeatedly documented (e.g., Girgus & Yang 2015; Oldehinkel, Verhulst, & Ormel 2011; Petersen, Sarigiani, & Kennedy 1991), as well as potential gender differences in the proportion of sexual minority youth and peer relationships.

Ethnicity

Respondents were coded as ethnic minority if either they or one or both parents were born in a non-Western country.

Parental socioeconomic status (SES)

In PEAR, SES was measured using two proxy indicators that children are likely to answer reliably: relative family affluence ("Does your family have more or less money compared to other families in your neighborhood?"; 1 = *we have a lot less money than other families* to 5 = *we have a lot more money than other families*) and family holiday frequency ("How often does your family go on vacation?"; 1 = *seldom or never* to 4 = *once or several times per year*).

Pubertal development

Pubertal development was included as a covariate as it is an important driver of sexual development (e.g., Baams, Dubas, Overbeek, &

[1] The Dutch language does not have a direct translation of the word gay. The most standard term for translating of words gay, homosexual, or being same-sex attracted more generally is 'homoseksueel' (often shortened to 'homo').

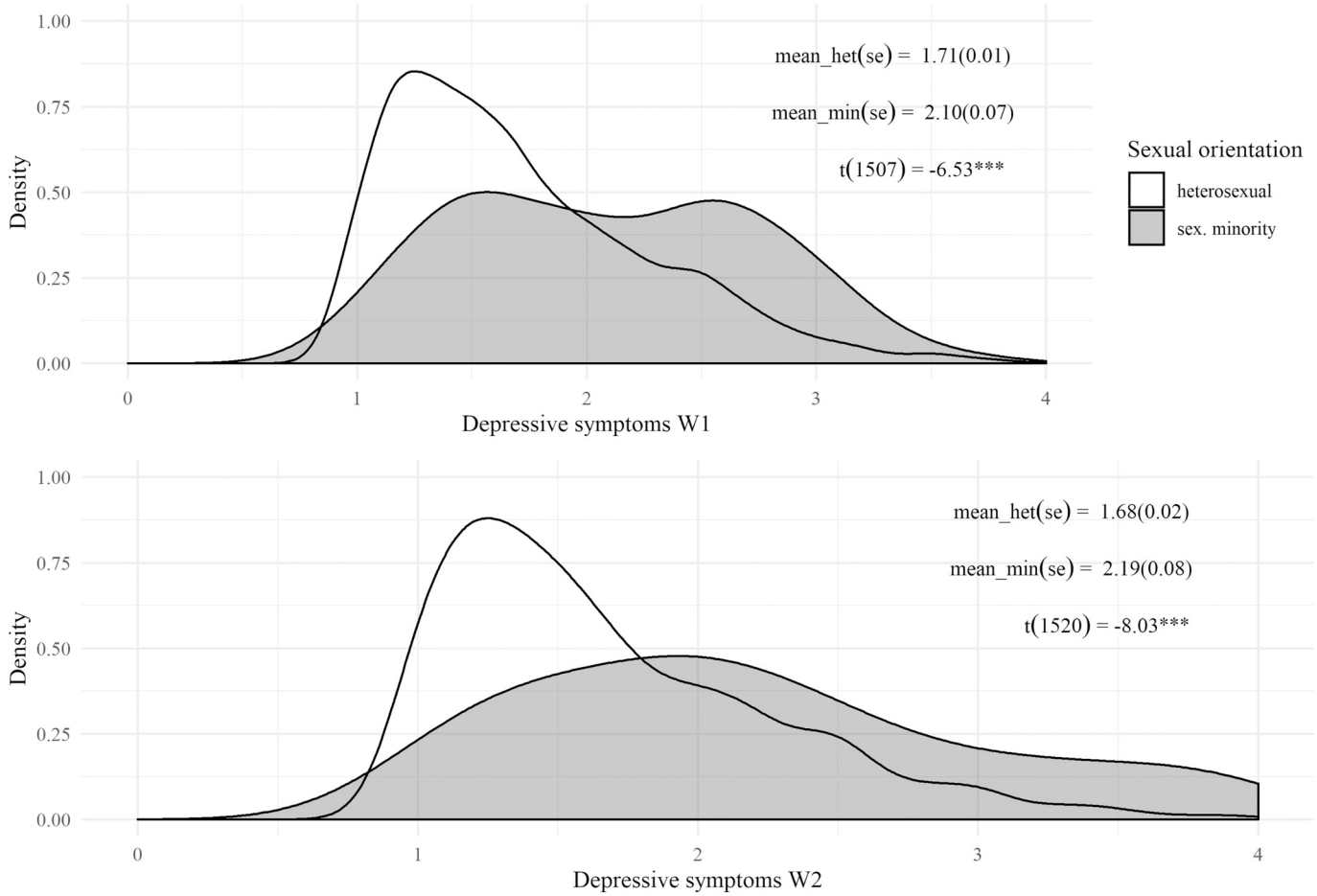

Fig. 2. Depressive symptoms PEAR by sexual orientation per wave.

van Aken 2015), and could as such impact the probability for sexual minority respondents to be aware of their sexual orientation and thus to identify as sexual minority. Furthermore, pubertal development has been associated with increased risks for depressive symptoms in adolescence (Patton & Viner 2007). Finally, more mature adolescents might have higher social status due to their relative physical dominance over peers.

The Pubertal Development Scale (PDS) was used to measure pubertal development. The PDS is a self-report measure consisting of five sex-appropriate ordinal items measuring pubertal development on a 4-point scale, where scores of 1 refer to *no development* (i.e., child-like appearance) and 4 to *completed development* (i.e., adult-like appearance) (Petersen, Crockett, Richards, & Boxer 1988). The mean score of all PDS items was used. Reliability was sufficient with α ranging between 0.71 (for girls) and 0.82 (for boys).

Age

We controlled for age in years.

Analytic strategy

We tested whether peer relationships mediated the association between sexual orientation and depressive symptoms, by estimating associations between a sexual minority orientation and peer relationships (path *a*), associations between peer relationships and depressive symptoms (path *b*), and the indirect effect, calculated using a products of coefficients approach in a structural equation modelling framework. As respondents were nested within classrooms, we estimated multilevel structural equation models to partial out within- and between-level variance (Preacher, Zyphur, & Zhang 2010). Variables with design effects larger than or close to 2 were allowed to vary on the within- and between-level, whereas variables with design effects well below 2 were constrained to vary on the within-level only. With two waves of data, a cross-lagged analysis with a lag of about 4.5 months was performed on the PEAR data. Analyses were performed in Mplus 7.4 (Muthén & Muthén 2012).

We computed separate models for each peer relationships measure. Results are presented by means of coefficient plots of unstandardized effects of paths *a*, *b* and the indirect effects (Fig. 3). In addition, standardized versions of the associations between sexual minority orientation and peer relationships (paths *a*) and the associations between peer relationships and depressive symptoms (paths *b*) of the indirect effects are displayed (Fig. 4). For clarity, coefficient plots are provided for general peer relationships (Figs. 3a & 4a), for peer relationships taking into account the gender of peers (Figs. 3b & 4b), and for peer relationships taking into account the popularity of peers (Figs. 3c & 4c). In Figure 4, paths *a* of the indirect effects are presented as Cohen's *d*'s (Cohen 1992), whereas paths *b* are presented as standardized regression coefficients. We used total sample standard deviations (thus ignoring clustering of data when estimating them) for calculating standardized effects, as is done elsewhere in the literature (Lorah 2018; Snijders & Bosker 2012).

Both standardized and unstandardized coefficients are provided as there are complementary advantages to both. The advantage of unstandardized coefficients in this case is that it provides very intuitive interpretations of the association between sexual orientation and peer relationships: differences in number of peer relationships between

heterosexual and sexual minority youth. An advantage of standardized coefficients is that effects sizes of the association between peer relationships and depressive symptoms are better comparable across peer relationship measures.

Missing data strategy

In order to prevent bias due to selectivity in missing data, we used multiple imputation using chained equations (White, Royston, & Wood 2011), which is able to impute non-normal variables (some of our variables with missing data were dichotomous) and missing independent variables. Within PEAR, outdegree versions (referring to participants' own nominations) of peer nomination measures had missing data, some of which had non-negligible design effects. We imputed these data using multilevel regression models (Grund, Lüdtke, & Robitzsch 2018). Twenty imputed datasets were created.

Results

Detailed results and robustness checks descriptions are provided here for PEAR only. For detailed results and a detailed description of robustness checks of all samples, please see Appendix A.

Descriptive statistics

Table 1 presents descriptive statistics of all study variables. Adolescents reported more positive than negative peer relationships. The gender distribution was even. Fig. 2 displays histograms of depressive symptoms by sexual orientation. Sexual minority respondents reported higher levels of depressive symptoms than heterosexual respondents, in line with expectations.

Mediation models

Model specification

Absolute fit was modest, with *RMSEA* $\approx$ 0.085 in most models, and acceptable within-level *SRMR*. The *SRMR* for the between-level and incremental fit were lower than standard thresholds (which are 0.08 for *SRMR* and close to 0.95 for *CFI* (Hu & Bentler 1999)). We attempted to improve model fit by removing all non-significant between-level paths from the model, retaining only the autocorrelation of peer relationship measures, and the effect of gender on peer relationships at both waves. This improved incremental fit and *SRMR* at the between-level to a limited extent. Furthermore, alternative model specifications that estimated only the within classroom path coefficients of the model with all variables centered by classroom, fitted the data well and returned almost identical results to the ones discussed below, suggesting that insufficient model fit did not substantially bias our findings.

Results

Fig. 3 depicts unstandardized point estimates and 95% confidence intervals of a sexual minority orientation on peer relationships (path *a*), the effects of peer relationships on depressive symptoms (path *b*), and the indirect effect. Standardized effects for paths *a* and *b* can be found in Fig. 4. Sexual orientation differences in peer relationships were smaller than one nomination for all measures used, also when taking into account the gender of peers. Expressed in standard deviations, most estimates ranged from 0.02 to 0.20, except for given dislike nominations weighted by the perceived popularity of peers, where the difference was about 0.25 of a standard deviation (see Fig. 4c). The associations between peer relationships and depressive symptoms were weak, with most estimates being 0.01 or smaller in terms of unstandardized effects (Fig. 3), and all standardized effects being smaller than 0.04 (see Fig. 4). None of the indirect effects were statistically significant.

The mediating role of peer acceptance and bullying relationships could only be studies in TRAILS and STRATEGIES, as neither type of peer relationships was measured in PEAR. Sexual orientation differences in bully victimization were small and both peer acceptance and bullying had small effects on depressive symptoms in both samples. Small sexual orientation differences in peer acceptance were found, although patterns were different from each other with regard to role of gender of peers. In TRAILS, sexual minority respondents were somewhat less accepted than heterosexual respondents, the effect of which seemed to be driven by lower levels of acceptance by boys. In STRATEGIES, sexual minority respondents were somewhat less accepted and accepted fewer peers than heterosexual respondents, the effect of which seemed driven by lower acceptance of and by girls (see Appendix A).

Robustness checks

We performed a series of robustness checks to ensure that the results of our mediation models were not influenced by methodological choices for which reasonable alternatives were available. We tested the association between sexual minority orientation and dichotomized versions of our peer relationship measures, checked whether imputing missing values for sexual orientation affected our results, tested whether the association between a sexual minority orientation and peer relationships depended on sex or grade, explored the impact of using alternative criteria for coding respondents as sexual minority, and tested sexual orientation disparities on an omnibus peer acceptance measure. None of the robustness checks led to substantially different results. Appendix A provides an extensive discussion of all robustness checks.

Discussion

Using three samples from the Netherlands and Belgium, we studied the extent to which differences in peer relationships at school explained depressive symptom disparities between heterosexual and sexual minority adolescents. Overall, sexual minority youth reported higher levels of depressive symptoms than their heterosexual counterparts, in line with previous research (Marshal et al. 2011; Peter et al. 2017). However, sexual orientation differences in school peer relationships were small. No systematic sexual orientation differences were found with regard to friendship and bullying relationships. Small sexual orientation differences in peer acceptance were detected, with sexual minority adolescents being somewhat less accepted than heterosexual adolescents. Furthermore, sexual minority youth reported to dislike somewhat more peers than heterosexual youth, in particular peers high in popularity. Associations between peer relationship measures and depressive symptoms were small across all samples and for all peer relationship measures tested.

These findings are important for several reasons. Whereas all existing empirical evidence using a sociometric approach for covering this topic came from one US data source, our study extends the body of evidence with three different samples from Western Europe. In addition, although prior research has stressed the importance of social relationships for mental health (Berkman et al. 2000; Kawachi & Berkman 2001; Umberson et al. 2010), we did not find school peer relationships to have an effect on depressive symptoms, which is surprising in light of the importance generally awarded to the peer context in adolescence (Bukowski et al. 2018). Although various factors might account for this absence of effects, communicating null results within research literature is important to prevent a publication bias and incorrect consensus regarding the size and sign of certain parameters (e.g., Oldehinkel 2018).

Relatedly, we did not find that peer relationships mediated the link between sexual orientation and depressive symptoms. This was also contrary to expectations, as a large body of research highlights the increased risk of sexual minority youth for, for instance, peer

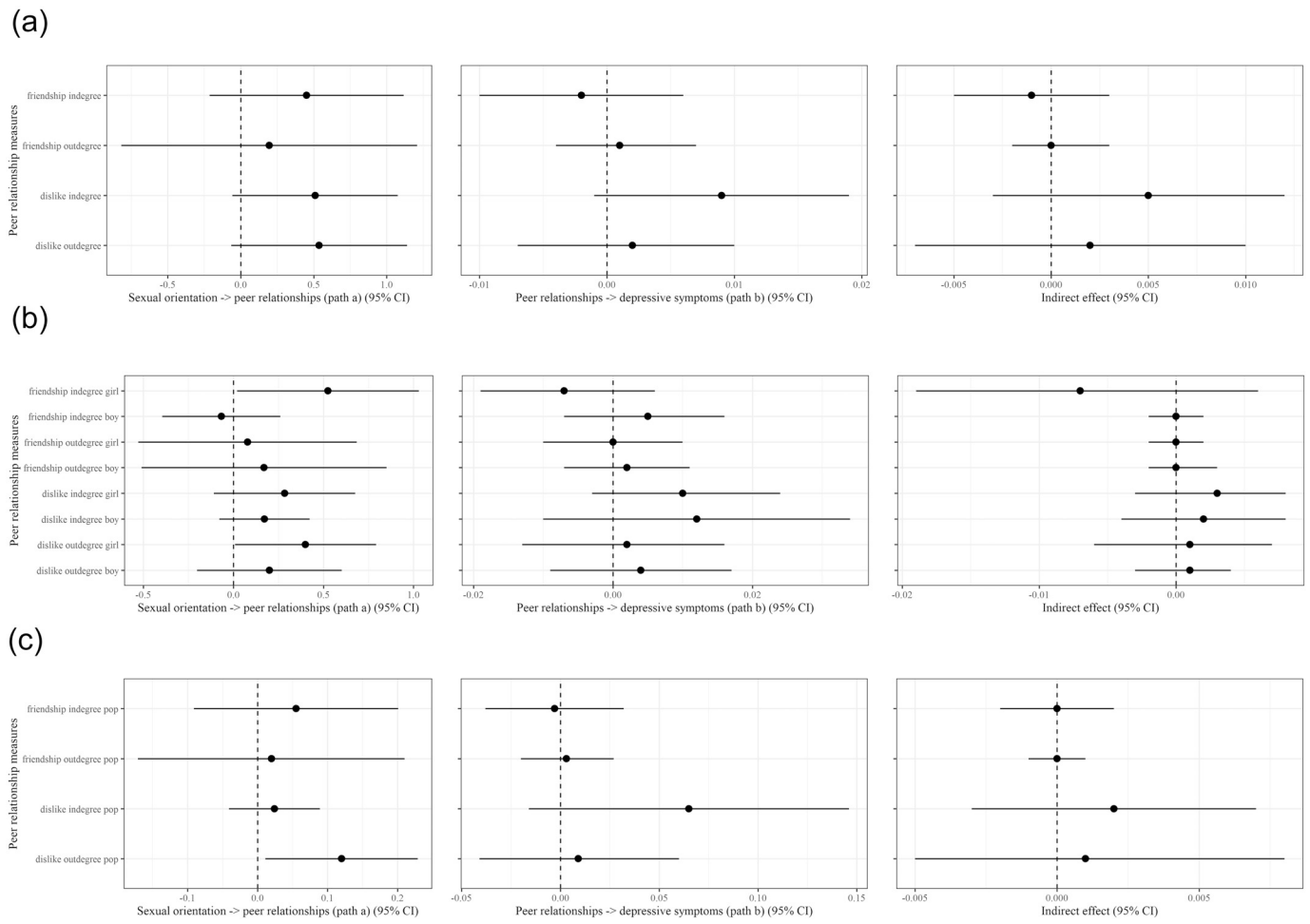

Fig. 3. a) Indirect effects of sexual orientation on depressive symptoms through peer relationship indicators. b) Indirect effects of sexual orientation on depressive symptoms through peer relationship indicators, using peer relationship indicators taking into account gender of peers. c) Indirect effects of sexual orientation on depressive symptoms through peer relationship indicators, using peer relationship indicators taking into account popularity of peers.
Notes: Unstandardized effects.
Sex, ethnicity, SES, pubertal development, and age were controlled for in each model.

victimization (Toomey & Russell 2016). It could be that the adolescent peer context is not as decisive for depressive symptom disparities by sexual orientation in the Netherlands and Belgium as elsewhere, because of the relatively high level of interpersonal acceptance of sexual diversity in these countries. As such, minority stress may predominantly be present on the distal, macro-societal level, signaled for instance by the stereotypical display of sexual minority individuals in popular media. On an interpersonal level, people might accept the sexual orientation of individuals with whom a more personal bond exists, such as classmates, explaining why the sexual minority youth in our samples appeared well-integrated in the peer context, both when looking at their own evaluation of peer relationships (i.e., in terms of nominations given), as well as the evaluation of their peers (i.e., in terms of nominations received). This interpretation does not clarify, however, the lack of an association between peer relationships and depressive symptoms. In addition, this suggestion is at odds with recent research from the Netherlands or Belgium, which indicates that sexual minority adolescents suffer still from negative experiences in the peer context (e.g., Collier et al. 2013; Kuyper 2015; van Beusekom et al. 2016). One alternative interpretation of the results could be that the peer relationships measures employed here are too general to capture minority stress still existing in the Dutch and Belgian peer context, but that more specific measures of, for instance, homophobic bullying are required to pick this up. In addition, findings of this study suggest that, on average, sexual minority youth do not occupy a more marginalized position in the peer context than their heterosexual peers. This does not rule out that such marginalization still occurs in some peer context, such as classrooms or schools with many peers with a negative stance towards sexual diversity.

Our findings complement previous research on peer relationships of sexual minority youth that relied on self-report information only. Nonetheless, some limitations must be taken into account. To begin, it should be noted that the group of sexual minority respondents was not very large in the samples used, which may have led to imprecise estimates of sexual orientation differences in depressive symptoms. This being said, also the effects of peer relationships on depressive symptoms, which were not affected by the small group of sexual orientation respondents and thus less harmed by imprecise estimates, were small. Therefore, even if larger samples would have revealed sizeable sexual orientation differences in peer relationships, it is unlikely that these differences would in turn have strongly impacted depressive symptoms.

A second potential pitfall was the young age of respondents when interviewed about their sexual orientation, particularly in PEAR and STRATEGIES. Those who did not yet identify as sexual minority might not have experienced negative social consequences, leading to a potential underestimation of the negative social consequences of a sexual minority orientation. Relatedly, sexual orientation in TRAILS was only measured at Wave 4 and 5, whilst we used peer nomination and depressive symptoms information from Wave 2. Although these measurements at young ages (PEAR and STRATEGIES) or non-concurrent

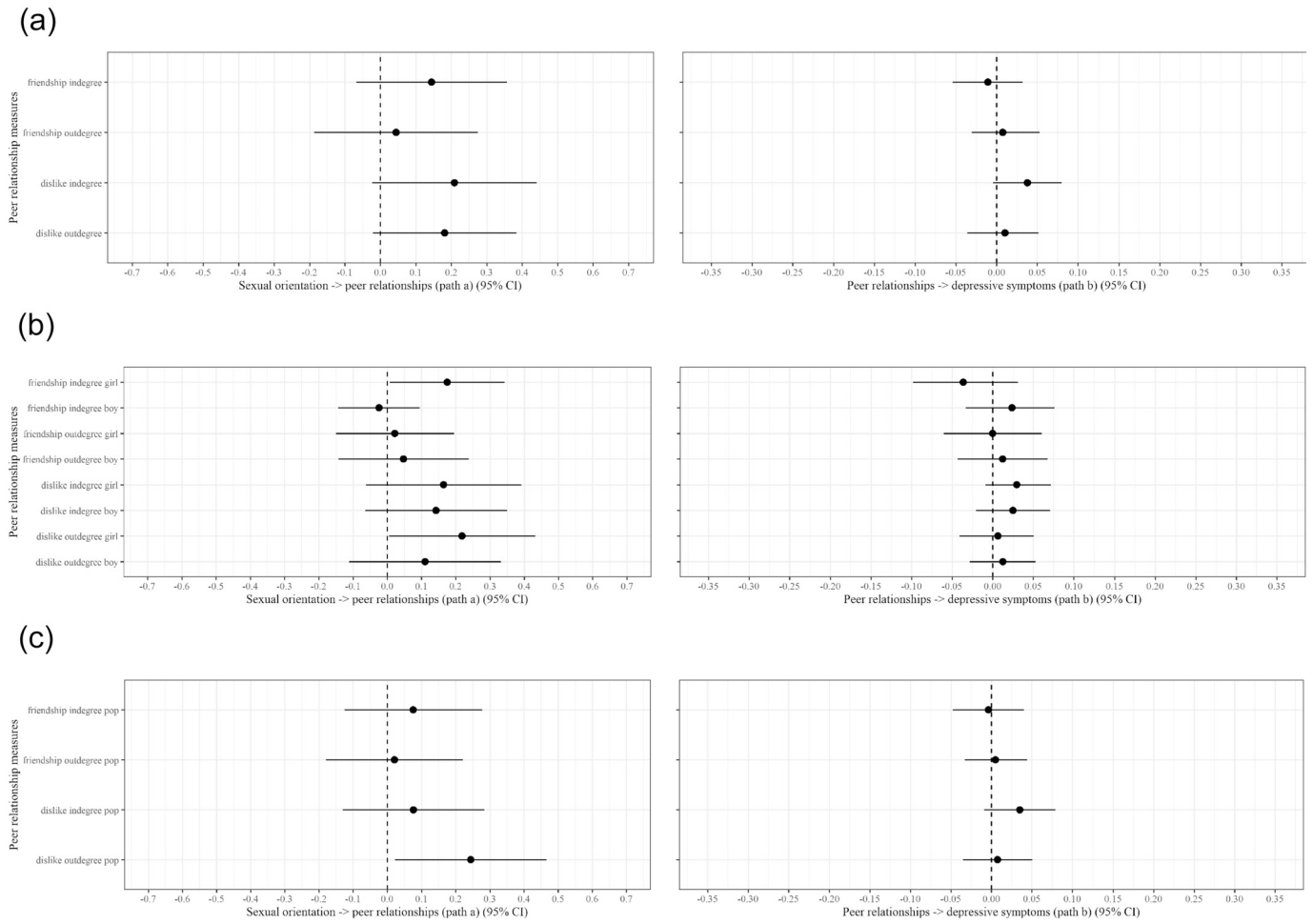

Fig. 4. a) Standardized effects sexual orientation on depressive symptoms (paths a) and peer relationship indicators on depressive symptoms (paths b). b) Standardized effects sexual orientation on depressive symptoms (paths a) and peer relationship indicators on depressive symptoms (paths b), using peer relationship indicators taking into account gender of peers. c) Standardized effects sexual orientation on depressive symptoms (paths a) and peer relationship indicators on depressive symptoms (paths b), using peer relationship indicators taking into account popularity of peers.

measurements (TRAILS) are suboptimal, research on the development of (sexual minority) orientations found the average age of self-awareness with regard to sexual orientation to lie around 8–10 years, highlighting the relevance of examining the social consequences of sexual orientation already at young ages (Maguen, Floyd, Bakeman, & Armistead 2002; Savin-Williams & Diamond 2000). This is also reflected in recent research detecting sexual orientation differences in peer victimization in middle childhood (Martin-Storey & Fish, 2019; Mittleman, 2019) and depressive symptom disparities in late childhood (la Roi et al. 2016).

A related limitation is that we were not able to account for the potentially moderating role of outness. Some of the respondents that identified as sexual minority in our samples might not have revealed this to their classmates in order to avoid negative social consequences, which might explain the small sexual orientation differences in school peer relationships. An important suggestion for future research is therefore to address the role that outness at school might play for the peer relationships of sexual minority youth. Similarly, sexual orientation was assessed by means of sexual attraction in STRATEGIES. Some of the respondents reporting same-sex attraction might not identify as sexual minority, because sexual attraction and identity do not always perfectly overlap within individuals (Pathela et al. 2006; Savin-Williams 2006). The findings of our study, however, do not reveal that the association between sexual orientation and school peer relationships was sensitive to the operationalization of sexual orientation, as sexual orientation differences in school peer relationships did not substantivelly differ between samples with an identity measure (TRAILS and PEAR) and a sample with a sexual attraction measure of sexual orientation (STRATEGIES).

Implications for research and practice

This study could have several implications, both for research as well as on a more practical level. To begin, we studied the influence of adolescents' school peer networks, which are only a subcomponent of adolescent' peer networks. Researchers are therefore advised to investigate the size and structure of adolescents' peer networks more broadly by extending to peer relationships outside school. Methodological tools have recently been developed that enable the collection of such network data (Stark & Krosnick 2017).

Relatedly, more research is needed for ascertaining the directionality of associations between peer relationships and depressive symptoms in a methodologically optimal way. We tried to account for reverse causality when studying the effects of peer relationships on depressive symptoms in our longitudinal samples by simultaneously estimating reverse cross-lagged effects. Current best practices for ascertaining directionality of effects, however, advocate combining (cross-)lagged designs with some kind of fixed effects methodology (Allison, Williams, & Moral-Benito 2017; Hamaker, Kuiper, & Grasman 2015; Leszczensky & Wolbring 2019). Employing such a design would in our case require (at least) three measurements of depressive symptoms and peer relationships in a stable class context. Such data were not

available to us, making it a task for future studies to collect them.

Another avenue for further research could be to combine measurements of peer relationships with intrapersonal evaluations of peer experiences (e.g., perceived burdensomeness) that have been found to relate to increased levels of depression and suicidality in sexual minority youth (Baams, Grossman, & Russell 2015). A combination of both concepts might reveal whether it is social exclusion per se or, alternatively, the negative evaluation of peer experiences that is more important for sexual minority adolescents' depressive symptoms. One possibility in this respect could be to collect additional qualitative data on school experiences of sexual minority students, which might provide insights that are not easily captured in standardized questionnaires.

These last research implications tie in with implications on a more practical level. The findings of this study pose an intriguing puzzle: whereas sexual minority youth consistently reported more depressive symptoms than heterosexual youth, they did not seem to occupy a marginalized position in the peer context. As such, interventions or programs that target general peer integration of sexual minority youth seem less needed in the Netherlands or Belgium than elsewhere. Instead, we need more zooming in on whether and how sexual minority youth in this liberal cultural context might still be vulnerable and experience marginalization. For instance, qualitative information derived from sexual minority youth might shed light on how often peer rejection or victimization, when it occurs, has to do with their sexual orientation, and whether such rejection is regarded by sexual minority youth as more aggravating than rejection or victimization for other reasons.

Conclusion

In conclusion, we studied the extent to which differences in school peer relationships explained depressive symptoms disparities between heterosexual and sexual minority adolescents, combining evidence from three samples from the Netherlands and Belgium. Our sociometric perspective complements existing work relying on self-reports only and replies to a call for implementing multi-informant methodology to improve our understanding of the social experiences of sexual minority youth (Baams 2019). Our results contain little evidence suggesting that sexual minority students occupy a marginalized position within the adolescent peer context. Moreover, we did not find that school peer relationships were related to depressive symptoms. On the one hand, these findings communicate a hopeful message: We did not find that a sexual minority orientation was consistently related to a marginalized position within the school peer context. On the other hand, depressive symptom disparities between sexual minority and heterosexual youth were nevertheless detected. More sociometric research is necessary to corroborate these results, and, more generally, continued research to the causes of sexual orientation depressive symptom disparities and the role that prejudice plays in explaining these disparities is warranted.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.appdev.2019.101086.

References

Abecassis, M., Hartup, W. W., Haselager, G. J. T., Scholte, R. H. J., & van Lieshout, C. F. M. (2002). Mutual antipathies and their significance in middle childhood and adolescence. *Child Development, 73*(5), 1543–1556. https://doi.org/10.1111/1467-8624.00489.

van den Akker, H., van der Ploeg, R., & Scheepers, P. (2013). Disapproval of homosexuality: comparative research on individual and national determinants of disapproval of homosexuality in 20 European countries. *Journal of Public Opinion Research, 25*(1), 1185–1198. https://doi.org/10.1093/ijpor/edr058.

Allison, P. D., Williams, R., & Moral-Benito, E. (2017). Maximum likelihood for cross-lagged panel models with fixed effects. *Socius: Sociological Research for a Dynamic World, 3*, 237802311771057. https://doi.org/10.1177/2378023117710578.

Arseneault, L., Bowes, L., & Shakoor, S. (2010). Bullying victimization in youths and mental health problems: 'Much ado about nothing'? *Psychological Medicine, 40*(5), 717–729. https://doi.org/10.1017/S0033291709991383.

Baams, L. (2019). Sexual orientation disparities: Starting in childhood and observable in adolescence? *The Journal of Adolescent Health, 64*(2), 145–146. https://doi.org/10.1016/j.jadohealth.2018.11.006.

Baams, L., Dubas, J. S., Overbeek, G., & van Aken, M. A. G. (2015). Transitions in body and behavior: A meta-analytic study on the relationship between pubertal development and adolescent sexual behavior. *The Journal of Adolescent Health, 56*(6), 586–598. https://doi.org/10.1016/j.jadohealth.2014.11.019.

Baams, L., Grossman, A. H., & Russell, S. T. (2015). Minority stress and mechanisms of risk for depression and suicidal ideation among lesbian, gay, and bisexual youth. *Developmental Psychology, 51*(5), 688–696. https://doi.org/10.1037/a0038994.

Bearman, P. S., & Moody, J. (2004). Suicide and friendships among American adolescents. *American Journal of Public Health, 94*(1), 89–95. https://doi.org/10.2105/ajph.94.1.89.

van Bergen, D. D., Bos, H. M. W., van Lisdonk, J., Keuzenkamp, S., & Sandfort, T. G. M. (2013). Victimization and suicidality among Dutch lesbian, gay, and bisexual youths. *American Journal of Public Health, 103*(1), 70–72.

Berger, C., & Dijkstra, J. K. (2013). Competition, envy, or snobbism? How popularity and friendships shape antipathy networks of adolescents. *Journal of Research on Adolescence, 23*(3), 586–595. https://doi.org/10.1111/jora.12048.

Berkman, L. F., Glass, T., Brissette, I., & Seeman, T. E. (2000). From social integration to health: Durkheim in the new millennium. *Social Science & Medicine, 51*(6), 843–857. https://doi.org/10.1016/S0277-9536(00)00065-4.

Betts, L. R., & Stiller, J. (2014). Reciprocal peer dislike and psychosocial adjustment in childhood. *Social Development, 23*(3), 556–572. https://doi.org/10.1111/sode.12063.

van Beusekom, G., Baams, L., Bos, H. M. W., Overbeek, G., & Sandfort, T. G. M. (2016). Gender nonconformity, homophobic peer victimization, and mental health: How same-sex attraction and biological sex matter. *Journal of Sex Research, 53*(1), 98–108. https://doi.org/10.1080/00224499.2014.993462.

Birkeland, M. S., Breivik, K., & Wold, B. (2014). Peer acceptance protects global self-esteem from negative effects of low closeness to parents during adolescence and early adulthood. *Journal of Youth and Adolescence, 43*(1), 70–80. https://doi.org/10.1007/s10964-013-9929-1.

Bos, H. M. W., Sandfort, T. G. M., de Bruyn, E. H., & Hakvoort, E. M. (2008). Same-sex attraction, social relationships, psychosocial functioning, and school performance in early adolescence. *Developmental Psychology, 44*(1), 59–68. https://doi.org/10.1037/0012-1649.44.1.59.

Brunstein Klomek, A., Marrocco, F., Kleinman, M., Schonfeld, I. S., & Gould, M. S. (2007). Bullying, depression, and suicidality in adolescents. *Journal of the American Academy of Child and Adolescent Psychiatry, 46*(1), 40–49. https://doi.org/10.1097/01.chi.0000242237.84925.18.

Bukowski, W. M., Laursen, B., & Rubin, K. H. (Eds.). (2018). *Handbook of peer interactions, relationships, and groups*(2nd ed.). New York: The Guilford Press.

Chan, A., & Poulin, F. (2009). Monthly instability in early adolescent friendship networks and depressive symptoms. *Social Development, 18*(1), 1–23. https://doi.org/10.1111/j.1467-9507.2008.00461.x.

Cillessen, A., & Bukowski, W. M. (2018). Sociometric perspectives. In W. M. Bukowski, B. Laursen, & K. H. Rubin (Eds.). *Handbook of peer interactions, relationships, and groups* (pp. 64–83). (2nd ed.). New York, NY: Guilford Press.

Cohen, J. (1992). A power primer. *Psychological Bulletin, 112*(1), 155–159.

Collier, K. L., van Beusekom, G., Bos, H. M. W., & Sandfort, T. G. M. (2013). Sexual orientation and gender identity/expression related peer victimization in adolescence: A systematic review of associated psychosocial and health outcomes. *Journal of Sex Research, 50*(3–4), 299–317. https://doi.org/10.1080/00224499.2012.750639.

Copeland, W. E., Wolke, D., Angold, A., & Costello, E. J. (2013). Adult psychiatric outcomes of bullying and being bullied by peers in childhood and adolescence. *JAMA Psychiatry, 70*(4), 419–426. https://doi.org/10.1001/jamapsychiatry.2013.504.

Dijkstra, J. K., Lindenberg, S., & Veenstra, R. (2008). Beyond the class norm: Bullying behavior of popular adolescents and its relation to peer acceptance and rejection. *Journal of Abnormal Child Psychology, 36*(8), 1289–1299. https://doi.org/10.1007/s10802-008-9251-7.

Falci, C., & McNeely, C. (2009). Too many friends: Social integration, network cohesion and adolescent depressive symptoms. *Social Forces, 87*(4), 2031–2061. https://doi.org/10.1353/sof.0.0189.

Fujimoto, K., Snijders, T. A. B., & Valente, T. W. (2017). Popularity breeds contempt: The evolution of reputational dislike relations and friendships in high school. *Social Networks, 48*, 100–109. https://doi.org/10.1016/J.SOCNET.2016.07.006.

Gates, G. J. (2011). *How many people are lesbian, gay, bisexual, and transgender ?* The Williams Institute1–8. https://doi.org/10.1080/13691058.2012.673639 April.

Gest, S. D., Graham-Bermann, S. A., & Hartup, W. W. (2001). Peer experience: Common and unique features of number of friendships, social network centrality, and sociometric status. *Social Development, 10*(1), 23–40. https://doi.org/10.1111/1467-9507.00146.

Gillespie, B. J., Frederick, D., Harari, L., & Grov, C. (2015). Homophily, close friendship, and life satisfaction among gay, lesbian, heterosexual, and bisexual men and women. *PLoS One, 10*(6), e0128900. https://doi.org/10.1371/journal.pone.0128900.

Girgus, J. S., & Yang, K. (2015). Gender and depression. *Current Opinion in Psychology, 4*, 53–60.

Gorrese, A., & Ruggieri, R. (2013). Peer attachment and self-esteem: A meta-analytic review. *Personality and Individual Differences, 55*(5), 559–568. https://doi.org/10.1016/J.PAID.2013.04.025.

Grund, S., Lüdtke, O., & Robitzsch, A. (2018). Multiple imputation of missing data for multilevel models. *Organizational Research Methods, 21*(1), 111–149. https://doi.org/10.1177/1094428117703686.

Hamaker, E. L., Kuiper, R. M., & Grasman, R. P. P. P. (2015). A critique of the cross-lagged panel model. *Psychological Methods, 20*(1), 102–116. https://doi.org/10.1037/a0038889.

Hatzenbuehler, M. L., McLaughlin, K. A., & Xuan, Z. (2012). Social networks and risk for depressive symptoms in a national sample of sexual minority youth. *Social Science & Medicine, 75*(7), 1184–1191. https://doi.org/10.1016/j.socscimed.2012.05.030.

Holt, M. K., Vivolo-Kantor, A. M., Polanin, J. R., Holland, K. M., DeGue, S., Matjasko, J. L., & Reid, G. (2015). Bullying and suicidal ideation and behaviors: A meta-analysis. *Pediatrics, 135*(2), e496–e509. https://doi.org/10.1542/peds.2014-1864.

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling, 6*(1), 1–55. https://doi.org/10.1080/10705519909540118.

Joseph, S., Linley, P. A., Harwood, J., Lewis, C. A., & McCollam, P. (2004). Rapid assessment of well-being: The short depression-happiness scale (SDHS). *Psychology and Psychotherapy, 77*(4), 463–478. https://doi.org/10.1348/1476083042555406.

Kawachi, I., & Berkman, L. F. (2001). Social ties and mental health. *Journal of Urban Health, 78*(3), 458–467. https://doi.org/10.1093/jurban/78.3.458.

Kochel, K. P., Ladd, G. W., & Rudolph, K. D. (2012). Longitudinal associations among youth depressive symptoms, peer victimization, and low peer acceptance: An interpersonal process perspective. *Child Development, 83*(2), 637–650. https://doi.org/10.1111/j.1467-8624.2011.01722.x.

Kretschmer, T., Veenstra, R., Deković, M., & Oldehinkel, A. J. (2017). Bullying development across adolescence, its antecedents, outcomes, and gender-specific patterns. *Development and Psychopathology, 29*(3), 941–955. https://doi.org/10.1017/S0954579416000596.

Kuyper, L. (2015). Jongeren en seksuele oriëntatie. *Ervaringen van en opvattingen over homoseksuele, biseksuele en heteroseksuele jongeren [youth and sexual orientation. Experiences of and attitudes towards homosexual, bisexual, and heterosexual youth]*. Den Haag, the Netherlands: Netherlands Institute for Social Research/SCP.

Leszczensky, L., & Wolbring, T. (2019). How to deal with reverse causality using panel data? *Recommendations for researchers based on a simulation study*Sociological Methods & Researchhttps://doi.org/10.17605/OSF.IO/8XB4Z.

Lorah, J. (2018). Effect size measures for multilevel models: Definition, interpretation, and TIMSS example. *Large-Scale Assessments in Education, 6*(1), 8. https://doi.org/10.1186/s40536-018-0061-2.

Lubbers, M., Jaspers, E., & Ultee, W. (2009). Primary and secondary socialization impacts on support for same-sex marriage after legalization in the Netherlands. *Journal of Family Issues, 30*(12), 1714–1745.

Maguen, S., Floyd, F. J., Bakeman, R., & Armistead, L. (2002). Developmental milestones and disclosure of sexual orientation among gay, lesbian, and bisexual youths. *Journal of Applied Developmental Psychology, 23*(2), 219–233. https://doi.org/10.1016/S0193-3973(02)00105-3.

Marshal, M. P., Dietz, L., Friedman, M., Stall, R., Smith, H., McGinley, J., & Brent, D. (2011). Suicidality and depression disparities between sexual minority and heterosexual youth: A meta-analytic review. *Journal of Adolescent Health, 49*(2), 115–123. https://doi.org/10.1016/j.jadohealth.2011.02.005.

Martin-Storey, A., & Fish, J. (2019). Victimization disparities between heterosexual and sexual minority youth from ages 9 to 15. *Child Development, 90*(1), 71–81. https://doi.org/10.1111/cdev.13107.

Meyer, I. H. (2003). Prejudice, social stress, and mental health in lesbian, gay, and bisexual populations: Conceptual issues and research evidence. *Psychological Bulletin, 129*(5), 674–697. https://doi.org/10.1037/0033-2909.129.5.674.

Mittleman, J. (2019). Sexual minority bullying and mental health from early childhood through adolescence. *Journal of Adolescent Health, 64*(2), 172–178. https://doi.org/10.1016/j.jadohealth.2018.08.020.

Modin, B., Östberg, V., & Almquist, Y. (2011). Childhood peer status and adult susceptibility to anxiety and depression. A 30-year hospital follow-up. *Journal of Abnormal Child Psychology, 39*(2), 187–199. https://doi.org/10.1007/s10802-010-9462-6.

Moreno, J. L. (1934). *Who shall survive? A new approach to the problem of human interrelations.* https://doi.org/10.2307/2084777.

Mustanski, B., & Liu, R. T. (2013). A longitudinal study of predictors of suicide attempts among lesbian, gay, bisexual, and transgender youth. *Archives of Sexual Behavior, 42*(3), 437–448. https://doi.org/10.1007/s10508-012-0013-9.

Muthén, L. K., & Muthén, B. O. (2012). *Mplus user's guide* (7th ed.). (Los Angeles, CA).

Oldehinkel, A. J. (2018). The importance of taking no for an answer. *Nature Human Behaviour, 2*, 533–534. https://doi.org/10.1038/s41562-018-0393-5.

Oldehinkel, A. J., Verhulst, F., & Ormel, J. (2011). Mental health problems during puberty: Tanner stage-related differences in specific symptoms. The TRAILS study. *Journal of Adolescence, 34*(1), 73–85.

Pachucki, M. C., Ozer, E. J., Barrat, A., & Cattuto, C. (2015). Mental health and social networks in early adolescence: A dynamic study of objectively-measured social interaction behaviors. *Social Science & Medicine, 125*, 40–50. https://doi.org/10.1016/j.socscimed.2014.04.015.

Pathela, P., Hajat, A., Schillinger, J., Blank, S., Sell, R., & Mostashari, F. (2006). Discordance between sexual behavior and self-reported sexual identity: A population-based survey of New York City men. *Annals of Internal Medicine, 145*(6), 416–425. https://doi.org/10.7326/0003-4819-145-6-200609190-00005.

Patton, G. C., & Viner, R. (2007). Pubertal transitions in health. *The Lancet, 369*(9567), 1130–1139. https://doi.org/10.1016/S0140-6736(07)60366-3.

Peter, T., Edkins, T., Watson, R., Adjei, J., Homma, Y., & Saewyc, E. (2017). Trends in suicidality among sexual minority and heterosexual students in a Canadian population-based cohort study. *Psychology of Sexual Orientation and Gender Diversity, 4*(1), 115–123. https://doi.org/10.1037/sgd0000211.

Petersen, A. C., Crockett, L., Richards, M., & Boxer, A. (1988). A self-report measure of pubertal status: Reliability, validity, and initial norms. *Journal of Youth and Adolescence, 17*(2), 117–133. https://doi.org/10.1007/BF01537962.

Petersen, A. C., Sarigiani, P. A., & Kennedy, R. E. (1991). Adolescent depression: Why more girls? *Journal of Youth and Adolescence, 20*(2), 247–271.

Plöderl, M., & Tremblay, P. (2015). Mental health of sexual minorities. A systematic review. *International Review of Psychiatry, 27*(5), 367–385. https://doi.org/10.3109/09540261.2015.1083949.

Pope, A. W. (2003). Developmental risk associated with mutual dislike in elementary school children. *New Directions for Child and Adolescent Development, 2003*(102), 89–110. https://doi.org/10.1002/cd.91.

Poteat, V. P., & Rivers, I. (2010). The use of homophobic language across bullying roles during adolescence. *Journal of Applied Developmental Psychology, 31*(2), 166–172. https://doi.org/10.1016/j.appdev.2009.11.005.

Poteat, V. P., Rivers, I., & Vecho, O. (2015). The role of peers in predicting students' homophobic behavior: Effects of peer aggression, prejudice, and sexual orientation identity importance. *School Psychology Review, 44*(4), 391–406. https://doi.org/10.17105/spr-15-0037.1.

Preacher, K. J., Zyphur, M. J., & Zhang, Z. (2010). A general multilevel SEM framework for assessing multilevel mediation. *Psychological Methods, 15*(3), 209–233. https://doi.org/10.1037/a0020141 209.

Robinson, J. P., Espelage, D. L., & Rivers, I. (2013). Developmental trends in peer victimization and emotional distress in LGB and heterosexual youth. *Pediatrics, 131*(3), 423–430. https://doi.org/10.1542/peds.2012-2595.

la Roi, C., Kretschmer, T., Dijkstra, J. K., Veenstra, R., & Oldehinkel, A. J. (2016). Disparities in depressive symptoms between heterosexual and lesbian, gay, and bisexual youth in a Dutch cohort: The TRAILS study. *Journal of Youth and Adolescence, 45*(3), 440–456. https://doi.org/10.1007/s10964-015-0403-0.

Russell, S. T., & Fish, J. N. (2016). Mental health in lesbian, gay, bisexual, and transgender (LGBT) youth. *Annual Review of Clinical Psychology, 12*, 465–487. https://doi.org/10.1146/annurev-clinpsy-021815-093153.

Savin-Williams, R. C. (2006). Who's gay? Does it matter? *Current Directions in Psychological Science, 15*(1), 40–44. https://doi.org/10.1111/j.0963-7214.2006.00403.x.

Savin-Williams, R. C., & Diamond, L. M. (2000). Sexual identity trajectories among sexual-minority youths: Gender comparisons. *Archives of Sexual Behavior, 29*(6), 607–627.

Schaefer, D. R., Kornienko, O., & Fox, A. M. (2011). Misery does not love company: Network selection mechanisms and depression homophily. *American Sociological Review, 76*(5), 764–785. https://doi.org/10.1177/0003122411420813.

Sijtsema, J. J., Veenstra, R., Lindenberg, S., & Salmivalli, C. (2009). Empirical test of bullies' status goals: Assessing direct goals, aggression, and prestige. *Aggressive Behavior, 35*(1), 57–67. https://doi.org/10.1002/ab.20282.

Snijders, T. A. B., & Bosker, R. (2012). *Multilevel analysis: An introduction to basic and advanced multilevel modeling* (2nd ed.). London: Sage.

Stark, T. H., & Krosnick, J. A. (2017). GENSI: A new graphical tool to collect ego-centered network data. *Social Networks, 48*, 36–45. https://doi.org/10.1016/j.socnet.2016.07.007.

Takács, J., & Szalma, I. (2013). How to measure homophobia in an international comparison. *Družboslovne Razprave, 73*, 11–42.

Takizawa, R., Maughan, B., & Arseneault, L. (2014). Adult health outcomes of childhood bullying victimization: Evidence from a five-decade longitudinal British birth cohort. *American Journal of Psychiatry, 171*(7), 777–784. https://doi.org/10.1176/appi.ajp.2014.13101401.

Toomey, R. B., & Russell, S. T. (2016). The role of sexual orientation in school-based victimization. *Youth & Society, 48*(2), 176–201. https://doi.org/10.1177/0044118X13483778.

Ttofi, M. M., Farrington, D. P., & Lösel, F. (2012). School bullying as a predictor of violence later in life: A systematic review and meta-analysis of prospective longitudinal studies. *Aggression and Violent Behavior, 17*(5), 405–418. https://doi.org/10.1016/J.AVB.2012.05.002.

Ueno, K. (2005a). Sexual orientation and psychological distress in adolescence: Examining interpersonal stressors and social support processes. *Social Psychology Quarterly, 68*(3), 258–277.

Ueno, K. (2005b). The effects of friendship networks on adolescent depressive symptoms. *Social Science Research, 34*(3), 484–510. https://doi.org/10.1016/j.ssresearch.2004.03.002.

Ueno, K. (2010). Patterns of cross-orientation friendships in high schools. *Social Science Research, 39*(3), 444–458. https://doi.org/10.1016/j.ssresearch.2009.10.001.

Umberson, D., Crosnoe, R., & Reczek, C. (2010). Social relationships and health behavior across the life course. *Annual Review of Sociology, 36*(1), 139–157. https://doi.org/10.1146/annurev-soc-070308-120011.

Veenstra, Dijkstra, J. K., Steglich, C. E. G., & van Zalk, M. H. W. (2013). Network-behavior dynamics. *Journal of Research on Adolescence, 23*(3), 399–412. https://doi.org/10.1111/jora.12070.

White, I., Royston, P., & Wood, A. (2011). Multiple imputation using chained equations: Issues and guidance for practice. *Statistics in Medicine, 30*(4), 377–399. https://doi.org/10.1002/sim.4067.

Witkow, M., Bellmore, A., Nishina, A., Juvonen, J., & Graham, S. (2005). Mutual antipathies during early adolescence: More than just rejection. *International Journal of Behavioral Development, 29*(3), 209–218. https://doi.org/10.1080/01650250444000513.