



Teacher attitudes toward lesbian, gay, and bisexual students: Evidence for intergroup contact theory and secondary transfer effects

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Received: 26 April 2022 / Accepted: 20 December 2022 / Published online: 10 January 2023
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Abstract

This article presents two studies that tested the predictive validity of intergroup contact theory and secondary transfer effects related to pre-service teacher attitudes toward sexual minority youth in classrooms. Multiple regression of feeling thermometer scores in Study 1 ($N=989$) suggested that more favorable attitudes are present among younger, female, bisexual or homosexual, less religious, politically left-wing pre-service teachers with lesbian, gay, and bisexual contacts. Associations with family membership and hometown size were nonsignificant. Analyses of variance in Study 2 ($N=406$) showed statistically significant secondary transfer effects. For instance, teacher candidates with no lesbian women contacts showed less sexual prejudice toward lesbian students if they were in social contact with gay men and bisexual people. Implications for teacher education, teacher professionalism, and the need to create safe spaces in school for LGBTQIA+ students are discussed.

Keywords Social contact · Teacher attitudes · Sexual prejudice · Heterogeneity · LGBTQIA+

1 Introduction

1.1 Teachers' attitudes toward lesbian, gay, and bisexual students

A growing number of sexual minority students disclose their sexual orientations at school (Gato et al., 2020). For example, in a Gallup poll of more than 12,000 US

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adults (Jones, 2022), 21% of Generation Z respondents (born 1997–2003) self-identify as lesbian, gay, bisexual, or transgender (LGBT)—a rather high number compared to 11% of Millennials (born 1981–1996) and 4% of Generation X respondents (born 1965–1980). Gower et al. (2022) noted that in the 2019 Minnesota Student Survey, 21% of 9th, 10th, and 11th graders identified as non-heterosexual. Moskowitz et al. (2022) noted that teenagers aged 13–18 years have shown a 60% increase in coming out since 2005. In Germany, Scharmanski and Heßling (2021) reported that 9% of female and 7% of male adolescents aged 14–15 years identified as non-heterosexual. These sexual minority students benefit from the safe spaces—where students can freely be who they are without fearing negative consequences of any kind—created by their teachers as studies demonstrate lesbian, gay, and bisexual students to be more vulnerable than heterosexual students to experience homophobic discrimination, stigmatization, and victimization (Dunn et al., 2017; Gegenfurtner & Gebhardt, 2017; Smith & Reidy, 2021) which, ultimately, reduces their academic achievement (Goldfarb & Lieberman, 2021; Kosciw et al., 2020). To minimize these negative school experiences for sexual minority children and adolescents, it is important to sensitize pre-service teachers early in their teaching careers and increase their attitudes toward these vulnerable groups of students because, as research findings suggest, teachers with positive attitudes toward lesbian, gay, and bisexual students are more likely to create safe spaces (Goldstein-Schultz, 2022), prevent homophobic behavior (Glikman & Elkayam, 2019), correct peer bullying (Nappa et al., 2018), act as mentors (Gastic & Johnson, 2009), participate in sexual diversity training (Kwok, 2018), and implement LGBTQ-inclusive curricula in their classrooms (Klocke et al., 2019; Page, 2017) than teachers with homonegative attitudes. Since teachers can be relevant support resources for sexual minority students—protecting them from victimization and supporting them emotionally (Bellini, 2012; Fenaughty, 2019; Kosciw et al., 2020; Mudrey & Medina-Adams, 2006; Taylor et al., 2016)—teacher education needs to focus on improving the attitudes of teacher candidates and preparing them to become allies for sexual minority youth. However, to date, there is a paucity of studies examining pre-service teachers' attitudes toward lesbian, gay, and bisexual youth in school settings. Without more evidence, it would be premature to draw conclusions about the prevalence and predictors of pre-service teachers' attitudes toward bi- and homosexual students.

Following the attitude theory proposed by Eagly and Chaiken (2007), teacher attitudes toward lesbian, gay, and bisexual youth can be defined as psychological tendencies that are expressed by evaluating lesbian, gay, and bisexual students in school with some degree of favor or disfavor. Conceptually, attitudes toward sexual minority students are important antecedents of teacher professionalism (Baumert & Kunter, 2013; Nett et al., 2022). According to Eagly and Chaiken's (2007) definition, attitudes are cognitive representations and include three elements: evaluation, attitude object, and tendency. The first element, *evaluation*, refers to all kinds of overt or covert evaluative responding, including cognitive beliefs and thoughts, affective emotions and feelings, as well as behavioral intentions and actual overt behavior. The second element of Eagly and Chaiken's definition, *attitude object*, yields the stimuli that we can measure as the evaluative responses of an individual directed toward this entity. Attitude objects can be abstract (conservatism) or

concrete (adolescents) and they can refer to an individual (a particular bisexual student) or to collective groups (all bisexuals in a country). The third element, *tendency*, describes the evaluation of an attitude object as neither disposition nor state. Eagly and Chaiken (2007) posit that attitudes can be short-term or long-term; while past experiences of an individual with a particular attitude object (for example, with gay or lesbian students) can establish a certain stable tendency to respond favorably or unfavorably to other gay or lesbian students, these responses are not necessarily temporally permanent—they can change as an individual makes more experiences (for example, new social contacts) which leave novel mental residues that predispose how an individual (a teacher) responds to attitude objects in the future. Some of these tendencies can be made observable as an overt, explicit response to particular stimuli. For this purpose, survey-based research employs the feeling thermometer approach (Alwin, 2007; Herek & McLemore, 2013), which measures overt affective feelings toward an attitude object (Eagly & Chaiken, 2007): Based on a symbolic thermometer, teachers numerically express their favorable or unfavorable feelings towards lesbian, gay, and bisexual students, with their attitudes corresponding to temperatures. A rating of 0 suggests that teachers do not have any positive feelings toward sexual minority students (very cold); in contrast, a rating of 100 indicates that teachers have strong positive attitudes toward sexual minority students a lot (very warm). As Alwin (2007) stated, “the feeling thermometer is particularly useful in the measurement of subjective variables, such as attitudes, that may be conceptualized as latent continua reflecting predispositions to respond” (p. 188). Research on teacher attitudes can thus use the feeling thermometer when examining the distribution of attitudes and the extent to which attitudes are associated with intergroup contact.

1.2 Intergroup contact theory and the secondary transfer effect

Intergroup contact is a critical component of attitude formation and attitude change toward social groups (Allport, 1954). Pettigrew and Tropp’s (2006) meta-analysis confirmed the basic assumption of intergroup contact theory—that contact between groups reduces intergroup prejudice by improving the attitudes of ingroup members who have personal contact experiences with one or more outgroup members. Allport (1954) claimed that prejudice is most reduced under optimal contact conditions, including equal status between groups, common goals, intergroup cooperation, and support of authorities. Pettigrew and Tropp (2006) tested Allport’s (1954) optimal conditions and found no statistical support for Allport’s claims. Rather, they argue, mere exposure alone—that is, greater contact and familiarity with members of other groups—results in more positive attitudes. Comparing different target groups, Pettigrew and Tropp (2006) reported that the largest effect sizes of reduced prejudice emerged for samples involving contact between heterosexuals and homosexuals, followed by contact with physically disabled and ethnically diverse people. Indeed, for pre- and in-service teachers, a number of studies show that attitudes toward sexual minorities are more positive if teachers had social contact with bisexual and homosexual people (Herek & McLemore, 2013). For example, Bartoş et al. (2014)

meta-analyzed past studies and confirmed that contact with gay men helped reduce antigay prejudice. Dessel (2010) reported that teachers displayed more positive attitudes toward lesbian, gay, and bisexual students and parents after their participation in a dialogue intervention. Positive relations between intergroup contact and reduced sexual prejudice, positive attitudes, and frequent responses to homophobic bullying in school have also been documented with teacher samples from Germany (Klocke et al., 2019), Greece (Grigoropoulos, 2022), and Italy (Baiocco et al., 2020; Simone et al., 2022; Zotti et al., 2019). Studies that considered samples of US teachers found that teachers with sexual minority friends have more favorable feelings toward bisexual and homosexual students (Foy & Hodge, 2016; Stucky et al., 2020) and family members (Foy & Hodge, 2016). Supporting the predictive validity of intergroup contact theory, these studies suggest that more positive attitudes are associated with the presence of sexual minority individuals in one's network. To account for the different quality of network contacts, it is specified here as someone in one's larger social network (for example, loose acquaintances at work or a socially distant neighbor), in one's close friendship circle (for example, a very good or a best friend), or in one's family (a lesbian, gay, or bisexual sibling). These analyses of different forms of contact take into consideration that greater contact and familiarity with members of other groups can mediate prejudice reduction as people tend to have, for example, more contact and greater familiarity with close friends compared to loose acquaintances (Pettigrew & Tropp, 2006).

Pettigrew (2009) advanced the intergroup contact theory by articulating the secondary transfer effects of intergroup contact. The secondary transfer effect assumes that people who are in contact with an outgroup show more favorable attitudes toward members of a second, noncontacted outgroup. If this assumption also holds true for sexual minorities, then social contact with lesbian women, for example, would heighten teachers' attitudes toward gay and bisexual students, even without prior social contact with the latter groups. This is presumably because attitudes toward lesbians can be generalized to other groups that are part of the larger lesbian, gay, bisexual, trans, queer, intersexual, asexual, and other identities (LGBTQIA+) community. Thus, intergroup contact theory and the secondary transfer effect can help explain the formation of teachers' attitudes toward sexual minorities (Allport, 1954; Herek & McLemore, 2013; Pettigrew, 2009; Pettigrew & Tropp, 2006). In contrast to intergroup contact theory, to date, secondary transfer effects have hardly been examined empirically; the transfer effects of pre-service teachers' intergroup contact on their attitudes toward lesbian, gay, and bisexual students remain unexplored.

1.3 Correlates of teacher attitudes toward lesbian, gay, and bisexual students

In addition to intergroup contact, Herek and McLemore's (2013) conceptual framework of sexual prejudice identifies a number of characteristics that influence the direction and magnitude of prejudice toward sexual minorities. Grounded in this framework, past research on pre-service and in-service teachers examined

a series of correlates, including age, gender, sexual orientation, hometown size, religiosity, and political orientation.

First, in terms of age, Herek and McLemore (2013) speculated that sexual prejudice tends to become “dysfunctional if community and peer group norms change such that expressions of antigay attitudes evoke social rejection rather than support” (p. 324). The authors argue that social norms to support lesbian, gay, and bisexual orientations are more prevalent among younger age groups and in more highly educated contexts such as college campuses. Indeed, associations with age are evident from the literature on teacher attitudes, suggesting that younger pre- and in-service teachers tend to have lower levels of sexual prejudice and feel more comfortable addressing LGBTQIA+ issues than older teachers of higher seniority (Baiocco et al., 2020; Grigoropoulos, 2022; Hall & Rodgers, 2019; Page, 2017). Along these lines, we hypothesize that age was negatively related with teacher attitudes, with more positive attitudes for younger pre-service teachers.

Second, in terms of gender, the available evidence is mixed. Although it seems plausible that (cisgender heterosexual) men devalue bi- and homosexual individuals to affirm their own masculinity and heterosexuality (Herek & McLemore, 2013), a number of studies have reported nonsignificant gender differences in attitudes (Grigoropoulos, 2022; Hall & Rodgers, 2019; Stucky et al., 2020; Wyatt et al., 2008). As notable exceptions, Heras-Sevilla and Ortega-Sánchez (2020) reported that Spanish male pre-service teachers had more negative attitudes toward homosexuality than female teachers; and Klocke et al. (2019) found that German female in-service teachers intervened more frequently against homophobia than male in-service teachers. These findings correspond with ample research evidence beyond teacher populations documenting greater levels of sexual prejudice and homonegative attitudes of heterosexual men compared to heterosexual women, particularly directed toward gay men (Herek, 2002; Klocke, in press; Petersen & Hyde 2010). According to Herek and McLemore (2013), sexual prejudice expressed by cisgender heterosexual men serves a dual function: to establish and reaffirm their own masculinity and to sanction other men who do not conform to these narrow gender role expectations. Grounded in this conceptual and empirical work, we hypothesize a similar pattern for male versus female pre-service teachers, with more positive attitudes for female teacher candidates who feel less pressure to reaffirm their masculinity by devaluing others.

Third, in terms of sexual orientation, research evidence is still rather limited. To our knowledge, only three studies have examined attitude differences between heterosexual and homosexual teachers. Foy and Hodge (2016) and Stucky et al. (2020) reported higher levels of prejudice among heterosexual teachers than homosexual teachers, while Hall and Rodgers (2019) reported that sexual orientation was a nonsignificant predictor of LGBQ teacher attitudes. Research tends to confirm that members of the LGBTQIA+ community share similar biographical experiences of stigma and prejudice (Casey et al., 2019; Gegenfurtner, 2021; Gegenfurtner & Gebhardt, 2017; Lopes & Jaspal, in press). Furthermore, heterosexual compared to LGB people show a greater need to reaffirm their masculinity and their conformity to traditional gender roles, which is associated with more negative attitudes toward lesbian, gay, and bisexual people (Herek, 2002; Herek

& McLemore, 2013). For these reasons, we hypothesize that bi- and homosexual pre-service teachers feel more positively toward bi- and homosexual students than heterosexual teachers do.

Fourth, in terms of hometown size, research evidence is ambiguous. On the one hand, Goldstein-Schultz (2022) reported that teachers in rural districts of Connecticut have more favorable attitudes toward gay men and lesbian women than teachers in urban districts. On the other hand, Page (2017) reported that teachers in rural schools of Minnesota feel less comfortable using literature related to sexual diversity in their curricula than teachers in suburban and urban schools. In a large survey of 16,713 US-American students aged 13 to 21, Kosciw et al. (2020) reported that the school locale was a predictor of negative school experiences: LGBTQIA+ students in rural schools reported a more hostile school climate, more anti-discriminatory school practices, more experiences of biased language and victimization, and the least amount of LGBTQIA+-related school resources and support than students in urban or suburban schools. This evidence corresponds with Page (2017). We would thus argue that hometown size is associated with pre-service teachers' attitudes toward homo- and bisexual students.

Fifth, research evidence clearly shows the associations between religiosity and homonegative attitudes. A number of studies with teachers working in Korea (Jeong, 2020), Brazil (Stucky et al., 2020), Italy (Baiocco et al., 2020), and the USA (Hall & Rodgers, 2019; Page, 2017) have reported that highly religious teachers have less positive attitudes toward lesbian and gay people, presumably because homosexuality disrupts and violates the value systems and traditional gender roles of certain religious denominations. Consequently, we hypothesize that religiosity was negatively related with teacher attitudes, with more negative attitudes for more religious pre-service teachers.

Finally, similar to religiosity, research evidence is very clear on the associations between political orientation and homosexuality. Teachers who are politically liberal and left-wing oriented have more favorable feelings toward lesbians and gays than teachers who are politically conservative and right-wing oriented (Baiocco et al., 2020; Foy & Hodge, 2016; Hall & Rodgers, 2019; Heras-Sevilla & Ortega-Sánchez, 2020; Klocke et al., 2019), probably because politically conservative people value heteronormative gender roles and sexual relations. Following this evidence, we speculate that pre-service teachers with a left-wing orientation would show more positive attitudes than pre-service teachers with a right-wing orientation.

Reflecting on the measures used in past teacher attitude studies, it is evident that the majority relied on composite scores that merged the attitudes toward homosexual people. While lesbian women and gay men were often considered together, bisexuality was de-emphasized and hardly ever referenced, let alone measured, as a standalone category. Furthermore, most studies focused on examining attitudes toward homosexual people in general and did not consider students in particular. When children or adolescents are referenced in the item stem, then in examinations on attitudes toward children raised in same-sex families. In contrast, measures used in the present study accounted differentially for attitudes toward lesbian, gay, and bisexual students.

1.4 The present article

Based on Eagly and Chaiken's (2007) attitude theory, this article presents two studies that examined the predictors of pre-service teachers' attitudes toward bi- and homosexual school students. Study 1 tested the predictive validity of intergroup contact theory (Pettigrew & Tropp, 2006). To this end, feeling thermometer scores obtained from a sample of 989 pre-service teachers were used to analyze the distribution and social, religious, political, and demographic correlates of attitudes toward lesbian, gay, and bisexual students in schools. Study 2 tested the predictive validity of the secondary transfer effect of intergroup contact (Pettigrew, 2009). Accordingly, the differences in feeling thermometer scores obtained from a sample of 406 pre-service teachers were analyzed to investigate whether intergroup contact is associated with a secondary reduction of bi- or homonegative attitudes toward the noncontacted outgroup.

2 Study 1

2.1 Aims

The aim of Study 1 was to test the predictors of pre-service teacher attitudes toward homosexual and bisexual children and adolescents at school. The research question was as follows: To what extent do social contact and individual characteristics predict pre-service teachers' feeling thermometer scores with respect to lesbian, gay, and bisexual students? Based on the attitude and intergroup contact theories, two hypotheses were examined. Hypothesis 1 assumed that pre-service teachers with lesbian, gay, or bisexual individuals in their social network (Hypothesis 1a), particularly as close friends (Hypothesis 1b) or family members (Hypothesis 1c), would display more positive attitudes than pre-service teachers without social contact. Hypothesis 2 assumed that attitudes toward lesbian, gay, and bisexual students would be more favorable among pre-service teachers who are of younger ages (Hypothesis 2a), are female (Hypothesis 2b), identify as bisexual or homosexual (Hypothesis 2c), were raised in an urban area (Hypothesis 2d), are less religious (Hypothesis 2e), and are politically left-wing oriented (Hypothesis 2f).

2.2 Methods

2.2.1 Participants and sampling

To address the abovementioned hypotheses, convenience sampling was performed, and 989 pre-service teachers (758 female, 231 male) enrolled in a national teacher education program at a large public university in Germany participated in the survey. The pre-service teachers had a mean age of 21.9 years ($SD = 4.4$). An invitation containing a URL and a QR code linked to an online

Google Forms survey was used to invite pre-service teachers found in lectures, the university's learning management system, and study groups on Instagram and Facebook. Study participation was voluntary, and the respondents received no compensation for the same. Anonymity and confidentiality were guaranteed for all respondents.

2.2.2 Measures

At the time of their own choosing, each pre-service teacher completed the online survey within approximately 10 min. The survey included items measuring attitudinal, social, as well as individual and demographic variables.

2.2.2.1 Attitudes The 101-point feeling thermometer from Herek and McLemore (2013) was adapted to measure participants' attitudes toward lesbian, gay, and bisexual students. The feeling thermometer consists of a scale from zero to 100, with higher ratings indicating more positive feelings. Participants rated each minority group using a feeling thermometer. Table 1 presents the wording of each feeling thermometer item.

2.2.2.2 Intergroup contact To measure social contact, we asked the participating pre-service teachers whether they were in contact with lesbian, gay, or bisexual people as acquaintances in one's larger social network, as close friends, or as family members. Responses were coded as 1 = *yes* or 0 = *no*.

2.2.2.3 Individual and demographic variables To measure individual and demographic variables, data regarding the participants' age, gender, sexual orientation, hometown, religiosity, and political orientation were collected. For age, the question "How old are you?" was posed to the participants. For gender, the participants were asked if they identify as 0 = *male*, 1 = *female*, or 2 = *non-binary*; all participants identified as either female or male. For sexual orientation, the Kinsey scale (Kinsey et al., 1998) was adapted, and the question "How would you describe your sexual orientation?" was asked; the participants responded based on a seven-point scale: 1 = *exclusively heterosexual*, 2 = *predominantly heterosexual*, 3 = *rather heterosexual*, 4 = *bisexual*, 5 = *rather homosexual*, 6 = *predominantly homosexual*, and 7 = *exclusively homosexual*. To obtain data on hometowns, the participants were asked, "How many people live in the town where you grew up?" The answers were then coded as follows: 1 = *less than 1,000*, 2 = *1,000–5,000*, 3 = *5,000–10,000*, 4 = *10,000–20,000*, 5 = *20,000–50,000*, 6 = *50,000–100,000*, 7 = *100,000–500,000*, 8 = *500,000–1,000,000*, and 9 = *more than a million people*. For religiosity, the question "How religious are you?" was asked, and the participants responded using a five-point scale: 1 = *not religious at all*, 2 = *not religious*, 3 = *neutral*, 4 = *religious*, and 5 = *very religious*. For political orientation, the participants were asked which party they would vote for in the next elections, and the answers were coded as 0 = *right wing* and 1 = *left wing*.

Table 1 Wording and response format for attitude and intergroup contact variables

Item wording	Scale	
	Min	Max
<i>Lesbian, gay, and bisexual feeling thermometer (adapted from Herek and McLemore, 2013), used in Study 1 and Study 2</i>		
1. Think of an imaginary thermometer with a scale from zero to 100. The warmer or more favorable you feel toward lesbian students, the higher the number you should give it. The colder or less favorable you feel, the lower the number. If you feel neither warm nor cold toward lesbian students, rate it 50. (Students entered a number)	0	100
2. Think of an imaginary thermometer with a scale from zero to 100. The warmer or more favorable you feel toward gay students, the higher the number you should give it. The colder or less favorable you feel, the lower the number. If you feel neither warm nor cold toward gay students, rate it 50. (Students entered a number)	0	100
3. Think of an imaginary thermometer with a scale from zero to 100. The warmer or more favorable you feel toward bisexual students, the higher the number you should give it. The colder or less favorable you feel, the lower the number. If you feel neither warm nor cold toward bisexual students, rate it 50. (Students entered a number)	0	100
<i>Social contact with lesbian, gay, and bisexual individuals (own development), used in Study 1</i>		
1. Do you have a lesbian, gay, or bisexual individual in your social network?	0=no	1=yes
2. Do you have a close lesbian, gay, or bisexual friend?	0=no	1=yes
3. Do you have a lesbian, gay, or bisexual family member?	0=no	1=yes
<i>Social contact with lesbian, gay, and bisexual individuals (own development), used in Study 2</i>		
1. Do you have a lesbian woman in your social network?	0=no	1=yes
2. Do you have a gay man in your social network?	0=no	1=yes
3. Do you have a bisexual individual in your social network?	0=no	1=yes
4. Do you have a close lesbian friend?	0=no	1=yes
5. Do you have a close gay friend?	0=no	1=yes
6. Do you have a close bisexual friend?	0=no	1=yes
7. Do you have a lesbian family member?	0=no	1=yes
8. Do you have a gay family member?	0=no	1=yes
9. Do you have a bisexual family member?	0=no	1=yes

2.2.3 Analysis

Prior to data collection, we performed statistical power analyses using the G*Power v3.1 software program. For a linear multiple regression with an alpha error probability of .01, a power of 0.99, and nine predictor variables, the recommended total sample size was 110. Our sample of 969 pre-service teachers exceeded this recommendation, indicating that the sample size was sufficiently large and with adequate statistical power. An alpha level of .05 was used for all analyses.

2.3 Results

2.3.1 Descriptive results

Table 2 presents the means, the standard deviations, and a correlation matrix of all variables in Study 1. Overall, the 989 pre-service teachers' ratings indicated that the pre-service teachers have positive attitudes toward homo- and bisexual children and adolescents at school, which were significantly more positive than the theoretical mean of 50 ($p < .001$). The feeling thermometer scores were interrelated, suggesting that people with homonegative attitudes toward lesbian and gay students also display binegative attitudes toward bisexual students; similarly, people with positive attitudes toward lesbian students tend to display positive feelings toward gay and bisexual students as well. Gender, sexual orientation, political orientation, and all social contact variables were positively correlated with attitude scores, whereas age and religiosity were negatively correlated with attitude scores. Table 3 presents the sample composition for the key demographic variables and the lesbian, gay, and bisexual thermometer scores for each group. The results show that most of the women (66%) and men (75%) in the sample identify as being exclusively heterosexual (68% of the sample), and more women (15%) than men (13%) are attracted to the same sex. More men (67%) than women (45%) reported being not religious or not religious at all on the five-point scale ($t(984) = -5.316$; $p < .001$). An almost equal number of female and male pre-service teachers indicated being politically right-wing (23% each) or left-wing oriented (62% and 63%, respectively), $p = .48$.

2.3.2 Regression results: Testing Intergroup Contact Theory

Table 4 presents the outcomes of the multiple regression analysis conducted to examine predictors of pre-service teacher attitudes toward lesbian, gay, and bisexual students. The independent variables accounted for a statistically significant amount of variance in attitudes toward lesbian ($R^2 = 0.13$), gay ($R^2 = 0.15$), and bisexual ($R^2 = 0.16$) students. In terms of social contact, the presence of a lesbian, gay, or bisexual individual within one's social network or as a close friend was positively associated with attitude scores. These findings support Hypotheses 1a and 1b; however, Hypothesis 1c was rejected because having an LGB family member was not significantly associated with attitude scores.

In terms of demographic variables, age was found to be negatively associated with attitudes toward lesbian, gay, and bisexual students, suggesting that the younger participants tend to have more positive feelings than older participants; thus, Hypothesis 2a was confirmed. In support of Hypothesis 2b, female pre-service teachers reported more favorable attitudes than male pre-service teachers. In support of Hypothesis 2c, people who identified as heterosexual were found to have more negative attitudes than participants who identified as bi- or homosexual. Hypothesis 2d was rejected because hometown size seemed unrelated to feeling thermometer scores. In partial support of Hypothesis 2e, religiosity was significantly negatively associated with attitudes toward lesbian and bisexual students but not with attitudes toward gay students. Finally, in

Table 2 Means, standard deviations, and correlation matrix of all variables in Study 1

	M	SD	1	2	3	4	5	6	7	8	9	10	11
<i>Feeling thermometer measures</i>													
1. Lesbian attitude	70.97	25.46	-										
2. Gay attitude	72.59	25.59	.91	-									
3. Bisexual attitude	70.17	25.79	.93	.90	-								
<i>Social contact variables</i>													
4. Social network (1 = contact)	0.86	0.34	.20	0.22	.21	-							
5. Close friend (1 = contact)	0.48	0.50	.25	.27	.27	.33	-						
6. Family member (1 = contact)	0.19	0.39	.09	.07	.10	.14	.19	-					
<i>Individual and demographic variables</i>													
7. Age	21.86	4.41	.10	-.10	-.10	.08	.07	.09	-				
8. Gender (1 = female)	0.77	0.42	.12	.16	.12	.03	.04	-.04	-.18	-			
9. Sexual orientation (1 = exclusively heterosexual)	1.70	1.41	.14	.13	.15	.10	0.18	.06	.07	.01	-		
10. Hometown	3.35	2.21	.01	.00	.01	.00	.05	.09	.13	-.01	-.03	-	
11. Religiosity	2.58	1.24	-.12	-.10	-.15	-.09	-.07	-.10	-.05	.17	-.06	-.12	-
12. Political orientation (1 = left-wing)	0.73	0.44	.21	.21	.25	.10	0.11	.10	-.03	.00	-.09	.11	-.24

Two-tailed correlations. Attitude scores range from 0 to 100; higher scores indicate more favorable feelings. $N = 989$
 $p \leq .05$ for $|r| \geq .07$; $p \leq .01$ for $|r| \geq .09$; $p \leq .001$ for $|r| \geq .34$

Table 3 Mean (and standard deviation) of lesbian, gay, and bisexual feeling thermometer scores by gender and demographic group in Study 1

Attitudes	Lesbian			Gay			Bisexual			
	Demographic group	Women	Men	Total	Women	Men	Total	Women	Men	Total
Entire sample										
<i>N</i> (%)	72.59 (26.39) 758 (77%)	65.59 (24.98) 229 (23%)	70.97 (25.46) 987 (100%)	74.85 (24.98) 758 (77%)	65.15 (26.20) 231 (23%)	72.59 (25.59) 989 (100%)	71.86 (25.76) 758 (77%)	64.63 (25.16) 231 (23%)	70.17 (25.79) 989 (100%)	
Sexual orientation										
<i>Exclusively heterosexual</i>										
<i>N</i> (%)	69.96 (26.11) 502 (66%)	63.80 (23.83) 171 (75%)	68.40 (25.67) 673 (68%)	72.63 (25.74) 502 (66%)	63.09 (25.01) 173 (75%)	70.18 (25.87) 675 (68%)	69.17 (26.26) 502 (66%)	62.25 (23.55) 173 (75%)	67.39 (25.75) 675 (68%)	
<i>Predominantly heterosexual</i>										
<i>N</i> (%)	76.97 (21.93) 144 (19%)	56.37 (28.94) 27 (12%)	75.14 (26.46) 171 (17%)	78.89 (21.14) 144 (19%)	67.19 (28.63) 27 (12%)	77.03 (22.79) 171 (17%)	76.38 (22.44) 144 (19%)	66.52 (28.24) 27 (12%)	74.82 (23.64) 171 (17%)	
<i>Rather heterosexual</i>										
<i>N</i> (%)	73.48 (29.30) 21 (3%)	71.67 (24.83) 6 (3%)	73.07 (27.92) 27 (3%)	72.52 (30.40) 21 (3%)	71.67 (24.83) 6 (3%)	72.33 (28.81) 27 (3%)	74.67 (29.82) 21 (3%)	70.00 (22.80) 6 (3%)	73.63 (28.07) 27 (3%)	
<i>Bisexual</i>										
<i>N</i> (%)	80.42 (27.47) 38 (5%)	72.00 (31.15) 5 (2%)	79.44 (27.65) 43 (4%)	81.34 (27.77) 38 (5%)	65.20 (41.45) 5 (2%)	79.47 (29.49) 43 (4%)	80.29 (29.40) 38 (5%)	66.20 (41.80) 5 (2%)	78.65 (30.08) 43 (4%)	
<i>Rather homosexual</i>										
<i>N</i> (%)	84.90 (18.81) 20 (3%)	58.80 (35.46) 5 (2%)	79.68 (24.56) 25 (3%)	86.40 (19.31) 20 (3%)	55.80 (36.90) 5 (2%)	80.28 (26.06) 25 (3%)	81.40 (21.35) 20 (3%)	52.80 (34.19) 5 (2%)	75.68 (26.31) 25 (3%)	
<i>Predominantly homosexual</i>										
<i>N</i> (%)	90.00 (10.00) 5 (1%)	90 (-) 1 (0%)	90.00 (8.94) 6 (1%)	94.00 (8.94) 5 (1%)	100 (-) 1 (0%)	95.00 (8.37) 6 (1%)	92.00 (8.37) 5 (1%)	100 (-) 1 (0%)	93.33 (8.17) 6 (1%)	
<i>Exclusively homosexual</i>										
<i>N</i> (%)	74.05 (21.38) 21 (3%)	85.77 (19.98) 13 (6%)	78.53 (21.35) 34 (3%)	76.19 (20.32) 21 (3%)	88.08 (16.53) 13 (6%)	80.74 (19.59) 34 (3%)	74.05 (21.38) 21 (3%)	88.46 (16.76) 13 (6%)	79.56 (20.73) 34 (3%)	
Religiosity										
<i>Not religious at all</i>										
<i>N</i> (%)	78.34 (24.69) 167 (22%)	65.49 (21.95) 90 (39%)	73.84 (24.50) 257 (26%)	78.89 (25.65) 167 (22%)	66.26 (23.68) 90 (39%)	74.46 (25.65) 257 (26%)	79.14 (24.44) 167 (22%)	65.42 (21.64) 90 (39%)	74.34 (24.35) 257 (26%)	
<i>Not religious</i>										
<i>N</i> (%)	74.95 (23.13) 173 (23%)	68.15 (22.81) 54 (24%)	73.33 (23.18) 227 (23%)	77.57 (22.00) 173 (23%)	69.38 (22.38) 55 (24%)	75.59 (22.32) 228 (23%)	73.53 (23.85) 173 (23%)	68.25 (21.85) 55 (24%)	72.25 (23.48) 228 (23%)	
<i>Neutral</i>										
<i>N</i> (%)	72.54 (23.99) 188 (25%)	65.67 (30.67) 42 (18%)	71.29 (24.41) 230 (23%)	75.53 (23.56) 188 (25%)	62.95 (31.02) 42 (18%)	73.23 (25.84) 230 (23%)	72.13 (23.99) 188 (25%)	63.81 (30.80) 42 (18%)	70.61 (25.50) 230 (23%)	

Table 3 (continued)

Attitudes	Lesbian			Gay			Bisexual		
	Women	Men	Total	Women	Men	Total	Women	Men	Total
Demographic group									
Religious	67.13 (27.27)	64.19 (23.70)	66.64 (26.68)	69.42 (26.82)	60.76 (26.85)	67.94 (26.97)	65.35 (27.94)	60.24 (26.62)	64.47 (27.72)
N (%)	179 (24%)	36 (16%)	215 (22%)	179 (24%)	36 (16%)	215 (22%)	179 (24%)	36 (16%)	215 (22%)
Very religious	65.13 (28.74)	53.71 (45.15)	63.67 (30.99)	69.25 (27.53)	54.00 (45.81)	67.31 (30.32)	64.19 (28.25)	54.14 (43.74)	62.91 (30.31)
N (%)	48 (6%)	7 (3%)	55 (6%)	48 (6%)	7 (3%)	55 (6%)	48 (6%)	7 (3%)	55 (6%)
<i>Political orientation</i>									
Right-wing	65.13 (25.82)	57.42 (27.12)	63.35 (26.27)	68.45 (25.30)	52.79 (27.91)	64.77 (27.22)	62.86 (26.57)	53.21 (26.89)	60.60 (26.90)
N (%)	173 (23%)	52 (23%)	225 (23%)	173 (23%)	53 (23%)	226 (23%)	173 (23%)	53 (23%)	226 (23%)
Left-wing	76.84 (24.07)	69.45 (23.84)	75.13 (24.20)	78.43 (23.93)	70.73 (24.77)	76.63 (24.33)	76.63 (24.48)	69.80 (23.78)	75.04 (24.47)
N (%)	474 (63%)	143 (62%)	617 (62%)	474 (63%)	144 (62%)	618 (62%)	474 (63%)	144 (62%)	618 (62%)

Table 4 Regression analysis: Predictors of lesbian, gay, and bisexual thermometer scores in Study 1

	Lesbian	Gay	Bisexual
Predictor	<i>b</i>	<i>b</i>	<i>b</i>
Constant	62.204**	60.182***	61.050***
Social contact variables			
Social network	6.492**	8.156**	6.697*
Close friend	9.691**	10.592***	10.549***
Family member	2.210	1.106	2.263
Demographic variables			
Age	-0.510**	-0.534**	-0.556**
Gender (1 = female)	6.727***	8.962***	7.231***
Sexual orientation	1.151*	1.121*	1.179*
Hometown	0.161	0.077	0.111
Religiosity	-1.484*	-1.118	-1.957**
Political orientation (1 = left-wing)	8.006***	8.070***	10.243***
R^2	0.132	0.150	0.161
F (df)	13.798 (9, 816)	23.824 (9, 816)	17.450 (9, 816)

* $p < .05$; ** $p \leq .01$; *** $p \leq .001$

support of Hypothesis 2f, left-wing-oriented pre-service teachers were found to have more favorable attitudes than right-wing-oriented pre-service teachers.

2.4 Discussion of study 1

In line with attitude theory (Eagly & Chaiken, 2007) and intergroup contact theory (Pettigrew & Tropp, 2006), the findings of Study 1 confirm that social contact and demographic variables are important predictors of pre-service teacher attitudes toward homo- and bisexual children and adolescents at school. However, the approach used to measure social contact was a limitation of Study 1: The survey items focused on contact with lesbian, gay, or bisexual people but did not differentiate between separate contact experiences with each distinct social group. This limitation was addressed in Study 2; the measures were refined, and three separate items were used instead of one aggregated item to investigate the participants' social contact with lesbian, gay, and bisexual groups differentially. In addition, these new items allowed for testing the secondary transfer effect of intergroup contact (Pettigrew, 2009).

3 Study 2

3.1 Aims

The aim of Study 2 was to test a secondary transfer effect (Pettigrew, 2009) of pre-service teacher attitudes toward homo- and bisexual children and adolescents at school. The research question was as follows: How does social contact with members of an outgroup transfer to a second outgroup that is not involved in the contact? Based on attitude theory and the assumption of secondary transfer effects, three hypotheses were examined. Hypothesis 1 assumed that, compared to pre-service teachers without LGB contact, pre-service teachers who have had no contact with lesbian women would still show favorable attitudes toward lesbian students if they had prior social contact with gay men or bisexual people. Hypothesis 2 was that, compared to pre-service teachers without LGB contact, pre-service teachers who have had no contact with gay men would still show favorable attitudes toward gay students if they had prior social contact with lesbian women or bisexual people. Finally, Hypothesis 3 suggested that, compared to pre-service teachers without LGB contact, pre-service teachers who have had no contact with bisexual people would still show favorable attitudes toward bisexual students if they've had prior social contact with lesbian women and gay men.

3.2 Methods

3.2.1 Participants and sampling

A convenience sample of 406 pre-service teachers (300 female, 106 male) with a mean age of 21.5 years ($SD=4.8$) participated in the survey. The participant population, sampling strategy, and procedure used in Study 2 were identical to those in Study 1.

3.2.2 Measures

Similar to Study 1, the online survey in Study 2 included items for measuring attitudes and intergroup contact variables.

3.2.2.1 Attitudes The feeling thermometers used in Study 2 paralleled those used in Study 1 (see Table 1).

3.2.2.2 Intergroup Contact In Study 2, pre-service teachers were asked to respond to three items each to indicate whether they have (a) a lesbian woman, gay man, or bisexual individual in their social network; (b) a close lesbian, gay, or bisexual friend; or (c) a lesbian, gay, or bisexual family member. Table 1 presents the exact wording for each item. Responses were numerically coded: 1 = *yes* and 0 = *no*.

3.2.3 Analysis

To test the secondary transfer effect of contact on attitudes toward noninvolved outgroups, a dummy variable was created to represent contact with secondary outgroup members in one's social network, particularly close friends and family members. Specifically, pre-service teachers were assigned the numerical code 1 if they (a) had contact with lesbian women or gay men but not with bisexual people, (b) had contact with lesbian women or bisexual people but not with gay men, or (c) had contact with gay men or bisexual people but not with lesbian women. Pre-service teachers were coded 0 if they had no contact with bisexual people, lesbian women, or gay men. One-way analyses of variance were performed to estimate the mean differences between the feeling thermometer scores of pre-service teachers with and without LGB contact.

3.3 Results

3.3.1 Descriptive results

Table 5 presents the means, the standard deviations, and a correlation matrix of all variables in Study 2. Overall, the 406 pre-service teachers' attitude ratings had mean values of 71.6 ($SD=25.0$) for lesbian students, 71.7 ($SD=25.5$) for gay students, and 70.7 for bisexual students ($SD=25.0$). These values indicate that pre-service teachers tend to have positive attitudes toward homo- and bisexual children and adolescents at school. The feeling thermometer scores were interrelated. Intergroup contact was positively correlated with attitude scores.

3.3.2 Analysis of Variance: secondary transfer Effect

Table 6 presents the mean and standard deviation estimates of pre-service teachers who have contact and do not have contact with noninvolved outgroups. One-way analyses of variance revealed statistically significant secondary transfer effects of contact on attitudes toward lesbian students, $F(1,178)=11.017$, $p<.001$, $\eta^2=0.06$; attitudes toward gay students, $F(1,99)=16.076$, $p<.001$, $\eta^2=0.14$; and attitudes toward bisexual students, $F(1,183)=7.121$, $p<.01$, $\eta^2=0.04$. These results support Hypotheses 1, 2, and 3.

3.4 Discussion of study 2

In line with the attitude theory (Eagly & Chaiken, 2007) and secondary transfer effect of intergroup contact (Pettigrew, 2009), the findings in Study 2 revealed statistically significant secondary transfer effects with respect to attitudes toward lesbian, gay, and bisexual students. Compared to pre-service teachers without any LGB contact, pre-service teachers who had no contact with lesbian women still showed favorable attitudes toward lesbian students if they had prior social contact with gay

Table 5 Means, standard deviations, and correlation matrix of all variables in Study 2

	M	SD	1	2	3	4	5	6	7	8	9	10	11
<i>Feeling thermometer measures</i>													
1. Lesbian attitude	71.61	24.95	–										
2. Gay attitude	71.66	25.60	.93	–									
3. Bisexual attitude	70.70	25.01	0.95	.92	–								
<i>Social contact variables</i>													
4. Lesbian network	0.55	0.50	.14	.11	.13	–							
5. Gay network	0.74	0.44	.12	.14	0.12	.25	–						
6. Bisexual network	0.54	0.50	.17	.17	.20	.35	.22	–					
7. Close lesbian friend	0.17	0.38	.20	.16	.19	.42	.09	0.31	–				
8. Close gay friend	0.30	0.46	.14	.17	.14	.08	.37	.13	.17	–			
9. Close bisexual friend	0.25	0.44	.16	.18	.19	.29	.15	.52	.42	.20	–		
10. Lesbian family member	0.07	0.26	.02	.00	.01	.18	.06	-.03	.08	.00	-.01	–	
11. Gay family member	0.11	0.32	-.01	.00	-.01	.03	.18	.07	.06	.12	.10	.05	–
12. Bisexual family member	0.05	0.23	.14	.06	.16	.09	-.01	.22	.21	.01	.19	.15	.09

Two-tailed correlations. Attitude scores range from 0 to 100; higher scores indicate more favorable feelings. For all social contact variables, 0=no contact, 1=contact. N=406

$p \leq .05$ for $|r| \geq .11$; $p \leq .01$ for $|r| \geq .14$; $p \leq .001$ for $|r| \geq .53$

Table 6 Results from the one-way analyses of variance

Attitudes towards	Intergroup contact	<i>N</i>	<i>M</i>	<i>SD</i>	<i>F</i>	<i>p</i>	η^2
Lesbian students	Contact with gay and bisexual, but not with lesbian people	128	71.95	24.90	11.017***	<.001	0.058
	No contact with LGB	52	58.73	22.46			
Gay students	Contact with lesbian and bisexual, but not with gay people	49	75.49	22.07	16.076**	.003	0.140
	No contact with LGB	52	57.52	22.92			
Bisexual students	Contact with lesbian and gay, but not with bisexual people	133	67.71	22.70	7.121***	<.001	0.037
	No contact with LGB	52	57.85	22.39			

Number of pre-service teachers in each group (*N*). Mean (*M*) and standard deviation (*SD*) estimates of the feeling thermometer scores. LGB = lesbian, gay, bisexual

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

men and bisexual people; their intergroup contact was associated with a secondary reduction of homonegative attitudes toward the noncontacted outgroup of lesbians. Identical findings were revealed in relation to gay and bisexual students.

4 General discussion

This article reports the outcomes of two studies that aimed to advance the literature on predictors of pre-service teacher attitudes toward lesbian, gay, and bisexual students. Strengths of the present article are the use of the feeling thermometer approach and a test of the secondary transfer effect of intergroup contact; these two aspects are novel and have not yet been reported in the literature on teacher attitudes toward non-heterosexual students.

The findings of Study 1 support the evidence reported in past studies on the correlates of pre-service teacher attitudes toward sexual minority youth. Most importantly, the predictive assumptions of the intergroup contact theory (Allport, 1954; Pettigrew & Tropp, 2006) were confirmed; specifically, the presence of a lesbian, gay, or bisexual individual within one's social network or as a close friend was found to be positively associated with attitude scores, which is in line with previously reported empirical results (Baiocco et al., 2020; Simone et al., 2022; Foy & Hodge, 2016; Grigoropoulos, 2022; Klocke, in press; Reimer et al., 2017; Stucky et al., 2020; Zotti et al., 2019). In contrast to Foy and Hodge (2016), however, having a lesbian, gay, or bisexual family member was nonsignificantly associated with teacher attitudes in this study, which could be due to a small number of participants (184 of 989 pre-service teachers) reporting LGB family members. Another explanation could be perceived contact quality with LGB family members—positive, negative, or neutral—with positive contact being positively

associated with attitudes (Reimer et al., 2017); future research could use qualitative approaches to collect supplemental data on these effects. Second, similar to previously reported findings in the literature, Study 1 confirmed that age (Baiocco et al., 2020; Grigoropoulos, 2022; Hall & Rodgers, 2019; Page, 2017), religiosity (Baiocco et al., 2020; Hall & Rodgers, 2019; Jeong, 2020; Page, 2017; Stucky et al., 2020), and political orientation (Baiocco et al., 2020; Foy & Hodge, 2016; Hall & Rodgers, 2019; Heras-Sevilla & Ortega-Sánchez, 2020) are predictors of teacher attitudes toward sexual minority youth. More interestingly, Study 1 contributes to the mixed evidence regarding the associations with gender, sexual orientation, and hometown size. In terms of gender, the results of Study 1 support the findings of Heras-Sevilla and Ortega-Sánchez (2020) and Klocke et al. (2019) but are somewhat in contrast to the nonsignificant gender differences reported in other studies (Grigoropoulos, 2022; Hall & Rodgers, 2019; Stucky et al., 2020; Wyatt et al., 2008). In terms of sexual orientation, the results of Study 1 confirm the findings of Foy and Hodge (2016) as well as Stucky et al. (2020) but are in contrast to the nonsignificant differences reported in Hall and Rodgers (2019), perhaps due to their dichotomous measure of homo- versus heterosexual orientation. Moreover, the findings of Study 1 suggest that pre-service teachers' subjective religiosity was significantly related with attitudes toward lesbian and bisexual students (Baiocco et al., 2020; Jeong, 2020), but not with gay students. We can only speculate why this association remained statistically nonsignificant; future research may use follow-up interviews to collect in-depth verbal data for supplemental qualitative analyses. Furthermore, Study 1 found nonsignificant associations between hometown size and pre-service teacher attitudes, which is in line with Hall and Rodgers's (2019) findings but contradicts the results reported by Goldstein-Schultz (2022)—who reported more positive attitudes in rural school districts in Connecticut—and Page (2017)—who reported more positive attitudes in urban school districts in Minnesota. It can be speculated that these heterogeneous findings reflect the heterogeneity of sample compositions in different countries and states as well as the variety of measures used to assess urbanicity and attitudes, which all tend to complicate comparability between studies. Based on the findings of Study 1, we can conclude that attitudes toward sexual minority students are more positive among young, female, bi- or homosexual, less religious, and politically left-wing-oriented pre-service teachers and those with close lesbian, gay, or bisexual friends or network contacts.

In support of the secondary transfer effect (Pettigrew, 2009), the findings of Study 2 confirmed that intergroup contact with sexual minority groups is associated with a secondary reduction of bi- and homonegative attitudes toward the noncontacted outgroup. Specifically, teacher attitudes toward lesbian girls in school are positive if the pre-service teachers have had no social contact with lesbians but are in contact with gay and bisexual people. Similarly, teachers who have had no contact with gay or bisexual people still hold favorable feelings toward these groups if they have close lesbian friends. To our knowledge, Study 2 is the first to investigate how pre-service teachers' intergroup contact extends and transfers to other, previously noncontacted groups of sexual minority children and adolescents, which helps advance our understanding of the antecedents of attitudes toward student heterogeneity in school.

Both studies, however, have some limitations that need to be discussed. First, the pre-service teachers who participated in the studies were selected via convenience sampling and on a voluntary basis. Therefore, reflecting a self-selection bias, it is hypothetically possible that teacher candidates with extreme sexual prejudice decided to withdraw from the survey and that the true score population coefficients might be somewhat smaller than those reported here. Conversely, teacher candidates with a positive attitude toward sexual minorities might have been more motivated to participate in both surveys, resulting in positively biased effect sizes. Second, results of these two studies were based on German pre-service teachers and are thus not easily generalizable to other populations; furthermore, to interpret the generalizability of the data, future studies can include measures of ethnicity and socioeconomic status. Third, attitudes were measured using feeling thermometers. Although feeling thermometers are parsimonious, intuitive, and often-used attitude measures (Alwin, 2007; Herek & McLemore, 2013), the present results are limited to this single-scale approach, which can be biased by social desirability. Future studies can aim to broaden attitude measures and triangulate thermometer scores using multi-item instruments or implicit association tests of attitudes toward lesbian, gay, and bisexual groups. Finally, some scales were measured with categorical dichotomous variables, including social contact and political orientation. As an alternative, future studies can use continuous variables that measure the frequency or intensity of intergroup contact and multi-item Likert scales to measure political conservatism or authoritarianism. In terms of social contact, future studies can also examine different kinds of network contact, including online contacts and workplace contacts, and the perceived quality of contact with family members, which can be positive, negative, or neutral. Furthermore, future studies can examine the consequences of pre-service teacher attitudes and actions when dealing with sexual minority students in class, such as changes in judgment accuracy (Tobisch & Dresel, 2017), reactions to homophobic bullying (Klocke et al., 2019; Nappa et al., 2018; Zotti et al., 2019), and sexual minority students' school adaptation (Schotte et al., 2022), to help create safe spaces for the growing number of sexual minority students who disclose their sexual orientations at school.

Despite these limitations, the findings of Study 1 and Study 2 have implications for teacher education and teacher professionalism. In terms of teacher education, Study 1 demonstrates the importance of improving the attitudes of the heterosexual male population in teacher education programs, as they seem to consistently have lower scores than female pre-service teachers. Possible avenues for attitude change—or at least positive attitude formation—among this population include promoting social contact with lesbian, gay, and bisexual individuals in teacher education seminars; inviting LGBTQIA+ experts to share their stories and experiences; reading LGBTQIA+ literature; and listening to student coming-out narratives (Bartoş et al., 2014; Dessel, 2010; Gato et al., 2020; Gegenfurtner & Gebhardt, 2017). In terms of teacher professionalism, both studies indicate how social contact is related to attitudes toward sexual minority students. As such, the reported evidence contributes to the wider literature on the predictors of teacher professionalism, particularly in heterogeneous and diverse groups of learners (Baumert & Kunter, 2013; Gegenfurtner, 2021; Herek & McLemore, 2013; Klocke et al., 2019; Nett et al., 2022; Pit-ten

Cate & Glock, 2019; Wyatt et al., 2008). Overall, if we consider that pre-service teachers, once they begin their service, will work for many years with a growing number of children and adolescents in classrooms that identify as lesbian, gay, or bisexual (Gato et al., 2020; Gower et al., 2022; Jones, 2022; Moskowitz et al., 2022; Scharmanski & Heßling, 2021), then teacher education programs should aim at supporting pre-service teachers reflect on their attitudes and preparing future teacher generations to create inclusive and safe spaces for every child in class.

Funding Open Access funding enabled and organized by Projekt DEAL. This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

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Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

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