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# A recent fast change: diffusion and acceptance of homosexuality among university students in Northern Italy during the twenty-first century

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## Abstract

The acceptance of same-sex relationships and the diffusion of associated behaviours reflect pivotal developments within the broader 'intimacy revolution', aligning with Inglehart's Silent Revolution and the Second Demographic Transition (SDT) theories. Drawing on a 2023 representative sample survey of 2600 Northern Italian university students aged 19–21, this study shows notably higher levels of engagement in same-sex behaviours and of supportive attitudes towards homosexuality compared to previous generations. It further shows that the pace of diffusion of SDT-related changes—observed in other sexual and reproductive behaviours—shapes the prevalence of these phenomena. Multivariate logistic regression analyses identify sex at birth, political orientation, and secularization as key individual-level predictors of attitudes and behaviours. Results situate Italy within a comparative framework, revealing both convergence with and divergence from patterns in other high-income countries. In the concluding section, we discuss the validity of the hypotheses previously formulated, on the basis of the empirical results.

**Keywords:** Homosexuality, Sex at birth, Gender self-description, Sexual identity, Sexual attraction, Homosexual experiences, Opinions about homosexuality, University students, Italy

## Introduction

In Italy, the changes in sexual, marital, and reproductive behaviour characteristic of the Second Demographic Transition (SDT: Van de Kaa, 1987; Lesthaeghe, 2014) followed a similar trajectory to those observed in other countries but occurred at a later stage (Castiglioni & Dalla-Zuanna, 1994, 2009; Barbagli et al., 2010; Caltabiano et al., 2020; Dalla-Zuanna & Vignoli, 2021). From a European perspective, Italy participated in a diffusion process that started from Northern Europe and then spread, first to Central Europe, and subsequently to South and East (Billari et al., 2007). The acceptance of homosexuality and the diffusion of homosexual behaviours are an important part of this intimacy revolution (Giddens, 2013; Gross, 2005; Weeks, 2007; Barbagli & Colombo, 2007).

This article aims to show whether homosexuality is today significantly more accepted and if the different dimensions of homosexuality are more widespread among the Italian Gen-Z in comparison with past generations, or if—instead—the diffusion of this change in Italy is also relatively delayed, as in the recent past. The available data allow us to compare 20-year-old university students, for which three surveys are available, carried out in 2000, 2017, and 2023.<sup>1</sup>

After an excursus on recent diffusion of homosexual behaviours in some Western countries and on the possible socio-demographic readings of the social milieu underlying these changes, we illustrate our research hypotheses. We then describe the 2023 survey, focusing in detail on the questions asked, since for these topics the results can depend greatly on the way in which the questions are asked. We also recall the 2017 and 2000 surveys, used here for comparative purposes, already widely described in other works (Billari et al., 2007; Dalla-Zuanna & Crisafulli, 2004; Caltabiano et al., 2020; Dalla-Zuanna & Vignoli, 2021).

The next part is dedicated to the results, always presented distinguishing between males and females at birth. First of all, thanks to the data collected in 2023, it is possible to measure to what extent the 20-year-old students identify with their sex at birth. Secondly, we measure the changes that have occurred in the three fundamental dimensions of homosexuality: attraction, experience and sexual identity.<sup>2</sup> Third, we deal with changes in opinion about homosexuality: both that expressed by students and those perceived by students with reference to their parents and friends. Finally, within the limits that—as we will see—characterize the 2023 research, we develop a differential analysis, to see in which groups the failure to identify with one's sex at birth, the non-heterosexual identity and the approval of homosexual acts are more or less widespread. In the final part, we draw conclusions to see if and to what extent the empirical analysis fits the hypotheses we formulated.

## Background

### Cross-generational changes in homosexual identity in some Western countries

Some recent surveys have shown that the diffusion of homosexuality has experienced an acceleration, particularly accentuated for people born at the end of the twentieth or at the beginning of the twenty-first century. Let's consider just some of them.

Sexual identity was explored in the UK in the 2022 Annual Population Survey by the Office for National Statistics (2024). Non-heterosexual identities are 14.8% for Gen-Z (aged 18–24): 2.8% gay or lesbian, 6.4% bisexual and 1.9% other; 3.7% did not answer. The same proportion drops to 8.0% for those aged 25–34, 6.0% for 35–49, 4.5% for 50–64 and 3.9% for 65+.

Another statistically representative survey of the UK in 2015, conducted by YouGov,<sup>3</sup> showed large differences according to age. Using the Kinsey scale (the prompt as

<sup>1</sup> As we will see, the vast majority of students interviewed in the three surveys are between the ages of 19 and 21. For brevity, we define them as “twenty-year-old university students”.

<sup>2</sup> For brevity, in this article, we use the term “sexual identity,” rather than “sexual orientation identity”. The latter is the expression suggested by the National Academies of Sciences, Engineering, and Medicine, in the 2022 volume “Measuring Sex, Gender Identity, and Sexual Orientation” (Washington, DC: The National Academies Press).

<sup>3</sup> <https://yougov.co.uk/society/articles/12999-half-young-not-heterosexual>

follows: “Please try to place your sexuality on a scale of 0–6, where 0 is completely heterosexual and 6 is completely homosexual (i.e. gay or lesbian)”, only 43% of young people (18–24 years old, born in 1991–96) did declare themselves completely heterosexual, compared with 58% of those aged 25–39, 78% of those aged 40–59 and 88% of those aged 60+. The same survey also asked the more classic question: “Which of the following best describes your sexuality?” Among young people aged 18–24, 83% declared themselves heterosexual, 10% gay or lesbian, 2% bisexual, 2% “other” while 2% preferred not to answer. In the same survey, among the under 40s, 25% answered affirmatively to the question: “Have you ever had a sexual experience with a member of the same sex?”, compared to 10% of the over 39s, who also had many more years available to live this type of experience.

Results are similar for USA. In 2023, through a telephone survey, Gallup asked who considered themselves to be lesbian, gay, bisexual, transgender, or something other than heterosexual. The proportion was 22.3% for those born 1997–2012 (Gen-Z), 9.8% for 1981–1996 (Millennials), 4.5% for 1965–80, 2.3% for 1946–64 and 1.1% for 1945 or earlier.<sup>4</sup>

The acceleration of the spread of non-heterosexuality has been observed in almost all developed countries where empirical research on the topic has been carried out. For example, the percentage of Australian women identifying as “mainly heterosexual” grows from  $\approx$ 1% of women born in 1946–1951 to  $\approx$ 26% of those born in 1989–1995, coinciding with comparable declines in the percentage of women identifying as “exclusively heterosexual” (Perales et al., 2021).

A strong growth for recent cohorts was also observed in an international comparative survey by IPSOS (2021). In the weighted average of the 27 countries involved (including Italy), the proportion who do not declare themselves heterosexual goes from 4% for people born in 1946–1964 to 7% for those born in 1965–1980, to 10% for those born in 1981–1996, to 18% for those born in or after 1997.

### Theoretical interpretations following a socio-demographic approach

Although the main purpose of this article is to describe rather than explain, it is worthwhile to briefly dwell on some interpretative lines about the diffusion of homosexuality adapted to the generality of developed countries. Far from proposing an exhaustive reading, we follow a socio-demographic approach, framing the changes in homosexuality within the evolution of sexual, marital, and reproductive behaviours. Furthermore—still without laying claim to exhaustiveness—we recall some hypotheses proposed to explain the greater diffusion of homosexual behaviours among women, the very young generations, and the left-wing people (among which, as we will see, homosexual behaviours and opinions are strongly widespread).

Beginning in the early 1970s, Inglehart hypothesized that societal norms evolve as existential security increases. When survival is no longer a primary concern, societal values shift from *materialist*—focused on tradition and security—to *post-materialist*—emphasizing self-expression and individual choice. The hypothesis helps explain the

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<sup>4</sup> <https://news.gallup.com/poll/611864/lgbtq-identification.aspx>

growing societal acceptance of non-heterosexual identities as cultural norms shift from “pro-fertility norms” to “individual-choice norms”, prioritizing individual autonomy (Inglehart, 1971; Inglehart, 1977; Inglehart, 1990; Inglehart, 1996; Inglehart & Welzel, 2005; Inglehart et al. 2017; Inglehart, 2018). Within the frame of the last version, *Inglehart's Evolutionary Modernization Theory* also accounts for the acceleration of value change. Intergenerational replacement fosters the establishment of post-materialist values. Value shifts can occur only when a new generation is born and nurtured within a historical environment where survival is taken for granted. This intergenerational mechanism underlies why value change and intergenerational change may have different speeds. Cultural change is typically slow, but when the acceptance of gender equality and the legitimacy of divorce, abortion and homosexuality have become established for a new generation, the new values gradually gain dominance, reaching a tipping point where conformist pressures reinforce the new norms even for people not yet touched by the change. Conformist pressure reverses its polarity at that point, and value change accelerates rapidly (Inglehart et al. 2017; Inglehart, 2018, 2021), following diffusive models (Rogers, 2003).

Starting in the mid-1980s, a theoretical framework, closely connected to Inglehart's theory, emerged. The *SDT Theory* explains large-scale societal shifts, such as sustained sub-replacement fertility, the rise of diverse living arrangements beyond marriage, and the decoupling of marriage and procreation (Lesthaeghe, & Van de Kaa, 1986; Van de Kaa, 1987; Lesthaeghe, 2014; Zaidi et al., 2017). Central to this theory is a shift in values driven by Maslow's hierarchy of needs (Maslow, 1954), wherein wealthier, more educated populations prioritize self-actualization, individual autonomy and non-conformist behaviours once basic survival needs are met. Within this framework, the increasing tolerance towards homosexuality is, again, explained by the broader societal move towards self-realization and individual choice. Although this theory has not yet been applied to the rise of non-heterosexual experience and gender incongruence, its emphasis on value shifts suggests that it could be extended to encompass these issues too.

A last development can be traced to the analysis of the changes in attitudes and behaviours of young Americans across generations by Twenge (2023). Twenge's analysis of social survey data suggests that for Gen-Z, the decoupling of sex and gender is the outcome of both rising individualism and technological change. *Twenge modifies Mannheim's original Generational Theory* (Mannheim, 1952) by emphasizing how everyday technological advancements—from the rise of television to social media—have shaped the experiences and worldviews of successive generations. In particular, social media has allowed young people to form communities based on shared identities and ideas, reinforcing individualism and supporting the decoupling of sex from gender. This individualistic framework has influenced how younger generations perceive gender as fluid and a matter of personal choice rather than being biologically determined. The individual is not to be treated as belonging to a certain gender category, from which certain behaviours are then expected. The generation that accepts this principle as central thus raises the bar of individualism even higher. According to Twenge, people become more and

more able to decide which gender category they identify with or even reject the notion of the gender binary entirely (Twenge, 2023, page 351).<sup>5</sup>

These remarks also suggest a link between these identity shifts and political orientation. It recalls the concept of socio-demographic “prototypes” (Cox & Jones, 2023; Egan, 2020) in which identity clusters are associated with political positions, reinforcing conformity within these socio-political circles. Thinking about sexual orientation, this means that those who engage in homoerotic experiences, reject exclusively heterosexual identities or embrace gender fluidity, tend to align with specific political ideologies.

Homoerotic experiences and the prevalence of gender incongruence are more prevalent among girls than boys, a widely confirmed pattern. The erotic plasticity hypothesis may provide some initial elements for exploring this feature. *Erotic Plasticity Theory* refers to the concept that sexual desire, attraction, and behaviour are more flexible or malleable in response to social, cultural, or situational influences for some individuals than for others. The theory suggests that women’s sexuality tends to exhibit higher plasticity than men’s, meaning that women’s sexual preferences and behaviours are more influenced by external factors, such as cultural norms, personal experiences, and social contexts (Baumeister, 2000). This theory has been used to explain various patterns in sexual behaviour research, such as why women are more likely to identify as bisexual or to report changes in their sexual identity over time than men (Baumeister, 2000; Baumeister et al., 2001; Diamond, 2008; Peplau & Garnets, 2000).

### Research hypotheses

The structural social and cultural changes outlined in the previous part have also manifested in Italy (Biolcati et al., 2020; Istituto Giuseppe Toniolo, 2024). We can therefore formulate three working hypotheses:

(H1) *Homosexual behaviours and attitudes favourable to homosexuality are more widespread in the Italian Gen-Z than in the immediately preceding cohorts;*

(H2) *The diffusion in Italy is less intense than in the countries that have been heralds of the SDT changes, as the same has happened for other aspects of sexual and reproductive behaviour (modern contraception, early sexual intercourse for women, female masturbation, and so on) that in Italy have taken hold decades later than in Northern Europe;*

(H3) *This diffusion is greater among young women than young men and among left-oriented people.*

<sup>5</sup> In this article, we have not addressed the topic of gender fluidity (i.e., change over time in one or more sexual orientation dimensions during the course of life), because our 2023 survey did not explore this topic. Sexual fluidity research has grown exponentially, with advancements in conceptual models, measurement and understanding of sexual orientation as a construct and developmental process that accommodates potential for change (Katz-Wise, & Todd, 2022). In a recent empirical research on 4,087 young Americans aged 14–25, participants reported on any changes they experienced in the genders they were attracted to and in the sexual orientation they identified with. More than 16% of the participants experienced a change in their sexual orientation, and 33% experienced a change in their attractions. The researchers also analysed data across gender and racial and ethnic lines, finding, for example, that changes to attraction or orientation were more common among cisgender girls than cisgender boys (Katz-Wise, Ranker, Gordon, Xuan, & Nelson, 2023). Another longitudinal study shows that between 2013 and 2019, almost 10% of US adults changed their sexual orientation: again, sexual fluidity is much more common among women than among men (Mittleman, 2023). A similar study on the UK shows more modest values (6.6% of respondents changed their sexual orientation from 2011–13 to 2017–19); again, sexual fluidity is more widespread among women than among men (Hu, & Denier, 2023).

## Data

### Surveys

We mainly use data from a sample survey on discrimination conducted in autumn 2023 by a group of academic scholars (Colombo et al., 2023). In three state universities of Northern Italy (Bologna, Milano-Bicocca, and Padua), a random sample of bachelor's degree compulsory courses was extracted. Since—as we will see shortly—practically all the students in the classroom filled out the questionnaire, we deal with a two-stage random sample, with a probability of extraction of the second-stage unit's  $\approx 1$ . Consequently, the inferential analysis on these data is appropriate, obtaining statistically representative results for all the undergraduate freshmen of the three universities.

Two thousand, six hundred students in their first and second years, who were not previously informed, filled in a web questionnaire (by cell phone) during a one-hour compulsory class after a brief survey presentation by a researcher. The vast majority (88,3%) of them were between 19 and 21 years of age, the full range being 18–26, with a mean age of 19.7 years. Weights were calculated to make the sample representative of all students (around 60,000) enrolled in the first 2 years of the bachelor's degree programmes at the three universities. In all the tables of this article the % data are weighted. The survey investigates discriminatory attitudes of students towards religions, migrants, ethnic and racial minorities, Islam, Jews, Roma and Sinti, women, and sexual minorities. A section about sex at birth (42% males, 58% females, and unweighted data),<sup>6</sup> gender self-identification, sexual identity, and the perception of acceptance of homosexual behaviours was included.

In spring 2017, a survey about sexuality (SELFY—Sexual and Emotional LiFe of Youth) was conducted on a random sample of bachelor's degree courses in Statistics and Economics at Italian state universities (Minello et al., 2020). Students filled in a paper questionnaire during a one-hour lesson and sealed it in an envelope. Seven thousand, eight hundred and forty-two anonymous questionnaires (3735 females and 4107 males) were collected, representative of all the students in Statistics and Economics (40,377). Questions about the three “classical” dimensions of homosexuality (experiences, attitudes and identity, according to Laumann, 2000) were included. In addition, the same section about the acceptance of homosexual behaviours of 2023 was submitted.

The same survey was earlier conducted in 2000, with the same design (Dalla-Zuanna & Crisafulli, 2004). Data from 4762 students were collected (2783 females and 1979 males), representative of 40,139 students enrolled in bachelor's degree courses in Statistics and Economics at Italian state universities. The questions about the same-sex experiences of 2000 and 2017 are perfectly comparable. The same can be said for the three surveys of 2000, 2017, and 2023 for the opinion questions on tolerance towards homosexual behaviour and on the perception of tolerance by parents and friends.<sup>7</sup>

In the three surveys of 2000, 2017 and 2023, very few students preferred to leave the classroom, refusing to participate in the survey. This last characteristic is critical because

<sup>6</sup> This higher share of females at birth among the students we interviewed reflects the national figure: in the 2024–25 academic year, 57% of the new entries in the Italian universities were women.

<sup>7</sup> *Perfect comparability* means that questions are asked identically across surveys. This does not mean that respondents necessarily interpret questions in the same way over time or that the propensity to answer truthfully necessarily remains the same. This decoupling may be stronger for opinion questions, but it may also be present in behaviour questions.

other methodologies (telephone surveys, face-to-face, via the web, etc.) almost always suffer from a very high proportion of refusals.

The comparability of the 2000 and 2017 surveys is close because the population is the same (students enrolled in bachelor's degree courses in Statistics and Economics in Italian state universities), the two weighted samples are both statistically representative, and the survey technique of data collection is the same (paper questionnaire filled out in class and delivered in a sealed envelope). The 2023 survey is different: it concerns only three universities in Northern Italy, the sample is representative of all freshmen (and not only those enrolled in bachelor courses in Statistics and Economics), and students were asked to fill out a questionnaire on their smartphone in class.

However, the comparability with the 2023 survey—in our opinion—should be possible, with some cautions. First, the three researches share a crucial characteristic, that is, a low level of unit-non-response. Second, the students interviewed in 2000 and 2017 are compared with the students interviewed in 2023 attending non-humanities courses (including Economics and Statistics), because—as we will see—non-heterosexual identity and favourable attitudes towards homosexuality in 2023 are less widespread among non-humanities students. More problematic is the comparison with regard to geographical representativeness because in 2000 and 2017 the samples are national, whereas in 2023 only students from three universities in the North were interviewed. Since some aspects of SDT are more widespread in Central-North than in Southern Italy, the differences highlighted here in homosexual behaviour between the 2017 sample and the 2023 sample could be partially amplified compared to those we could have detected with two national samples.<sup>8</sup>

The 2000 survey was also conducted using the same questionnaire and similar methods of detection among university students in other states (Billari et al., 2007). We will observe the differences between countries in the opinions expressed regarding male and female homosexuality to better place the changes in the Italian case.

This article was born mainly to illustrate the results of the new 2023 research, while the changes for the period 2000–2017 have already been studied (Barbagli et al., 2010; Dalla-Zuanna & Vignoli, 2021). The main aim of the 2023 survey was to study the discriminatory attitudes of students, referring to different areas, including homosexuality. The breadth of the questions on the topic was therefore much more limited, especially in comparison with the surveys of 2000 and 2017, which mainly focused on sexuality. The

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<sup>8</sup> Some data of different sources suggest that the North-South dichotomy in homosexual behaviour could be restrained. First, the comparison between the surveys of 2000 and 2017 shows that the gap between Central-Northern and Southern Italy in the sexual behaviour of young people is closing. For example, the median age at first sexual intercourse for girls in 2000 was 18.5 in Central-Northern Italy and 20.5 in the South, in 2017 it was 18.0 in both Central-Northern and Southern regions (Dalla-Zuanna & Vignoli, 2021, p. 49). In other aspects of SDT, too, the gap between Central-Northern and Southern-Islands is closing (Istat, 2024). For example, in 2023 the divorce rate is the same in the Centre-North and in the South-Islands (1.4 per 1,000 inhabitants) and also out-of-wedlock births are only slightly higher in the CN than in the SI (45% CN, 38% SI respectively). On the other hand, a wider difference between North and South still persists for first marriages with a Catholic religious rite between Italian spouses (44% in the Centre-North and 76% in the South) and for same-sex civil unions (6.2 per 100,000 inhabitants in the Centre-North and 2.2 in the South). However, this figure for civil unions does not reflect the behaviour of young people, because the average age at same-sex civil unions in Italy is 45.4 years for men, and 39 years for women. Further evidence of this pattern comes from a recent survey of a representative sample of Italians over 18, conducted by one of the authors. The survey confirms that today the differences between the North and South regarding certain aspects of homosexuality among the youth population are minimal. For instance, among respondents aged 18 to 26, the percentage of residents in North-Central regions who identify as being attracted to same-sex partners, whether exclusively or not, is only 1 percent higher (0.3 percentage points) than that of residents in the South and Islands (unpublished data).

sexual identity was detected, but no questions were posed on either homosexual attraction or experiences. Moreover, the variables usable for the differential analysis are limited because they were chosen with the aim of interpreting the discriminatory attitudes of students and not identities and attitudes regarding homosexuality. However, many comparisons with the past are possible, both on homosexual identity and on the opinions expressed, and the differential analysis—although exploratory—also provides interesting impetus for future research.

### Questions about homosexuality and its approval

In the 2023 questionnaire, three questions about sex and gender were included. The first was a binary question about biological sex (*What sex were you assigned at birth on your original birth certificate? Male, Female*). The second question was more subjective about gender self-identification (*How would you currently describe yourself? Male, Female, Transitioning, Non-binary, I would use a different term*). The last one was about sexual orientation identification (*Which of the following terms best represents you? Gay, Lesbian, Heterosexual, Bisexual, Other, I don't know*). We used this last question as a measure of general sexual identity.

In the 2017 SELFY survey, three questions collected information regarding the three dimensions of homosexuality. One was about the experiences (*Have you ever had some kind of sexual experience, even incomplete (kisses, caresses or other) with people of your same sex? Never, Sometimes, Often, Very often*). Another was about attraction (*In general, who are you sexually attracted to today? Only by women, Mostly by women, Both men and women, Mostly by men, Only by men, Neither men nor women*). The third question was about identity (*How do you define yourself today? Heterosexual, Bisexual, Homosexual*). In the 2000 survey, only homosexual experiences were investigated with the same question as in 2017.<sup>9</sup>

In addition to these personal questions, the same battery was included in all three surveys on students (2000, 2017 and 2023) to measure the personal level of approval of homosexual behaviours and their perception about the level of approval of their closest network: parents and friends. The introductory question was: *Now, let's look at some things that happen to young people, making a distinction between boys and girls. Please state your parents' and your friends' views, if they were to know, as well as your own*. The “things” to be answered were: *A boy has sexual relationships with another man*, and *A girl has sexual relationships with another woman*. The interviewed students had to give their opinion about the following statements: *Friends approve, Parents approve, You approve (No, Not really, Quite, Yes)*.

<sup>9</sup> Non-responses to the questions on sexual orientation were grouped with respondents with no same-sex attraction, experience or identity, who were the large majority. In this way, statistical units are not lost, and at the same time, the three categories are not eventually affected by the (low) number of non-answers, even if among those who did not answer these questions, the proportion of non-heterosexual people could be relatively high (Ortensi, & Farina, 2020). This means that—possibly—we underestimate the number of non-heterosexual students in the survey of 2017.

**Table 1** How would you currently describe yourself? 2023 survey (% row weighted values)

Sex at birth	Sex declared by the students at interview					Total	N
	Male	Female	Transitioning	Non-binary	Others		
Males	95.6	0.3	0.3	0.6	3.2	100	<i>1091</i>
Females	0.2	96.5	0.5	1.4	1.4	100	<i>1508</i>

*In all tables, percentage data are weighted, while absolute values (in italics) are not*

**Table 2** Sex declared at interview and sexual identity, 2023 survey (absolute unweighted values)

How would you currently describe yourself?	How do you define yourself?		
	Heterosexual	Non-heterosexual	Total
Males at birth			
Male	<i>953</i>	<i>97</i>	<i>1050</i>
Female, transitioning, non-binary, others	<i>22</i>	<i>19</i>	<i>41</i>
Total	<i>975</i>	<i>116</i>	<i>1091</i>
Females at birth			
Female	<i>1121</i>	<i>336</i>	<i>1457</i>
Male, transitioning, non-binary, others	<i>8</i>	<i>43</i>	<i>51</i>
Total	<i>1129</i>	<i>379</i>	<i>1508</i>

## Results: changes in the different dimensions of homosexuality and opinions

### From sex at birth to gender self-description at interview

The relationship between sex at birth and students' current gender self-identification can be analysed in the 2023 survey only (Table 1). Twenty-year-old students who identified only with the opposite sex or declared themselves to be transitioning were a small percentage (0.6% of males at birth and 0.7% of females at birth). The non-insignificant proportion of students who did not declare that they recognized themselves as the sex they were assigned at birth (4.4% males at birth and 3.5% females at birth) was linked to the answers "Non-binary" and "Others". Among the latter (who were asked to specify), those who cited comics, novels, tales or series centred on non-binary characters prevailed.

It is possible that for some respondents—in answering this question—student spirit prevailed: Table 2 shows that this could be true among males at birth, since of the 41 males at birth who did not declare that they recognized themselves with the same biological sex at birth, 22 explicitly declared themselves heterosexual (most of them described themselves as "Others"). Among females at birth, this occurs to a much lesser extent: among the 51 females at birth who declared that they did not recognize themselves with the sex at birth, only 8 explicitly declared themselves heterosexual. Moreover—as we will see—non-identification with the sex at birth changes significantly as some characteristics of the students interviewed vary.

### Homosexual attraction

Questions about same-sex attraction were not asked in 2023, but they are available for students in 2017 and can be compared with data representative of the Italian population

**Table 3** Sexual experiences (deep kisses and/or petting and/or sexual intercourse) among Italian students, 2000–2017 by sex (% row weighted values)

	Males				Females			
	None	Only hetero	Also homo	Total	None	Only hetero	Also homo	Total
2000	11.3	82.4	6.3	100	10.2	85.5	4.3	100
2017	7.3	85.6	7.1	100	6.6	78.8	14.6	100

aged 18–24 interviewed in 2006 to explore clues of possible trends.<sup>10</sup> In 2017, 5.5% of male students and 10.1% of female students, respectively, said that they were (also) attracted by same-sex persons. In 2006 among all people aged 18–24 the same proportions were 2.7% (men) and 2.5% (women). While these proportions are not entirely comparable, these data suggest that homosexual attraction has increased over the decade, especially among young women.

### Homosexual experiences

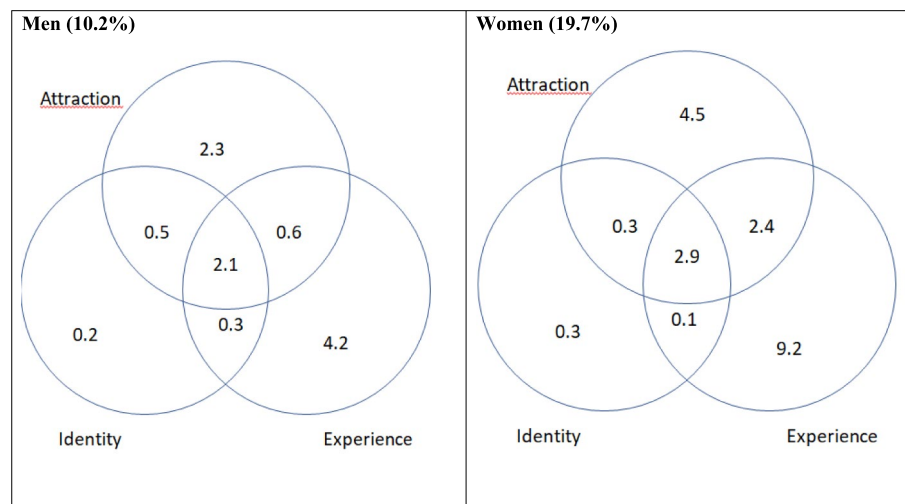
Questions about homosexual experiences were also not asked in 2023, but it is possible to compare two identical questions asked to students in 2000 and 2017 (Table 3). The two surveys show the increased interest of women in same-sex experiences. Compared with male students, in 2017, a double proportion of girls had already practised sexual acts “also with other women”. (Unluckily, we have not collected information about exclusive same-sex experiences.)

It is possible that the progressive increase in homoerotic experiences for both men and women is partly due to a greater social and cultural acceptance of homosexuality, which has also occurred in Italy, as we will see later. This allows people to live with greater serenity about their homosexuality, at least to the point of admitting it to themselves. However, a much higher number of young women than young men who have homoerotic experiences is a novelty of recent years and has also been detected in other countries, attracting the interest of scholars.<sup>11</sup> The results of these studies agree with ours: the homosexual experiences of girls are often included within a broad spectrum of sexual experimentation. The Norwegian case is interesting:

*“25% of 17–18-year-old women reported having had sexual experiences with other women, especially kissing and caressing above the waist. This behaviour mostly took place in public, during alcohol-fueled parties. According to the protagonists, the main goal of this make-out is neither to express affection nor to foster sexual arousal, but to arouse the interest of men. Young men, on the other hand, would never behave in the same way, because two boys hugging in public would not be con-*

<sup>10</sup> Data about homosexual attraction, experiences and identity in Italy were also collected in 2006 on a representative sample of the Italian population aged 18–64 (Barbagli et al., 2010). Results concerning young respondents aged 18–24 (140 males and 135 females) about homosexual attraction and identity are recalled in this paper to integrate the picture of the 23-year period studied. These small numbers argue against obtaining data relating only to students: comparisons with the surveys of 2000, 2017 and 2023 must therefore be conducted with caution. In the 2000, 2006 and 2017 surveys, the “traditional” question on the interviewee’s sex was asked, without specifying whether at the interview or at birth, as was done in 2023. In the comparison between surveys (both in the text and in the tables) we always talk about “males” and “females”, meaning the answer to the only question for the three surveys cited, sex at birth for the 2023 survey.

<sup>11</sup> For Finland: Kontula (2009, pages 118–120); for UK: Mercer et al. (2013).



**Fig. 1** Composition of the three dimensions of homosexuality, 2017 survey (% weighted values). The areas of the figure are not proportional to the frequencies. Source: Dalla-Zuanna & Vignoli (2021), page 146

*sidered sexually attractive, but would rather risk being labeled as homosexuals*.<sup>12</sup>

Even in Italy, between 2000 and 2017, the number of women who—while defining themselves as heterosexual—use some homosexual behaviours as a weapon of seduction towards men may have grown. This hypothesis is supported by the fact that in two cases out of three, the female homosexual experiences detected in 2017 are not combined with either a homo/bisexual identity or with sexual attraction towards women (see Fig. 1) and that they are mostly occasional experiences. The strong predisposition to alcohol among this group (three times higher than women who have not had homosexual experiences, at the same level as the average for men) also lends support to this interpretation.

However, as we will see shortly, considering what happened in the following years for female homosexual identity, this interpretation must be accepted with caution. In fact, the increase in experiences in the period 2000–2017 could anticipate the strong leap forward in female non-heterosexual identities observed between 2017 and 2023, which in 2017 were not yet culturally ready to manifest themselves fully. Unfortunately, while relying on these data, more than this cannot be said, because in the 2023 survey, only the dimension of identity was explored, and that of experiences was not.

### Sexual identity

In 2023 we distinguish students by bachelor courses, looking separately at those who attended non-humanities or humanities (Table 4). Actually, sexual identities are different between the two groups of students, with the humanities students more open to non-heterosexual identities. But Table 4 shows also that the changes in the hetero-homosexual identity of 20-year-old students are profound. Between 2017 and 2023, non-humanities students who declared a non-heterosexual identity went from 4.5 to 8.7% among men and 5.0–19.2% among women. Both gays and lesbians increase, but the

<sup>12</sup> Kontula (2009, page 120), who quotes Hegna and Larsen (2007).

**Table 4** Sexual identities among Italian students, 2017–2023 (% weighted values)

	Males					Females				
	Gay	Bisex	Other non-hetero	I don't know	Total non-hetero	Lesbian	Bisex	Other non-hetero	I don't know	Total non-hetero
2017	1.3	1.6	1.6	–	4.5	0.8	2.8	1.4	–	5.0
2023 Non-humanities	1.8	3.3	1.3	2.3	8.7	1.9	11.7	2.6	3.0	19.2
2023 Humanities	5.1	6.6	1.1	2.6	15.4	2.0	16.2	4.0	4.8	27.0
2023	2.7	4.2	1.2	2.4	10.5	2.0	14.4	3.4	4.0	23.8

bulk of the increase is concentrated among those who declare themselves bisexual, with stronger changes among women. Focusing on humanities students, those who declare non-heterosexual identities are much more, mainly among women (15.4% men vs. 27.0% women); this very relevant change in girls' bisexuality may represent a broader interest of these women in other sexual matters and does not indicate a question of any gendered identity. It may signal that many women want to more actively realize their sexuality and the pleasure associated with it in more versatile ways than previously. This changing interest of females is confirmed by the increased proportion of those indicating other options also among non-humanities students: 2.6% choosing "other" and 3.0% choosing "I don't know". This is 1.3% and 2.3% among male students.

Part of this difference may stem from the fact that while the 2017 survey covered students from all over Italy, the 2023 sample only covers the universities of Bologna, Milano-Bicocca, and Padua. However, as specified in the part of this article dedicated to the description of the data, in 2017 the differences between students from the North and the South in several dimensions of homosexuality were modest; furthermore, a new national survey conducted in 2024 by one of the authors of this article (still unpublished) shows that among young people the differences between the North and South regarding certain aspects of homosexuality are minimal. This rapid 5-year increase might at least partially be due to a different formulation of the question. In 2023, students were asked to choose the term *that best represents* them. This wording might be less demanding than choosing how you would *define* yourself (question of 2017). Moreover, the list of alternative answers in 2023 was longer than in 2017, suggesting a broader spectrum of options, among which the respondent could feel free to place him/herself: *Gay, Lesbian, Heterosexual, Bisexual, Other* and *I don't know* (2023) compared with *Heterosexual, Bisexual* and *Homosexual* (2017). However, the increase of 2023 can be observed in all categories, including those equal to the 2017 questionnaire. We observe an increase among boys identifying themselves as "gay" or "bisexual" and among girls identifying as "lesbian" or, above all, "bisexual".

The validity of the data on sexual identity collected in 2023 is supported by another empirical clue. There is almost perfect coherence between sexual orientation and opinions expressed regarding homosexual acts (Table 5). Among males and females at birth who do not declare themselves heterosexual in the interview, the share of those who say they are against homosexual acts between people of their own sex is minimal (although the coherence is again stronger for females, as in Table 2). Similar results were observed in the 2017 survey, although—as we will see later—the proportion of male and female students who approved of homosexual acts was much lower.

### **Crossing the three dimensions of homosexuality in 2017**

To complete this set of factual data, with reference to 2017—for which the sample is larger, and for which homosexual attraction, experience and identity were detected in the same questionnaire—it is possible to cross the three dimensions of homosexuality (return to Fig. 1).

Men and women who are attracted, have experienced, and identify themselves as non-heterosexual are relatively few (2.1% of men and 2.9% of women). Conversely, considering the presence of at least one dimension, we identify how many students are "touched"

**Table 5** Sexual identity and self-approval of homosexual sex by sex at birth, 2023 survey (absolute unweighted values)

How do you define yourself?	Males at birth			Females at birth		
	Do you approve of sex between males?			Do you approve of sex between females?		
	No/A few	Rather/Yes	Total	No/A few	Rather/Yes	Total
Heterosexual	229	746	975	63	1066	1129
Non-heterosexual	7	109	116	6	373	379
Total	236	855	1091	69	1439	1508

by some dimensions of homosexuality: they are 10.2% among boys and 19.7% among girls.

These data are not available for 2023. However, to emphasize the speed of recent changes, it should be underlined that these two proportions for 2017 are lower than for young men and young women who, in 2023, have not declared a heterosexual identity (11.5% among boys and 24.3% among girls), without considering the other two dimensions.

#### Opinions on homosexual intercourse

Strong changes in attitudes towards non-heterosexuality are also evident in the responses regarding approval of homosexual intercourse (Table 6). Young women have always expressed the same evaluation of male and female homosexuality. However, over the past 23 years, their approval (% *Quite + Yes*) has increased from 28 to 95 percent, thus becoming virtually universal by 2023. Boys, on the other hand, have always had a harder time accepting male than female homosexuality. Until 2017, approval of female homosexuality was slightly lower than that expressed by girls, while approval of male homosexuality was much lower—practically half in 2017. However, over the past 6 years, data indicate a rapid change, even among boys: in 2023, three out of four young interviewed boys (also among non-humanities students) approved of homosexual experiences between two boys.

To interpret the gender gap in the 2017 data, it has been suggested that the construction of heterosexual identity by males tends to be oppositional (“I do not accept homosexuality because this acceptance would call into question my heterosexuality”), unlike what happens to females (Kimmel, 1997; Dalla-Zuanna & Vignoli, 2021, p. 142). The 2023 data suggest that this identity mechanism for building male heterosexuality is now attenuated but not eliminated: 77% of boys and 95% of girls are not against both male and female homosexual relationships (Table 7), as a greater difficulty for male students to accept male homosexuality persists. However, the current trend is clearly towards the almost universal acceptance of male and female homosexuality by boys and girls.

Things are partially different when observing the perception of approval of homosexuality among friends and parents, although even in these responses, the tendency towards greater acceptance appears. In 2000, both male and female students perceived that very few friends of the same sex as them approved of homosexual behaviour among both men and women. In the following years, perceived approval increased, with

**Table 6** Approval of same-sex intercourse, 2000–2023 (% weighted values *Quite + Yes*)

	Opinion of answering student		Perception of opinion expressed by friends of the same sex		Perception of parents' opinion	
	Girl with girl	Boy with boy	Girl with girl	Boy with boy	Girl with girl	Boy with boy
Answers of male students						
2000	25	19	9	5	3	3
2017	60	32	35	18	17	17
2023 NH	83	75	85	62	50	45
2023 H	89	85	88	70	56	53
2023	85	78	86	64	51	47
Answers of female students						
2000	28	27	7	6	2	2
2017	66	70	40	23	20	19
2023 NH	94	94	91	78	52	49
2023 H	96	96	93	83	52	51
2023	95	96	92	81	52	50

Legend: NH non-humanities, H humanities

**Table 7** Opinions of male and female answering students on same-sex of men and women, 2023 survey (% weighted values)

	You approve of sex of boys with boys		You approve of sex of girls with girls	
	No/A few	Quite/Yes	No/A few	Quite/Yes
Males				
No/A few	14	8	236	
Quite/Yes	1	77	855	
<i>Total (absolute unweighted values)</i>	<i>158</i>	<i>933</i>	<i>1091</i>	
Females				
No/A few	4	0	67	
Quite/Yes	1	95	1441	
<i>Total (absolute unweighted values)</i>	<i>69</i>	<i>1439</i>	<i>1508</i>	

a strong acceleration between 2017 and 2023. Change over time is driven by females: in 2023, only the proportion of male students who perceive an attitude of rejection of male homosexuality on the part of male friends remains relatively high (38% among non-humanities students, 30% among humanities ones). This proportion, too, is drastically lower than that recorded in 2017 (82%) and 2000 (95%). Finally, in 2000 and 2017, both male and female respondents declared perceiving their friends' acceptance of male and female homosexuality to be significantly lower than their own acceptance. In 2023, things changed: only the perception of a slightly higher rejection of male homosexuality by friends compared to their own remains, both among males and females (78 vs. 64 among male respondents and 96 vs. 81 among female respondents, with similar proportions among non-humanities and humanities students).

The perception of increasing acceptance of homosexuality is also observed with reference to parents, although to a lesser extent: in 2023, around half of respondents affirmed

that their parents did not approve of homosexual intercourse between men or women, without differences between non-humanities and humanities students. Even in this case, the speedy change should be underlined: 23 years earlier, in the 2000 survey, almost all students perceived an attitude of total rejection of homosexual acts on the part of their parents.<sup>13</sup>

The question on approval of female and male homosexuality was asked in 2000 to samples of university students in some European countries, Japan, Australia, and the United States (Table 8). The countries are similar in terms of the greater tolerance expressed by female students than by male students regarding male homosexuality. There were no differences regarding the tolerance of female homosexuality (see columns 7 and 8) or in the greater tolerance expressed by male students regarding female homosexuality than male homosexuality (column 3). However, differences between countries in the acceptance of homosexual intercourse are large: students of Brown University (North-East of the US) express the highest levels of tolerance, followed by those in France and Australia. Opinions expressed by Italian students were similar to those of their peers in Poland, Bulgaria, Japan and the US state of South Carolina. The level of tolerance of homosexuality expressed by Romanian and Russian female and especially male students was decidedly low. These data are consistent with the perception of acceptance of homosexuality by parents and friends: as tolerance increases, the perception of acceptance systematically increases (data not shown).

It then takes a generation, but in 2023, the responses of Northern Italian students (both humanities and non-humanities) are very close to those given 23 years earlier by the most tolerant students, namely those of Brown University. The impression, therefore, is that tolerance towards homosexuality is a diffusion process, as already detected for other behaviours and attitudes to reproductive behaviours (such as cohabitation, out-of-wedlock births and early sex for women): they started in Northern Europe, some areas of the United States and Australia, and then spread throughout Europe and in all the overseas countries of European tradition (Billari et al., 2007).

### Exploring differences between groups of students for the 2023 survey

As already mentioned, the data collected in 2023 do not allow for an in-depth and theory-based differential analysis of the connections between non-heterosexuality and opinions expressed on homosexuality and other dimensions of the life of young university students.<sup>14</sup>

However, it is possible to conduct some explorations using collected data to develop differential analyses on the discriminatory attitudes expressed by students. The areas that can be explored are *Individual characteristics* (Sex at birth, Age, Occupational status, University, Enrolled in humanities or not)<sup>15</sup>; *Performance and interest in studying*

<sup>13</sup> In the three surveys of 2000, 2017 and 2023, the answers regarding the acceptance of male and female homosexuality by parents are identical when the respondents are male or female. In our opinion, this result speaks in favour of the robustness of this question, because it would have been difficult to justify perceptions of different attitudes by the parents of a male or female respondent.

<sup>14</sup> A comprehensive and theoretically grounded differential analysis has been conducted on data collected in 2000 and—in more depth—in 2006 and 2017 (Barbagli et al., 2010; Dalla-Zuanna & Vignoli, 2021). Some of these results will be revisited by commenting on the analyses carried out on the 2023 data.

<sup>15</sup> By inserting the university attended (Bologna, Padua and Milano-Bicocca) and the course of study (Non-humanities and Humanities) as covariates, it is possible to build unweighted regression models, obtaining results that are representative of the entire student community attending the first two years of the three state universities.

**Table 8** Approval of female and male homosexuality by both male and female university students in some countries, year 2000 (% values *Quite + Yes*)

	Answers of male students			Answers of female students			Difference Fem-Male	
	Girls (1)	Boys (2)	Diff. G-B (3)	Girls (4)	Boys (5)	Diff. G-B (6)	Girls (7)	Boys (8)
USA (Brown University)	91	80	11	90	87	3	0	7
France	65	51	15	64	59	5	-1	8
Australia	62	42	19	61	62	-1	-1	20
Poland	35	21	14	35	46	-11	0	25
Italy	28	19	9	27	25	2	-1	6
USA (South Carolina)	27	15	12	30	40	-10	3	25
Japan	31	12	19	28	18	10	-2	7
Bulgaria	21	10	11	24	39	-15	3	29
Romania	12	5	8	13	29	-16	1	25
Russia	11	5	6	16	18	-2	6	14
ITALY 2017	60	32	28	66	70	-4	6	38
Northern ITALY 2023 non-humanities	83	75	8	94	94	0	11	19
Northern ITALY 2023 humanities	89	85	4	96	96	0	7	11
Northern ITALY 2023	85	78	7	95	96	-1	10	18

Countries sorted by the values of column 2

Sources: *International Surveys on Students around 2000* (Billari et al., 2007). We thank Marcantonio Caltabiano for elaborating on these data

(Grade at high school final exam; Non-school books read in the last 12 months); *Political orientation* (Position in the left–right scale; Whether participated in rallies in the last 12 months); *Religion* (Attend mass/religious gatherings); *Parental family* (Parents' education, Importance of the family, Parents' approval of sexual relations between two men, Parents' approval of sexual relations between two women). Using simple logistic models, we focus on four binary response variables: *Incongruence between sex at birth and gender self-identification at interview*, *Non-heterosexual identity*, *Approval of homosexual acts between men*, and *between women*. The complete results are reported in the Appendix (Tables 9, 10 and 11). For ease of reading, the results are reported as predicted probabilities, constructing 95% confidence intervals and highlighting statistically significant differences. We used STATA 18.0 software.

### Incongruence between sex at birth and gender at interview

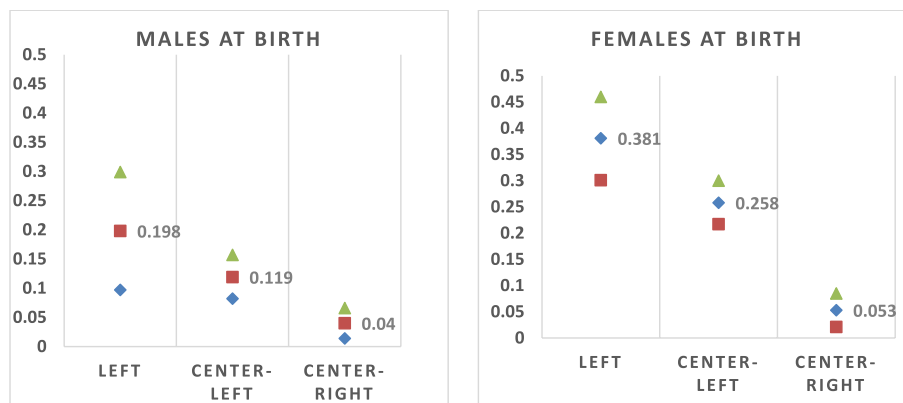
The relatively small number of people who identify themselves with a gender different from their sex at birth led us not to develop separate models for males and females at birth, inserting sex at birth as a covariate. In Table 10, we report both extended and restricted models: the extended model contrasts those who declare the same sex at birth with those who recognize themselves in all other ways (101 vs. 2498), and the restricted model aggregates the “others” category with those who declare the same sex attributed at birth during the interview (44 vs. 2555) (return to Table 1). As already clarified while commenting on Table 1, this distinction is appropriate because, especially among

male students, a certain number of students playfully placed themselves in the “Others” category.

The small numbers in the numerator require large relative differences between the predicted probabilities to reach statistical significance. The restricted model—despite the even smaller numbers—proves to be more suitable than the extended model to highlight some characteristics of students who do not recognize themselves in the sex assigned to them at birth. The predicted probability is higher for female students (0.023 vs. 0.006), those who declare having often participated in demonstrations and marches, and those who assign little importance to family. The difference between those who attend or do not attend the ceremonies of their religion is not statistically significant at 95%, but it is very clear, a variable that is instead significant in the extended model (predicted probability: 0.048 for non-attendees vs. 0.021 for those who attend). Our data do not allow us to say much more about these phenomena, which are growing like elsewhere in Italy (Zoja, 2022) and should be studied in depth in Italy in its various facets.

**Non-heterosexual identity**

Some of the covariates we investigated are strongly correlated, *ceteris paribus*, with the expression of a heterosexual identity in the interview (Table 10). The statistically significant variable for both male and female students is political orientation (Fig. 2). The predicted probability of declaring non-heterosexuality is five times higher for left-wing male students than centre-right male students (0.198 vs. 0.040) and seven times higher for left-wing female students than centre-right female students (0.381 vs. 0.053). This result is further strengthened by participation in demonstrations and marches, which are significant for female students, at the limit of 95% significance for male students. Other variables, varying between male and female students, also exceed the significance threshold: for male respondents, non-heterosexual identities are more widespread among the most assiduous readers and among those who have better results in high school. The connection with the characteristics of the family of origin is in some ways surprising: students from less cultured families are the most likely to declare themselves non-heterosexual, as well as—albeit below the significance threshold—those who perceive their parents to be



**Fig. 2** Predicted probabilities of declaring a non-heterosexual identity by political orientation. Males and females at birth. Values and confidence interval at 95%. Survey of 2023. Source: Table 10 in the Appendix

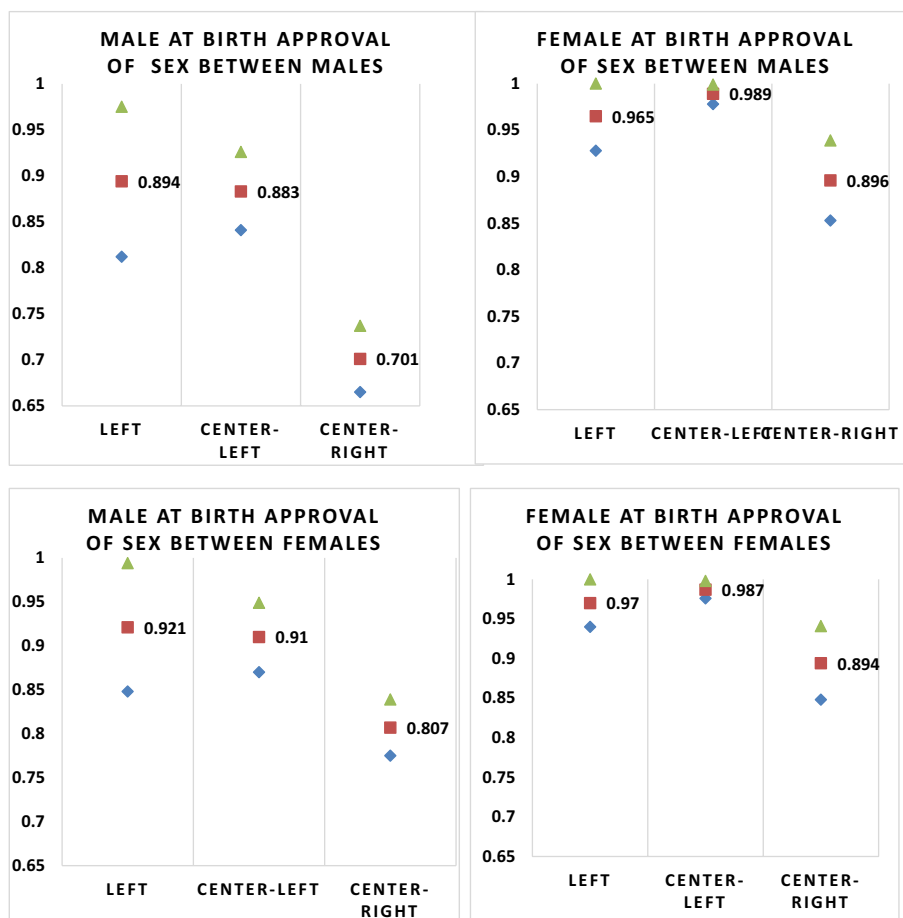
less accepting of male homosexuality. Therefore, it seems that among males, the expression of a non-heterosexual identity occurs more often among students belonging to a traditional family.

On the contrary, among female students, the results are close to what we expected: non-heterosexual identities are more widespread among assiduous readers, those who assign little importance to family and the least religious. No clear connection is observed with the parents' educational qualifications, school results or the level of acceptance of female homosexuality by parents.

In summary, this exploration's main results, limited to the available covariates, are as follows: among university students interviewed in 2023, non-heterosexual identities are not disjoined from some family characteristics or socio-political and religious orientations.

**Approval of homosexual acts between men and between women**

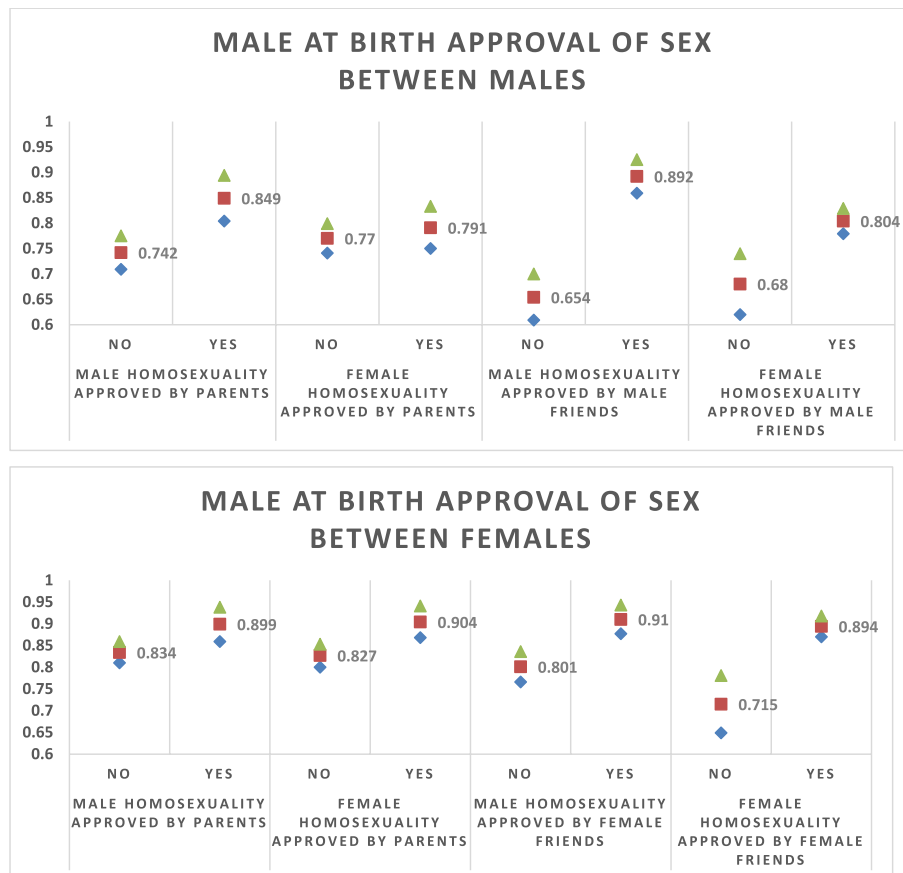
Even for opinions on male and female homosexual acts, the most discriminating variable among those considered here, among male- and female-at-birth students, is political orientation (Fig. 3). The level of tolerance of right-wing students—although never falling



**Fig. 3** Predicted probabilities of approving homosexual intercourse between men and between women by political orientation. Values and confidence interval at 95%. Males and females at birth. Survey of 2023. Source: Table 11 in the Appendix

below 70%—is significantly lower than that declared by their centre-left and left-wing classmates. Furthermore, male and female respondents share a higher level of approval of homosexuality (both male and female) when they assign less importance to the family, even if this difference is statistically significant only for females.

On the contrary, male and female students differ significantly in the influence exerted on their opinion by their perception of the acceptance of homosexuality by parents and friends. For female students, the influence of parents and friends is weak, with the notable exception of the opinion perceived by female friends on female homosexuality. For male students, on the contrary, the influence on their level of tolerance exerted by parents and friends is significant (Fig. 4). This difference between male and female students is in line with what was observed in the 2017 survey, where male students, in addition to being less tolerant than their female classmates with respect to male homosexuality, were found to be more influenced in declaring their opinion by their social and family environments (Dalla-Zuanna & Vignoli, 2021).



**Fig. 4** Predicted probabilities of approving homosexual intercourse between men and between women by perception of approval of parents and friends. Values and confidence interval at 95%. Males at birth. Survey of 2023. "No" includes "No" and "A few"; "Yes" includes "Rather" and "Yes". Source: Table 11 in the Appendix

## Discussion and conclusion

### Hypotheses and empirical data

Five key phenomena have emerged: first, a continuing rise in the acceptance of homosexuality; second, an increase in the proportion of young men and women reporting non-heterosexual experiences, including attraction, sexual encounters with same-sex partners, and identification with non-exclusively heterosexual identity; third, an acceleration in the speed of these changes in Northern Italian students born around 2000, although this acceleration could be partially emphasized by the nature of our comparisons; fourth, the emergence of gender incongruence, defined as a disconnection between sex registered at birth and self-identified gender; fifth, the trends identified vary with the individual characteristics of the respondents: among the variables here considered, the three exerting the most decisive influence are sex at birth, religion and political orientation.

The results of the 2023 survey are fully consistent with two of our three hypotheses. Homosexual behaviours and attitudes favourable to homosexuality are more widespread in Northern Italian students belonging to the Gen-Z (born around 2000) than in the immediately preceding cohorts, and this diffusion is greater among young women and among left-oriented people.

In our third hypothesis, we stated also that the diffusion of non-heterosexual identities among Gen-Z in Northern Italy is less intense than in the countries that have been heralds of the SDT changes. It is not easy to give a clear answer, because surveys on this topic conducted with different methods, different questions, in different countries can only be compared with great caution. Putting together the results of men and women at birth (giving the two genders a weight of 50%), in our 2023 survey 18% of students did not declare a heterosexual identity. The second section of this article reports the same data from some surveys on Gen-Z conducted around the age of 20 on the entire population (therefore not only on university students) in other countries: UK (15–17%), USA (22%), and on an average of 27 developed countries (18%). We cannot know whether the data for Italian non-students are higher or lower than that found among students in Northern universities. However, the impression is that the differences between Italy and the other countries considered here are modest or in any case shrinking. Furthermore, our comparison limited to non-humanities 20-year-old students from 2017 to 2023 in Italy shows a more pronounced acceleration in the spread of non-heterosexuality than in the other countries considered here. It is therefore possible that, for this dimension of sexual behaviour, Northern Italian Gen-Z has filled the gap compared to the countries that first experienced the great changes in SDT.

Let's comment on other results of our 2023 survey from a comparative viewpoint. Data on *gender incongruence* are unclear. Studies on the topic agree with the suggestion that in recent years, the number of children and adolescents seeking help with gender incongruence and gender dysphoria has increased sharply, and the majority are female at birth (Shields et al., 2013; Flores et al., 2016; Claahsen-van der Grinten et al., 2021; Saperstein, 2024). Furthermore, it appears that as the phenomenon has come out of the shadows and its higher prevalence among less well-off and more deprived populations has diminished (Crissman et al., 2017; Zucker, 2017). However, a recent careful review

shows that no rigorous population studies are available, so it is not possible to ascertain the prevalence conclusively (Thompson et al., 2022).

The *differences between US Gen-Z young men and women* are also similar to those observed for our Italian sample. Women are more likely than men to have a non-heterosexual identification: 28.5% of Gen-Z women identify as non-heterosexual, compared with 10.6% of Gen-Z men. Moreover, more than 20% of Gen-Z women identify as bisexual. US Gen-Z men are more likely to identify as bisexual than as gay, whereas older generations of non-heterosexual men are most likely to identify as gay.

The *political polarization of attitudes towards homosexuality* also emerges from survey data in the United States. When asked about LGBTQ lessons in schools—an issue that is fuelling parental rights fights across the country—Democratic voters were more likely to oppose allowing parents to opt out of these lessons if the way they were taught conflicted with their personal views. Republicans were much more likely to approve of dropping LGBTQ classes. The survey found that 79% of Republicans and 32% of Democrats believe parents should have a choice (Pew Research Center, 2024).

In conclusion, according to this rapid and not exhaustive review, North Italy has shared with other countries the recent surge, among the younger generations, in the proportion of people not identifying as heterosexual; that the increase has been more intense for women; and that political orientation strongly affects the extent of these phenomena. The acceleration of the spread of non-heterosexual identities and tolerance towards homosexuality may have occurred earlier in countries such as the United Kingdom and the United States. However, the latest generations of young Northern Italians may have closed, at least in part, the gap that separated them from the countries heralding change.

The Italian case retains peculiarities worthy of interest. In May 2016, a Civil Unions Act was adopted in Italy, which recognized unions between same-sex partners and gave them some of the rights hitherto reserved for opposite-sex married partners. The adoption of this law was after an intense and very polarized debate that lasted years and elicited strong public participation. Moreover, in recent years, the issue of the rights of homosexuals and their children, the fight against homophobia, and the rights of transgender people—along with other biopolitical issues—have occupied a central position on the political agenda of Italy's left-wing parties, both in their parliamentary activities and in their actions within civil society. These developments may have contributed both to accelerating among young people the adoption of more tolerant behaviours, attitudes and perceptions towards homosexuality and to polarizing positions politically and defining a growing alignment between political orientations and positions towards civil rights and biopolitical issues.

Furthermore, some studies on other marital and reproductive behaviours—for example, the spread of heterosexual cohabitation without or before marriage (Rosina et al., 2004)—have shown that their spread is conditioned, more than in other countries, by parental acceptance. This fact, if extended to the acceptance of homosexuality, could explain the contemporaneity between the perception of acceptance by parents of homosexuality and the spread of both homosexual behaviours and more tolerant attitudes towards homosexuality expressed by young students.

### Glimpsing future research

Observing generational trends suggests that, in the near future, also in Italy, the tendency described here will continue to spread, with an increasing prevalence of non-heterosexual experiences, identities and gender fluidity. Additionally, as these identities become more normalized within younger cohorts, the pace of social change in these areas is likely to accelerate.<sup>16</sup> These trends are challenging for psychological, sociological and sexological research to adequately describe and interpret what is happening. There are several perspectives for future research. For example, it will be interesting to observe whether the spread of sexual fluidity and non-heterosexual identities will call into question one of the founding bases of couple life in contemporary societies, namely, mutual fidelity between partners. So far, surveys show that—in Italy as elsewhere—an increasing number of people believe that infidelity in a couple is intolerable, because it signals the cessation of mutual attraction, that is, the constitutive element of a couple, regardless of the sexual orientation of the two partners (Dalla-Zuanna & Vignoli, 2021, part 3.5; Konutla, 2009, chapter 8, entitled: *From infidelity to the renaissance of romanticism*).

Demographic research is also called upon to do its part. For example, Ophir et al. (2023) have shown—with reference to the UK—that a large majority of people with a non-heterosexual identity aged 18–40 do not have children. A greater diffusion of this type of sexual identity among the younger generations could further drag down fertility; on the contrary, the normalization of these behaviours could lead to a more widespread coexistence between non-heterosexual identity and the birth of children. In any case, reproductive decisions will have to deal with this differentiation of the gender system, in which the clear division between men and women gives way to a plurality of orientations, identities and attitudes. This is a bit like what happened in the past decades, when the marital condition progressively ceased to be the only legitimate way for potentially fertile cohabitation between two heterosexual partners. This evolution has not determined either the disappearance of marriage or the collapse of procreation. However, a priori, it does not seem possible to predict the effect of the differentiation of the gender system on reproduction. Future research is needed to better highlight those trends among population strata and continue to explore the relationship between these identity shifts and features such as gender, political orientation, reproduction, fidelity and so on, in Italy as elsewhere.

### Appendix. Detailed results of 2023 survey

See Tables 9, 10 and 11

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<sup>16</sup> This dynamic seems consistent with the *model of diffusion of innovations* suggested by Rogers, after Tarde, and variously tested. According to this model, we should expect slow progress at the outset of the introduction of an innovation, fast progress of regular acceleration in the middle, before final gradual deceleration down to the end (Tarde, 1890; Rogers, 2003). Only further research, based on more detailed data, can move in the direction of testing hypotheses such as that regarding the diffusion of different aspects of homosexuality considered as cultural innovations.

**Table 9** Main variables used in the logistic models, weighted frequencies (column percentages and absolute values)

<b>Frequencies</b>	
<b>Total</b>	(100%) 2599
<b>Sex at birth (“What sex were you assigned at birth, on your original birth certificate?”)</b>	
0. Male	(48.5%) 1260
1. Female	(51.5%) 1339
<b>Gender self-description (“Do you currently describe yourself as male, female, in transition, non-binary, or something else?”)</b>	
<i>Do you currently describe yourself as MALE?</i>	
0. Male	(46.8%) 1215
1. Other	(53.2%) 1384
<i>Do you currently describe yourself as FEMALE?</i>	
0. Female	(49.8%) 1294
1. Other	(50.2%) 1305
<b>Sex at birth &amp; Gender self-description</b>	
<i>Sex and gender coincide (extended version)?</i>	
0. Coincide	(96.3%) 2504
1. Diverge (opposite, trans, non-binary, others)	(3.7%) 95
<i>Sex and gender coincide (selected version)?</i>	
0. Coincide	(98.5%) 2504
1. Diverge (opposite, trans, non-binary)	(1.5%) 37
<b>Personal identification (“Which of the following best represents how you think of yourself? Gay; Lesbian; Heterosexual; Bisexual; something Else, DK?”)</b>	
<i>Personal identification as HETEROSEXUAL?</i>	
0. Heterosexual	(82.5%) 2143
1. Non-heterosexual	(17.5%) 456
<i>Personal identification as GAY versus OTHER NON HETEROSEXUAL?</i>	
0. Gay	(8.1%) 37
1. Other non-heterosexual	(91.9%) 419
<i>Personal identification as LESBIAN versus OTHER NON HETEROSEXUAL?</i>	
0. Lesbian	(5.7%) 26
1. Other non-heterosexual	(94.3%) 430
<b>Occupational status</b>	
0. Not active	(55.5%) 1442
1. Full- or part-time employed	(44.5%) 1157
<b>Grade at final exam</b>	
0. 60–79	(34.9%) 905
1. 80–89	(25.7%) 666
2. 90–100	(39.5%) 1024
<b>University</b>	
1. Milan-Bicocca	(29.4%) 765
2. Bologna	(20.2%) 524
3. Padua	(50.4%) 1310
<b>Enrolled in humanities or not</b>	
0. Non-humanities	(56.2%) 1459
1. Humanities	(43.8%) 1138
<b>Non-school books read last 12 months</b>	
0. No one	(12.0%) 311
1. 1–5	(53.5%) 1390
2. 6+	(34.5%) 897

**Table 9** (continued)

<b>Frequencies</b>	
<b>Parent's education (highest among the two)</b>	
0. Less than high school	(14.4%) 374
1. High school	(43.0%) 1116
2. University	(42.5%) 1102
<b>Attend Mass/religious gatherings</b>	
0. Almost never	(56.0%) 1456
1. At least a few times a year	(44.0%) 1143
<b>Importance of family</b>	
0. Not at all/a bit/rather	(16.4%) 425
1. A lot	(83.6%) 2174
<b>Political orientation</b>	
1. Left (1–2)	(12.1%) 312
2. Centre-left (3–5)	(36.1%) 926
3. Centre-right/right (6–10)	(26.1%) 669
4. Don't know–Non-response	(25.7%) 661
<b>Participation to rallies last 12 months</b>	
0. No	(79.2%) 2058
1. Yes	(20.8%) 540
<b>Perception of parents' approval of sexual relations between two males</b>	
0. No/a bit	(51.3%) 1334
1. Quite/yes	(48.7%) 1265
<b>Perception of parents' approval of sexual relations between two females</b>	
0. No/a bit	(48.2%) 1252
1. Quite/yes	(51.8%) 1347
<b>Approval of answering students of same-sex of men</b>	
0. No/a bit	(13.4%) 348
1. Quite/yes	(86.6%) 2251
<b>Approval of answering students of same-sex of women</b>	
0. No/a bit	(10.0%) 259
1. Quite/yes	(90.0%) 2340
<b>Perception of friends' approval of sexual relations between two males</b>	
0. No/a bit	(26.9%) 699
1. Quite/yes	(73.1%) 1900
<b>Perception of friends' approval of sexual relations between two females</b>	
0. No/a bit	(10.8%) 280
1. Quite/yes	(89.2%) 2319

In bold: questionnaire questions

In Italics: rearranged variables

**Table 10** Gender incongruence (sex and gender diverge) and non-heterosexual identity. Predicted probabilities (p) of logistic models

	Gender incongruence (extended)		Gender incongruence (restricted)		Not heterosexual identity (males)		Not heterosexual identity (females)	
	p	Confidence interval	p	Confidence interval	p	Confidence interval	p	Confidence interval
<b>Sex at birth</b>								
Male	0.039	[0.024, 0.053]	0.006	[0.001, 0.011]				
Female	0.034	[0.021, 0.047]	0.023	[0.012, 0.034]				
<b>Age</b>								
18–19	0.030	[0.019, 0.041]	0.012	[0.006, 0.018]	0.102	[0.076, 0.128]	0.272	[0.233, 0.311]
20	0.047	[0.025, 0.070]	0.018	[0.003, 0.033]	0.111	[0.065, 0.157]	0.220	[0.174, 0.266]
21	0.034	[0.004, 0.063]	0.014	[–0.002, 0.029]	0.109	[0.036, 0.181]	0.159	[0.102, 0.216]
22	0.054	[0.003, 0.105]	0.033	[–0.001, 0.066]	0.131	[0.041, 0.221]	0.202	[0.114, 0.290]
23 and more	0.067	[0.007, 0.126]	0.043	[0.003, 0.084]	0.116	[–0.006, 0.239]	0.251	[0.133, 0.368]
<b>Occupational status</b>								
Not active	0.039	[0.027, 0.052]	0.017	[0.009, 0.024]	0.127	[0.098, 0.155]	0.236	[0.202, 0.270]
Full- or part-time employed	0.033	[0.021, 0.045]	0.012	[0.005, 0.019]	0.073	[0.044, 0.101]	0.250	[0.214, 0.286]
<b>Parent's education (highest among the two)</b>								
Less than high school	0.025	[0.007, 0.042]	0.017	[0.002, 0.031]	0.200	[0.128, 0.272]	0.268	[0.207, 0.330]
High school	0.032	[0.020, 0.045]	0.009	[0.003, 0.016]	0.108	[0.076, 0.141]	0.204	[0.168, 0.239]
University	0.044	[0.030, 0.059]	0.019	[0.010, 0.028]	0.080	[0.053, 0.108]	0.272	[0.231, 0.312]
<b>Grade at final exam (/100)</b>								
60–79	0.041	[0.025, 0.057]	0.012	[0.004, 0.020]	0.072	[0.044, 0.100]	0.263	[0.217, 0.309]
80–89	0.026	[0.012, 0.039]	0.012	[0.002, 0.021]	0.103	[0.065, 0.142]	0.210	[0.168, 0.253]
90–100	0.040	[0.026, 0.054]	0.018	[0.009, 0.027]	0.140	[0.100, 0.180]	0.247	[0.209, 0.284]
<b>Non-school books read in the last 12 months</b>								
No one	0.021	[0.006, 0.036]	0.012	[–0.002, 0.026]	0.062	[0.019, 0.106]	0.118	[0.029, 0.207]
1–5	0.039	[0.026, 0.052]	0.015	[0.007, 0.023]	0.114	[0.084, 0.144]	0.233	[0.199, 0.266]
6+	0.037	[0.023, 0.052]	0.015	[0.007, 0.022]	0.109	[0.075, 0.144]	0.269	[0.230, 0.309]
<b>University</b>								
Milan-Bicocca	0.039	[0.023, 0.056]	0.018	[0.008, 0.028]	0.139	[0.096, 0.183]	0.220	[0.170, 0.269]
Bologna	0.041	[0.020, 0.062]	0.018	[0.004, 0.031]	0.088	[0.051, 0.126]	0.210	[0.164, 0.256]
Padua	0.032	[0.020, 0.045]	0.011	[0.004, 0.018]	0.090	[0.061, 0.120]	0.281	[0.238, 0.324]
<b>Enrolled in humanities or not</b>								
Non-humanities	0.037	[0.023, 0.051]	0.013	[0.003, 0.022]	0.094	[0.069, 0.119]	0.215	[0.170, 0.259]
Humanities	0.035	[0.023, 0.048]	0.016	[0.009, 0.022]	0.132	[0.092, 0.171]	0.261	[0.229, 0.292]
<b>Attend mass/religious gatherings</b>								
Almost never	0.048	[0.035, 0.061]	0.018	[0.011, 0.026]	0.117	[0.091, 0.142]	0.274	[0.239, 0.310]
At least a few times a year	0.021	[0.011, 0.031]	0.009	[0.002, 0.016]	0.088	[0.056, 0.119]	0.203	[0.169, 0.238]
<b>Political orientation (1–10)</b>								
Left (1–2)	0.037	[0.018, 0.057]	0.017	[0.006, 0.028]	0.198	[0.097, 0.299]	0.381	[0.301, 0.460]
Centre-left (3–5)	0.032	[0.018, 0.045]	0.013	[0.005, 0.020]	0.119	[0.082, 0.157]	0.258	[0.217, 0.300]

**Table 10** (continued)

	Gender incongruence (extended)		Gender incongruence (restricted)		Not heterosexual identity (males)		Not heterosexual identity (females)	
	<i>p</i>	Confidence interval	<i>p</i>	Confidence interval	<i>p</i>	Confidence interval	<i>p</i>	Confidence interval
Centre-right/right (6–10)	0.041	[0.018, 0.063]	0.013	[−0.004, 0.030]	0.040	[0.014, 0.066]	0.053	[0.021, 0.085]
Don't know–Non-response	0.039	[0.020, 0.059]	0.016	[0.003, 0.028]	0.120	[0.077, 0.164]	0.231	[0.177, 0.286]
<b>Participated in rallies in the last 12 months</b>								
No	0.028	[0.020, 0.037]	0.008	[0.003, 0.012]	0.088	[0.066, 0.111]	0.203	[0.174, 0.231]
Yes	0.065	[0.039, 0.091]	0.032	[0.015, 0.048]	0.165	[0.108, 0.221]	0.347	[0.291, 0.404]
<b>Importance of family</b>								
Not at all/a bit/quite	0.064	[0.037, 0.092]	0.045	[0.019, 0.071]	0.132	[0.088, 0.176]	0.438	[0.361, 0.516]
A lot	0.030	[0.021, 0.039]	0.008	[0.004, 0.013]	0.096	[0.073, 0.119]	0.213	[0.187, 0.239]
<b>Parents' approval of sexual relations between two males</b>								
No/a bit	0.034	[0.022, 0.047]	0.014	[0.006, 0.022]	0.126	[0.085, 0.167]	0.266	[0.207, 0.326]
Quite/yes	0.038	[0.024, 0.053]	0.015	[0.007, 0.023]	0.090	[0.060, 0.120]	0.222	[0.176, 0.267]
<b>Parents' approval of sexual relations between two females</b>								
No/a bit	0.041	[0.024, 0.057]	0.013	[0.005, 0.022]	0.100	[0.063, 0.136]	0.230	[0.178, 0.281]
Quite/yes	0.033	[0.022, 0.045]	0.016	[0.008, 0.023]	0.111	[0.077, 0.145]	0.254	[0.202, 0.307]
N	2558		2510		1069		1489	

**Gender incongruence (extended version):** sex and gender diverge (opposite, trans, non-binary, and other are included) versus sex and gender coincide

**Gender incongruence (restricted version):** sex and gender diverge (opposite, trans, and non-binary–other are excluded) versus sex and gender coincide

Confidence interval, 95% level of significance

**Table 11** Homosexuality approved by interviewee. Predicted probabilities ( $p$ ) of logistic models

	Male approval of sex between males		Female approval of sex between males		Male approval of sex between females		Female approval of sex between females	
	$p$	Confidence interval	$p$	Confidence interval	$p$	Confidence interval	$p$	Confidence interval
<b>Age</b>								
18–19	0.760	[0.731, 0.789]	0.951	[0.932, 0.970]	0.847	[0.821, 0.873]	0.956	[0.939, 0.973]
20	0.798	[0.759, 0.837]	0.955	[0.928, 0.977]	0.855	[0.819, 0.892]	0.948	[0.924, 0.972]
21	0.801	[0.739, 0.863]	0.984	[0.961, 1.007]	0.840	[0.781, 0.898]	0.981	[0.954, 1.008]
22	0.783	[0.672, 0.894]	0.926	[0.858, 0.994]	0.858	[0.755, 0.960]	0.898	[0.828, 0.969]
23 and more	0.786	[0.675, 0.897]	0.897	[0.795, 0.999]	0.833	[0.716, 0.949]	0.886	[0.786, 0.986]
<b>Occupational status</b>								
Not active	0.785	[0.756, 0.815]	0.946	[0.928, 0.963]	0.851	[0.821, 0.881]	0.947	[0.929, 0.965]
Full- or part-time employed	0.768	[0.739, 0.798]	0.958	[0.942, 0.973]	0.847	[0.822, 0.871]	0.955	[0.940, 0.971]
<b>Parent's education (highest among the two)</b>								
Less than high school	0.784	[0.735, 0.833]	0.940	[0.913, 0.966]	0.840	[0.794, 0.887]	0.935	[0.906, 0.963]
High school	0.792	[0.759, 0.824]	0.956	[0.939, 0.974]	0.851	[0.821, 0.881]	0.964	[0.948, 0.981]
University	0.759	[0.728, 0.790]	0.952	[0.932, 0.972]	0.851	[0.821, 0.880]	0.944	[0.922, 0.965]
<b>Grade at final exam (/100)</b>								
60–79	0.759	[0.723, 0.795]	0.950	[0.932, 0.968]	0.846	[0.813, 0.879]	0.945	[0.927, 0.964]
80–89	0.786	[0.748, 0.825]	0.964	[0.945, 0.982]	0.855	[0.819, 0.890]	0.955	[0.933, 0.978]
90–100	0.792	[0.758, 0.826]	0.946	[0.923, 0.968]	0.848	[0.815, 0.880]	0.954	[0.933, 0.975]
<b>Non-school books read in the last 12 months</b>								
No one	0.781	[0.738, 0.824]	0.953	[0.920, 0.985]	0.855	[0.814, 0.897]	0.980	[0.963, 0.997]
1–5	0.772	[0.745, 0.798]	0.949	[0.933, 0.965]	0.848	[0.822, 0.873]	0.952	[0.938, 0.966]
6+	0.788	[0.737, 0.838]	0.955	[0.934, 0.977]	0.846	[0.801, 0.890]	0.938	[0.914, 0.962]
<b>University</b>								
Milan-Bicocca	0.794	[0.750, 0.838]	0.976	[0.950, 1.002]	0.845	[0.801, 0.889]	0.964	[0.933, 0.996]
Bologna	0.833	[0.780, 0.886]	0.945	[0.909, 0.981]	0.898	[0.849, 0.947]	0.944	[0.908, 0.980]
Padua	0.758	[0.730, 0.787]	0.943	[0.922, 0.965]	0.842	[0.818, 0.866]	0.949	[0.931, 0.966]
<b>Enrolled in humanities or not</b>								
Non-humanities	0.770	[0.745, 0.795]	0.952	[0.929, 0.974]	0.844	[0.821, 0.867]	0.946	[0.922, 0.969]
Humanities	0.802	[0.763, 0.842]	0.951	[0.931, 0.971]	0.866	[0.833, 0.899]	0.956	[0.938, 0.973]
<b>Attend mass/religious gatherings</b>								
Almost never	0.794	[0.765, 0.822]	0.958	[0.938, 0.977]	0.873	[0.847, 0.899]	0.958	[0.939, 0.977]
At least a few times a year	0.758	[0.727, 0.789]	0.947	[0.932, 0.963]	0.823	[0.794, 0.853]	0.947	[0.931, 0.963]
<b>Political orientation (1–10)</b>								
Left (1–2)	0.894	[0.812, 0.975]	0.965	[0.928, 1.002]	0.921	[0.848, 0.994]	0.970	[0.940, 1.001]
Centre-left (3–5)	0.883	[0.841, 0.926]	0.989	[0.978, 0.999]	0.910	[0.870, 0.949]	0.987	[0.976, 0.998]
Centre-right/right (6–10)	0.701	[0.665, 0.737]	0.896	[0.853, 0.939]	0.807	[0.775, 0.839]	0.894	[0.848, 0.941]

**Table 11** (continued)

	Male approval of sex between males		Female approval of sex between males		Male approval of sex between females		Female approval of sex between females	
	<i>p</i>	Confidence interval	<i>p</i>	Confidence interval	<i>p</i>	Confidence interval	<i>p</i>	Confidence interval
Don't know–Non-response	0.792	[0.741, 0.842]	0.957	[0.938, 0.976]	0.865	[0.824, 0.905]	0.951	[0.928, 0.974]
<b>Participated in rallies in the last 12 months</b>								
No	0.768	[0.746, 0.790]	0.951	[0.938, 0.964]	0.842	[0.822, 0.863]	0.951	[0.938, 0.964]
Yes	0.856	[0.807, 0.904]	0.953	[0.925, 0.982]	0.906	[0.861, 0.951]	0.954	[0.925, 0.983]
<b>Importance of family</b>								
Not at all/a bit/quite	0.735	[0.678, 0.793]	0.990	[0.978, 1.003]	0.831	[0.778, 0.885]	0.992	[0.982, 1.002]
A lot	0.786	[0.764, 0.808]	0.947	[0.934, 0.960]	0.853	[0.832, 0.873]	0.946	[0.933, 0.959]
<b>Male homosexuality approved by parents</b>								
No/a bit	0.742	[0.709, 0.775]	0.948	[0.929, 0.967]	0.834	[0.810, 0.859]	0.942	[0.920, 0.965]
Quite/yes	0.849	[0.804, 0.894]	0.967	[0.918, 1.016]	0.899	[0.859, 0.938]	0.975	[0.946, 1.005]
<b>Female homosexuality approved by parents</b>								
No/a bit	0.770	[0.741, 0.799]	0.940	[0.905, 0.974]	0.827	[0.800, 0.853]	0.943	[0.919, 0.967]
Quite/yes	0.791	[0.750, 0.833]	0.982	[0.951, 1.012]	0.904	[0.868, 0.941]	0.975	[0.943, 1.007]
<b>Male homosexuality approved by friends</b>								
No/a bit	0.654	[0.609, 0.700]	0.935	[0.910, 0.959]	0.801	[0.766, 0.836]	0.946	[0.925, 0.966]
Quite/yes	0.892	[0.859, 0.925]	0.963	[0.948, 0.979]	0.910	[0.877, 0.943]	0.956	[0.939, 0.973]
<b>Female homosexuality approved by friends</b>								
No/a bit	0.680	[0.620, 0.740]	0.917	[0.881, 0.954]	0.715	[0.649, 0.781]	0.883	[0.834, 0.933]
Quite/yes	0.804	[0.779, 0.829]	0.961	[0.947, 0.975]	0.894	[0.870, 0.918]	0.966	[0.954, 0.979]
N	1069		1489		1069		1489	

Confidence interval, 95% level of significance

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**Author contributions**

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**Data availability**

The datasets analysed during the current study are available in the data repository of the Dept. of Statistical Sciences of the Padua University: <https://datarepository.stat.unipd.it/>. The 2023 data about Discrimination are available from the corresponding author on reasonable request.

**Declarations**

**Competing interests**

The authors declare that they have no competing interests.

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