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'Free to Be Me?': Gender Role Norms Constrain Career Interests Less for Lesbian, Gay and Bisexual People Than for Heterosexual People

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ABSTRACT

Societal gender role norms play a crucial role in shaping men's and women's career aspirations. However, prior research documenting this key role of gendered norms has primarily focused on heterosexual women and men in the global North-West. Previous studies documenting differences in career interests by sexual orientation suggest that gender role norms might affect lesbian, gay and bisexual (LGB) women and men less strongly than heterosexuals. This large-scale, preregistered study sought to document group differences in norm perceptions, career interests and their relationship. To this end, 18,351 university students ($n = 3318$ LGB, $n = 15{,}033$ heterosexual) from 46 countries completed a self-report survey about their gender, sexual orientation, perceptions of societal gender role norms, as well as their personal gender role beliefs and career interests. Analyses revealed that, compared to heterosexual individuals, LGB individuals reported significantly less stereotypical career interests and endorsed less traditional gender role beliefs about careers. As predicted, perceptions of societal gender role norms predicted career interests for heterosexual but not for LGB participants. Moreover, LGB participants showed a weaker relationship between societal gender role norms and own gender role beliefs than straight participants did. Interestingly, we found no evidence that this effect was conditional on the level of LGBT acceptance in different countries sampled. We discuss implications of this new evidence for understanding occupational gender segregation from an intersectional perspective.

1 | 'Free to be Me?' Gender Role Norms Constrain Career Interests Less for LGB Than Heterosexual Students

> *"You have to go the way your blood beats. If you don't live the only life you have, you won't live some other life, you won't live any life at all."*
>
> — James Baldwin, openly gay writer and civil rights activist

While the desire to pursue a specific career might appear personal, the influence of social pressures on career aspirations is evident. Traditional gender roles are one of the most well documented of these social forces (Eagly and Koenig 2021). Even in highly progressive countries, women are underrepresented in science, technology, engineering and math (STEM) fields, and men represent fewer than 24% of employees in healthcare, early education and social work (HEES) (EIGE 2023; Croft et al. 2015). In decades of research, societal gender role norms have been established as one of the key factors leading men and women to different careers (e.g., Eagly and Wood 1999; Graef et al. 2010; Rudman and Phelan 2010). Yet, relatively little work has considered that not all groups of women and men may be equally oriented toward—or equally constrained by—traditional gender role norms. This misses one critical point of intersectionality: Sexual orientation.[1] There is some evidence that lesbian, gay and bisexual (henceforth LGB[2]) individuals are overrepresented in careers that are counter-normative for their gender (Ellis et al. 2012). It is further possible that LGB women and men are less bound by gender roles than heterosexual men and women. Being 'out', either publicly or privately, requires confronting mainstream gendered expectations, which may make it easier to reject the influence of traditional gender roles in one's career interests. In a large, preregistered sample from 46 countries, the current study asked whether the career interests of LGB women and men are less traditional and less tied to societal gender role norms than those of their heterosexual counterparts, and whether cultural contexts shape these processes.

1.1 | Occupational Gender Role Norms

Societal norms about which groups should enter different occupational fields are strongly gendered, and social role theory (SRT; Eagly and Steffen 1984) explains how these norms emerge and are sustained. According to SRT, people can form injunctive norms (i.e., beliefs about what one 'should' do based on socially agreed standards) by observing descriptive norms (how groups are distributed into existing roles). Seeing men overrepresented in science and women overrepresented in nursing leads people to believe that each gender *should* take on these divergent roles and that their innate qualities align with these careers (Eagly and Wood 1999, 2016; Eagly and Koenig 2021). In this way, occupational segregation does not merely reflect preferences; it becomes part of the cultural evidence base people use to justify and reinforce what women and men 'should' do.

Learning about occupational gender role norms begins at an early age, is reinforced across contexts and remains robust in adulthood. Children are taught both explicitly and implicitly which behaviours and values are appropriate for their gender (Bigler et al. 2013; Martin and Ruble 2009; Ward and Grower 2020; Weisgram et al. 2010). Young children already learn about gender roles through observing their parents and caretakers, and their attitudes begin to resemble those modelled (Bussey and Bandura 2004; Croft et al. 2014). Children also learn gender role norms through broader cultural inputs, such as through peers at school as well as media representation in television and literature (Adler et al. 1992; Diekman and Murnen 2004; Karunanayake and Nauta 2021; Ward and Grower 2020). By the time children enter elementary school, they demonstrate reliable knowledge of stereotypical societal gender role norms (Blakemore 2003), which persist in adults, even in relatively progressive societies (Block et al. 2019; Breda et al. 2020; Napp 2023). As such, gender role norms about careers are often touted as ubiquitous.

Once learned, occupational gender role norms shape career aspirations by influencing which options are considered, how much 'fit' people anticipate, and the social and economic costs attached

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to norm violation (e.g., Croft et al. 2015; Eagly and Koenig 2021; Gartzia 2024; for theoretical accounts). Initially, gender role norms shape which roles and careers are even considered by signalling whether a career is a 'good match' in terms of goals, self-efficacy and belonging (Schmader and Sedikides 2017). For example, young men and women discount counter-normative career options at an early stage because of anticipated social identity threats, such as concerns that others will perceive them as less competent because of their gender (Cheryan and Plaut 2010; Ganley et al. 2018). Further along the career pipeline, breaking societal gender role norms has real repercussions, which can force people out of non-normative careers; Women in counter-normative leadership roles are penalized for violating gender role norms (Rudman et al. 2012), and men in counter-normative occupations like nursing or teaching are viewed as unmasculine or even predatory (Evans 2002; Evans and Frank 2003; Moss-Racusin et al. 2010). Despite the robustness of the norm–career link, relatively little research has examined whether and how this relationship holds for people who already deviate from societal gender roles in other ways, such as LGB people.

1.2 | Career Interest in LGBTQ+ Populations

There is some evidence that LGB women and men show less gender-normative career interests and choices than heterosexual individuals, but this evidence is concentrated in Western contexts. In these samples, gay men and lesbian women are more likely to be employed in fields that are dominated by the other gender category (Tilcsik et al. 2015). Career interests show a similar pattern: Gay men are more likely than heterosexual men to be interested in careers traditionally seen as normative for women, such as artistic or socially oriented careers (e.g., actor or nurse; Chung 1995; Chung and Harmon 1994; Ellis et al. 2012; Lippa 2008). Similarly, lesbian women tend to show more counter-normative career interests than heterosexual women, for example exhibiting a greater preference for careers perceived as more masculine, such as car mechanic or electrical engineer (Ellis et al. 2012; Lippa 2008). While these findings are suggestive, they focus largely on samples from Western countries, representing a limited cultural realm and stance toward LGB people. This study thus aimed to confirm that these patterns of career interest generalize to a more diverse sample, and further examine whether they reflect reduced constraint by perceived societal gender role norms.

Understanding *why* career choices of LGB individuals might differ from those of heterosexuals carries significant socio-economic consequences. LGB individuals represent between 6.3% and 15% of the population depending on the estimate (Berlingieri and Kovacic 2025, Boyon 2021; Böthe et al. 2023; J. M. Jones 2025). However, gay men are underrepresented in lucrative STEM careers, thereby missing out on high-status and high-salary positions (Freeman 2020). In contrast, lesbian and bisexual women in the US have similar or higher incomes (Klawitter 2015), but are disproportionately experiencing financial strain (Badgett et al. 2013). To our knowledge, the current paper is the first to systematically address how career interests are shaped by adherence to gender role norms among LGB people.

On the one hand, heteronormativity suggests that LGB individuals may face many of the same societal pressures as heterosexual individuals, which could make perceived societal gender role norms similarly constraining across groups. Heteronormativity is often described as an ideological structure maintaining that heterosexuality is the only normative expression of sexuality and that heterosexual forms of kinship are central and normative (Danby 2007). Importantly, heteronormativity upholds not only traditional perceptions of sexuality, but also traditional dichotomous gender role norms (Ingraham 1996). Within this system, even LGB individuals can be held to the same societal standards of gender roles. Indeed, studies have demonstrated that heteronormative attitudes are internalized by LGB individuals (Nguyen et al. 2023), and that LGB individuals experience more prejudice when their gender expression does not conform to traditional norms for their gender (Iacoviello et al. 2020). In the context of careers, LGB people report anticipating social identity threats and failure were they to take on careers counter-normative for their gender (Parnell et al. 2012), and experience conflict between their LGB identities and heteronormative expectations of what professionalism should look like for women and men (i.e., heteroprofessionalism; see Morgenroth et al. 2024). These pressures imply that perceptions of societal gender role norms could constrain the career aspirations of LGB and heterosexual individuals alike to some extent.

On the other hand, LGB individuals may have greater capacity to reject traditional gender role norms, implying more liberal personal beliefs and weaker norm–interest coupling for LGB people. Members of the LGB community often describe development of sexual identity involving questioning traditional and heteronormative gender role norms (Robinson and Schmitz 2021; Hinton et al. 2022). In fact, resisting mainstream ideas of gender roles is an important theme in many LGBTQ+ communities (Hopkins et al. 2013; Wagaman 2016) and queer literature (e.g., Fine 2010). Such a process of rejecting traditional norms could also allow individuals to disregard societal gender role norms when considering career choices. Further, young LGB individuals forego the gender normative pressures of the heterosexual dating market. Competing for heterosexual dating partners has been shown to heighten stereotypic gender role norms (Luberti et al. 2020). In contrast, qualitative work suggests that lesbian and bisexual women's non-conformity to traditional gender roles and non-reliance on men may provide advantages in the process of career planning, as they are less restricted by concerns of appeasing men (Gedro 2009; Fassinger 1996). Finally, LGB individuals may also be 'pushed' towards non-traditional career choices because their sexual orientation is tied to threats in spaces dominated by straight people of their own gender. LGB individuals are often not prototypical for their gender (Robinson and Schmitz 2021; Hinton et al. 2022), and can thus fear entering traditional gender role jobs because they will be targeted for deviating from the gender role norms (Anderson et al. 2017). For example, gay and bisexual men in the military experienced sexual assault more frequently than heterosexual men did (Schuyler et al. 2020). Taken together, it is likely that LGB individuals reject mainstream societal gender role norms to some extent and have career interests less shaped by such societal norms.

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1.3 | Gender Role Norms and LGBTQ+ Acceptance

Cultural differences in LGBTQ+ acceptance could further shape how binding societal gender role norms are for LGB people, because the consequences of deviating from heteronormativity vary dramatically across countries. Much of the sparse literature on LGB individuals' career aspirations samples participants from English-speaking, Western countries. Yet, these countries are not representative of how LGB people are treated worldwide. Many societies enforce heteronormativity and compel conformity from their members (Flores 2019), but the extent varies. Although challenges remain, North American and Western European cultures have become increasingly accepting of LGBTQ+ individuals (Flores 2019; Smith 2011; Pew Research Center 2013; Poushter and Kent 2020). In contrast, being perceived as LGBTQ+ comes with the threat of torture, murder and other forms of violence in some countries (Human Rights Watch 2023). In 2019, same-sex marriage was legal in only 29 countries worldwide (Flores 2019) and same-sex sexual activity was subject to criminalization in over 70, and punishable by death in 11 countries (Human Dignity Trust 2023). Regional differences in attitudes towards LGBTQ+ populations shape choices such as where to live (Snyder et al. 2023) and plausibly affect LGB individuals' ability to reject heteronormative gender roles. If heteronormativity is more strongly enforced in some countries than others, we would expect occupational gender role norms to be more or less binding for LGB individuals depending on national context.

1.4 | Current Research

With preregistered procedures, hypotheses and analysis plan (https://osf.io/7pw6b), the present study examined self-reported perceptions of societal gender role norms and career interests of 15,033 heterosexual versus 3318 LGB university students from 46 countries. Based on past research and theory (e.g., Tilcsik et al. 2015; Chung 1995; Chung and Harmon 1994; Ellis et al. 2012; Lippa 2008), we predicted that LGB women and men will be less likely to express interest in gender-normative careers than heterosexual women and men (H1) and that LGB individuals are less likely to personally endorse traditional gender role beliefs than heterosexual individuals are (H2). While we expected that, on average across all participants, perceptions of societal gender role norms would predict participants' career interests (H3), our key prediction was that sexual orientation (heterosexual vs. LGB) would moderate the relationship between perceived societal gender role norms for a career and participants' own career preferences; Specifically that the relationship between perceptions of societal gender role norms and own career preferences would be stronger for heterosexual compared to LGB people (H4). We further examined whether the extent to which perceptions of societal gender role norms guide the career aspirations of LGB women and men varied between countries. We hypothesized that among LGB people, country-level LGBT+ acceptance would moderate the relationship between perceptions of societal gender role norms and own career interest. Specifically, we expected that the relationship between perceptions of societal gender role norms and participants' own career interest would be stronger in countries in which LGBTQ+ populations are relatively less accepted (H5).

2 | Method

2.1 | Participants and Procedure

As part of a larger project on gender roles across countries (https://osf.io/tp8jd), 75 international collaborating teams recruited a total of 25,979 university student participants from 125 universities in 49 countries. Each of our 75 collaborating teams initially aimed to collect data from a minimum of 160 domestic students (80 men and 80 women) from psychology majors or from both HEES and STEM majors. If collaborators could not meet these requirements, they sampled a selection of other majors to achieve a larger sample. Each data collection site received ethics approval from their local research ethics board in a manner complying with the laws of their country. The original project broadly focused on understanding how culture shapes men's underrepresentation in communal careers and family roles. The full dataset contains 182 self-report questions on several topics such as personal values, career interest, expectations of household work and childcare. Each sub-project (Block et al. 2026; Olsson et al. 2023; Schindler et al. 2024), testing non-overlapping hypotheses, was required to submit a pre-registration before beginning data analyses.

Participants gave informed consent and subsequently completed a self-report survey either on Qualtrics, an institution-specific computer tool, or on paper at their institutions in exchange for course credit, a volunteering certificate or a nominal honorarium. For countries where English is not the primary language, the questionnaire was translated into the language of instruction by a team of at least two collaborators with high language proficiency and research experience in psychology. The questionnaire asked participants about their perceptions of roles in HEES, STEM and the domestic sphere, followed by the collection of general demographic information (e.g., gender, age and year of study). Here, we only discuss the key measures that were relevant and preregistered for the current research, but a full list of measures can be found in the supporting information.

General data cleaning procedures were preregistered for the overall dataset (https://osf.io/pc8uf) with additional considerations for this specific project (https://osf.io/7pw6b). As preregistered for the overall dataset, we excluded participants who failed at least one of the two attention checks (15.17%), failed to complete more than 80% of the entire survey or completed the survey in less than 10 min (1.08%). We also excluded participants who were aged under 17 or over 30 (2.44%), participants who moved to their country after age 14 (6.18%) and participants who did not come from the universities we sampled (1.45%).

As preregistered for the current project, we focused on participants who self-identified as either men or women (who may be cisgender or gender diverse), and thus excluded non-binary individuals and individuals who did not indicate any gender (2.16%).[3] Furthermore, we decided a priori to exclude participants identifying as asexual from the main analyses (0.75%) due to concerns about the accuracy of the data and unclarity about how to categorize them for analyses.[4] In addition, participants who did not answer the sexual orientation question were excluded (0.94%). Finally, we also made an a priori decision to exclude

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TABLE 1 | Number of participants by majors, gender and sexuality.

Major	Women		Men	
	LGB	Hetero	LGB	Hetero
HEES	1505	6218	587	2608
Other Social Science	126	401	68	248
STEM	444	1659	284	2052
Business	63	508	60	551
Other	133	468	48	320
Total	2271	9254	1047	5779
Percentage		80.3%		84.7%
	19.7%		15.3%	

countries in which the percentage of LGB participants fell more than two standard deviations above or below the mean percentage of LGB participants across all countries, as very high or low percentages that seem unlikely to reflect reality and might indicate issues with reporting, possibly because sexuality is a taboo topic in some cultures or questions about sexual orientation categories might have been interpreted differently than intended. This led to the exclusions of three countries (Ethiopia: 0.5% LGB, Mexico: 39.01% LGB and Russia: 42.46% LGB, see Table S1).

After all preregistered exclusions, our final sample for analyses comprised 18,351 participants ($n = 3318$ LGB) from 119 universities in 46 countries. This final sample included a disproportionate number of women (n = 11,525) compared to men (n = 6826). However, given the large sample size, a sufficient sample of all sub-groups was achieved. Participants in our final sample ranged from 17 to 30 years of age ($M = 20.50$, SD = 2.38). See Table 1 for a breakdown of participants by major, gender and sexuality and Table S1 for a full breakdown of the number of participants by country and sexuality.

2.2 | Measures

Sexual orientation: Participants self-reported their sexual orientation from the following choices: (a) Heterosexual, (b) mostly heterosexual, (c) bisexual, (d) mostly homosexual, (e) homosexual/gay/lesbian, (f) asexual and (g) other, please specify _____[5]), which we re-coded as per the preregistration into 0 = heterosexual, and 1 = LGB (answering anything other than 'heterosexual' on the sexual orientation item). Note that asexual-identifying participants were excluded from our sample as outlined previously. Results were robust to an alternative coding of sexual orientation categories (see Tables S5 and S6 of supporting information).

Own endorsement of gender role beliefs: Participants reported the extent to which they themselves believed that men or women should occupy three HEES careers (social work, nursing and elementary school teaching) and three STEM careers (computer programming, electrical engineering and mechanical engineering) on a scale ranging from 0 (*only men should be in these careers*) to 100 (*only women should be in these careers*). Items for each career type were averaged into an index of participants' own injunctive gender role norms for HEES ($\alpha_{overall}$ = 0.68, country range = 0.39–0.79) and STEM careers ($\alpha_{overall}$ = 0.90, country range = 0.63–0.97). Cronbach's alpha for each country can be found in Table S2 in the SI.

Perceptions of societal gender role norms for own gender: To measure participants' perceptions of societal gender role norms for careers in their country, participants rated three statements about the number of women that others in their country believe should be in the same three HEES and STEM careers as above from 0 (*only men should be in these careers*) to 100 (*only women should be in these careers*). For example, participants answered 'Who do people in [COUNTRY] think should work as [CAREER]?' Items were then averaged into two separate indices of perceptions of societal gender role norms for HEES ($\alpha_{overall}$ = 0.70, country range = 0.53–0.97) and perceptions of societal gender role norms for STEM ($\alpha_{overall}$ = 0.94, country range = 0.39–0.85). Cronbach's alpha for each country can be found in Table S2 in the Supporting Information. Given that some countries showed low reliabilities, we replicate key results without them in Tables S3 and S4 in the supporting information. Importantly, as per the preregistration, scores on this scale were reverse coded for male participants, so that higher scores indicate for all participants the beliefs that others perceive a given career as *normative for the own gender* of the participant.

Career interest for HEES and STEM: For each of three HEES careers and three STEM careers, participants answered two items regarding their interest in ('In another life, I could imagine [CAREER] being an interesting career for me') and perceived fit ('A career in [CAREER] would match my values') from 1 = *strongly disagree* to 7 = *strongly agree*. These items were selected a priori from the existing items in the dataset because they fit the narrow definition of personal interest in a career without taking into account whether participants' current major specifically trains them for a given career. The two items for all three HEES (or STEM) careers were first z-scored (because they would have different means and standard deviations) and then averaged into one index of career interest for each career-type (HEES: $\alpha_{overall}$ = 0.84, country range 0.73–0.91; STEM: $\alpha_{overall}$ = 0.89, country range 0.82–0.95). Cronbach's alpha for each country can be found in Table S2 in the supporting information. Given that some countries showed low reliabilities, we replicate key results without them in Tables S3 and S4 in the supporting information.

Country-level LGBT acceptance: To measure LGBT acceptance, we used each country's score on the publicly available Global LGBT Acceptance Index (GAI; Flores 2019). This index quantifies attitudes toward homosexuality (and transgender individuals) sourced from a variety of cross-national public opinion surveys, including the AfroBarometer (2019), the America's Barometer (LAPOP Lab 2017), the Eurobarometer (2015), the European Social Survey (2016), the European Values Survey (2022), the Gallup World Poll (2017), the International Social Survey Programme (2016), Ipsos International (2013), the Latinobarómetro (2015), the Pew Research Center (2013) and the World Values Surveys (2018). Scores range from 0 to 10, with higher scores indicating greater LGBT acceptance.

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Gender: Participants were asked to report their gender with the options as 'male', 'female' or 'neither best reflects my identity'.[6] Given that non-binary individuals were excluded from these analyses, we dummy-coded each participant's gender as 0 = man, 1 = woman.

2.2.1 | Control Variables

We preregistered a number of control variables (in addition to gender) that help account for slight differences in sampling strategies between the different sites.

Degree status: Participants self-reported their year level at university. With the information collaborators provided in a site survey, participant answers were coded as 1 = undergraduate with undeclared major; 2 = undergraduate with declared major; 3 = master's student.

Age: Participants reported their age in years (continuous).

Subjective socioeconomic status (SES) within one's own country: Participants rated their perceived socio-economic status on a scale of 0 (*lowest SES*) to 10 (*highest SES*) as follows: 'Please think about where YOUR FAMILY stands in comparison to others in [COUNTRY]. This ladder conceptually represents society where those with the highest SES (Rung 10; i.e., those with the most money, highest education and best jobs) are at the top and those with the lowest SES (Rung 1; i.e., those with the least money, least education and worst jobs) are at the bottom. Please choose the number that best represents where YOUR FAMILY is on this ladder compared to others in [COUNTRY].'

University status within one's country: Collaborators reported their perception of their university's status within their own country by rating their agreement to the following statement from 1 (*lowest status*) to 5 (*highest status*): 'How would you best describe the status of [UNIVERSITY] in relation to other universities in your country? Think of the ladder below as representative of the standing of different universities in your country. At the top of the ladder are the universities which are the best off—those which have the most prestige, the best academic ranking and whose graduates get the most attractive jobs. At the bottom are the universities which are the worst off—those which have the least prestige, the worst academic ranking and whose graduates get the least attractive jobs. The higher up your university is on this ladder, the closer it is to the top universities; the lower your university is, the closer it is to the worst off universities. Where would you place your university on this ladder?'

Percentage of HEES or STEM majors in sub-sample: Participants self-reported their study major, which we effect-coded into HEES (including psychology), STEM, other social sciences, business or other. We calculated the per cent of students in either HEES or STEM majors for each university as a variable to account for differing sample strategies at the different universities (e.g., some had access to HEES students primarily, and others sampled a mix of students from different majors).

3 | Results

3.1 | Analysis Strategy

All hypotheses and analyses were preregistered unless otherwise specified. Multilevel models were run in R using the lme4 package (Bates et al. 2015), using the lmerTest (Kuznetsova et al. 2017) to extract *p*-values. All key analyses used three-level multilevel models that nested individual level data (n = 18,351), within universities (n = 119) and countries (n = 46). Intercepts for all outcome variables were allowed to vary by site and country. All models included participants' gender, age, subjective SES within their own country and degree progress (all site-mean centred), percentage of students in HEES majors in the sub-sample (for models predicting HEES preferences) or percentage of STEM majors in the sub-sample (for models predicting STEM preferences), and universities' perceived status in the country (centred to the grand mean of sites) to account for country- and site-level differences in sampling. All models have random intercepts for the university and country level. Raw correlations for key variables can be found in Table 2. Raw means and standard deviations by gender and sexuality are shown in Table 3. All key effects hold without individual-level control variables (see Tables S11–S14 in supporting information), and without any control variables (see Tables S15–S18 in supporting information).

Hypothesis 1. *Do LGB individuals hold less stereotypical career interests?*

To examine differences in career interest between heterosexual and LGB participants, for each outcome (STEM and HEES interest), we ran a three-level multilevel model to assess whether gender and sexuality showed a significant interaction in predicting each outcome (alongside all preregistered control variables). Effects of gender and sexuality were allowed to vary by country. As predicted and detailed below, the interaction between gender and sexual orientation was significant for both HEES interest and STEM interest.

HEES: Overall, gender differences in HEES interest were significantly smaller among LGB compared to heterosexual participants, $B_{\text{interaction}} = -0.28$, SE = 0.03, $t(14810.19) = -8.00$, $p < 0.001$, but still showed some clear gender stereotypic patterns. Among heterosexual participants, women expressed more interest in HEES than did men, $B = 0.48$, SE = 0.03, $t(49.01) = 18.35$, $p < 0.001$. Among LGB participants, this gender difference was still present but only half the size, $B = 0.20$, SE = 0.04, $t(218.45) = 5.34$, $p < 0.001$. Importantly, gay and bisexual men expressed a stronger interest in HEES careers than heterosexual men did, $B = 0.25$, SE = 0.03, $t(86.61) = 7.18$, $p < 0.001$. In contrast, lesbian and bisexual women expressed similar levels of HEES interest as heterosexual women, $B = -0.03$, SE = 0.03, $t(38.14) = -1.02$, $p = 0.315$.

STEM: The moderating effect of sexual orientation was even more pronounced for gender differences in STEM interest, $B_{\text{interaction}} = 0.34$, SE = 0.03, $t(13277.27) = 9.91$, $p < 0.001$. Among heterosexual participants, women expressed less interest in STEM than did men, $B = -0.38$, SE = 0.03, $t(46.31) = -14.53$, $p < 0.001$. Among LGB participants, this gender difference in STEM interest

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TABLE 2 | Bivariate correlations for key variables, collapsed across the whole dataset.

	1	2	3	4	5	6	7	8	9	10
1. Gender[1]	—									
2. Sexual orientation[2]	0.06***	—								
3. HEES interest	0.27***	0.07***	—							
4. STEM interest	−0.20***	0.02*	0.02*	—						
5. Own HEES belief	0.55***	0.01	0.20***	−0.21***	—					
6. Own STEM belief	−0.48***	0.00	−0.16***	0.23***	−0.62***	—				
7. Societal HEES norm	0.82***	0.04***	0.24***	−0.17***	0.56***	−0.42***				
8. Societal STEM norm	−0.79***	−0.03***	−0.22***	0.18***	−0.48***	0.51***	−0.83***			
9. Age	−0.12***	0.02*	−0.00	0.11***	−0.06***	0.05***	−0.09***	0.10***		
10. SES	−0.01	−0.04***	−0.02**	−0.01	0.00	−0.01	−0.02**	0.01	−0.09***	
Computed correlation used Pearson method with list wise-deletion										

Note: Point bi-serial correlations, using Pearson method with list wise-deletion, in which positive coefficients reflect an association between the variable and being female and LGB, respectively. [1] Gender was coded as men = 0, women = 1. Sexual orientation was coded 0 = heterosexual, 1 = LGB. Norms/Beliefs, higher numbers represent more women.

TABLE 3 | Raw means and standard deviations for key variables by gender and sexuality.

Variable	Women				Men			
	LGB		Hetero		LGB		Hetero	
	M	SD	*M*	SD	*M*	SD	*M*	SD
HEES interest[1]	0.21	0.83	0.18	0.83	−0.03	0.91	−0.37	0.92
STEM interest[1]	0.02	0.85	−0.18	0.87	0.06	0.86	0.26	0.84
Own HEES beliefs	52.88	5.91	55.17	8.50	54.38	7.85	57.71	10.30
Own STEM beliefs	47.32	8.07	43.91	11.54	45.13	11.43	41.36	13.81
Societal HEES norms	72.80	14.37	72.78	14.64	69.52	14.82	68.88	13.83
Societal STEM norms	22.59	19.10	21.71	18.73	25.90	19.79	27.74	19.89

Note: For all gender role norms variables, the number indicates the desired percentage of women in the type of career. [1]Because interest scores are a composite of different scales that were *z*-scored then combined (as preregistered), zero is the midpoint of this scale.

was non-significant, $B = -0.03$, SE = 0.04, $t(210.37) = -0.86$, $p = 0.392$. Importantly, lesbian and bisexual women expressed significantly more interest in STEM than heterosexual women did, $B = 0.19$, SE = 0.02, $t(27.89) = 7.73$, $p < 0.001$ and gay and bisexual men expressed significantly less interest in STEM than heterosexual men, $B = -0.15$, SE = 0.03, $t(89.93) = -4.90$, $p < 0.001$.

Hypothesis 2. *Do LGB individuals endorse less stereotypical gender role beliefs?*

To examine if LGB individuals themselves endorse less stereotypic gender role beliefs (i.e., believed that the proportion of women and men in STEM and in HEES should be more equal), we ran two separate three-level multilevel models using sexual orientation (0 = heterosexual, 1 = LGB) to predict participants' own gender role beliefs for HEES and STEM careers (along with participants' gender and all other preregistered covariates). The effect of sexual orientation was allowed to vary by country. Note that for these analyses, the raw gender role norms score (rather than the own-gender role norm) is used, where the score signifies the participants' desired percentage of women in each career type. As predicted and illustrated in Table 3, LGB individuals, on average, endorsed less stereotypical gender role beliefs than heterosexual individuals did in both career types. Specifically, compared to heterosexual participants, LGB participants believed that relatively more men should be in HEES careers, $B = -2.67$, SE = 0.33, $t(33.46) = -7.98$, $p < 0.001$, and relatively more women should be in STEM careers, $B = 3.57$, SE = 0.37, $t(26.90) = 9.59$, $p < 0.001$.

Exploratory follow-up analyses tested whether LGB and Heterosexual participants' beliefs separately differed from gender equal beliefs (i.e., the midpoint of the scale). In separate models for LGB and heterosexual participants, we ran a multi-level model with all control variables to account for the multi-level structure. The outcome variables for these models were own gender role beliefs minus the midpoint (50 of the scale), so that a

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significant intercept of the model indicates significant difference of the overall adjusted mean from the gender equal midpoint. These analyses revealed that, despite group differences, both LGB and heterosexual participants reported preferring slightly unequal gender distributions significantly different from the 50/50 midpoint for both HEES and STEM, all ts > 8.465, all ps < 0.001.

Hypothesis 3. *Do perceptions of societal gender role norms predict career interests?*

Using a more diverse sample than past work, we tested whether perceptions of injunctive norms for one's own gender predicted one's own career interest (H3). We ran two parallel models, using each participant's perception of others' injunctive gender role norms (coded so that higher numbers indicate a perception that others in society endorse that the participants' gender should be overrepresented in the career) as predictors (standardized) of participants' interest in HEES or STEM careers. The models controlled for the main effects of sexual orientation and gender, along with all other preregistered covariates. The effect of perceived societal norms was allowed to vary by country. As expected (H3), the extent to which participants perceived other people in their country believed that the participants' gender should occupy a given career did positively predict individuals' interest in HEES, $B = 0.05$, SE = 0.01, $t(98.05) = 3.69$, $p < 0.001$, and STEM, $B = 0.05$, SE = 0.01, $t(82.92) = 3.52$, $p < 0.001$, when collapsing the whole sample and controlling for gender and sexuality.

Hypothesis 4. *Does sexuality moderate the relationship between injunctive gender role norms and career interest?*

To test whether perceptions of societal gender role norms predict LGB individuals' career interests less strongly than they do heterosexuals' career interests (H4), we ran two three-level models predicting HEES and STEM interest from perceptions of societal gender role norms for one's own gender (standardized), sexual orientation (0 = heterosexual, 1 = LGB), and their interaction (along with gender and all other preregistered control variables). See Tables S29 and S30 in supporting information for full results. As hypothesized (H4), perceptions of societal gender role norms were a significantly weaker predictor of career interest for LGB compared to heterosexual participants for both HEES, $B_{\text{interaction}} = -0.12$, SE = 0.02, $t(18151.34) = -7.58$, $p < 0.001$ and STEM, $B_{\text{interaction}} = -0.14$, SE = 0.02, $t(17917.61) = -8.40$, $p < 0.001$.[7]

Decomposing these interactions further revealed the predicted patterns; as in past studies, perceptions of societal gender role norms did predict greater HEES interest for heterosexual individuals, $B = 0.09$, SE = 0.01, $t(18094.85) = 8.13$, $p < 0.001$. In contrast, perceptions of societal gender role norms did not predict own HEES interest for LGB individuals, $B = -0.03$, SE = 0.02, $t(18157.18) = -1.90$, $p = 0.0578$. Even more divergent were results for STEM; in line with traditional normative influence, heterosexual individuals expressed more interest in STEM the more they perceive that others believe it is normative for their own gender, $B = 0.07$, SE = 0.01, $t(17924.84) = 6.81$, $p < 0.001$. However, LGB individuals expressed less interest in STEM the more they perceived that others believe it is normative for their own gender, $B = -0.07$, SE = 0.02, $t(17915.10) = -3.92$, $p < 0.001$.

The bivariate relationship between gender role norms and career interest for both career types is shown in Figure 1.

Exploratory: Are LGB participants' own attitudes less congruent with perceived societal norms? Given that we found that LGB people reported less stereotypical interests and personal gender role beliefs than straight participants, and further seemed to detach their own interest from their perception of societal gender role norms, a new question arose: Are LGB participants' own beliefs less tied to perceptions of societal norms than those of straight participants? To test this, we ran additional models to first examine whether perceptions of societal norms (entered as standardized predictor, controlling for gender and sexual orientation) predicted participants' own gender role beliefs and then, more crucially, whether there was an interaction between sexual orientation and perceived societal gender roles in predicting participants' own gender role beliefs. The effect of sexual orientation was allowed to vary by country. Results suggested that perceived societal gender role norms were, on average, extremely predictive of participants' own gender role beliefs about HEES, $B = 1.95$, SE = 0.07, $t(17860.54) = 29.91$, $p < 0.001$ and STEM, $B = 2.93$, SE = 0.08, $t(18070.90) = 34.97$, $p < 0.001$. As expected, significant interactions showed that this strong relationship between perceived societal norms was notably weaker for LGB than for straight participants, both for HEES, $B_{\text{interaction}} = -1.22$, SE = 0.16, $t(2269.85) = -7.70$, $p < 0.001$ and for STEM, $B_{\text{interaction}} = -1.71$, SE = 0.21, $t(7397.30) = -8.01$, $p < 0.001$. This lends further evidence to the idea that LGB participants experience less congruence between personal beliefs and societal norms (see Tables S27 and S28 in supporting information for detailed models).

Hypothesis 5. *Does country-level variability in LGBT acceptance moderate the relationship between perceived gender role norms and career interest among LGB individuals?*

We next more closely investigated the relationship between perceptions of societal gender role norms and career interest among those who identified as LGB ($n = 3318$) in our sample. We first aimed to identify whether the relationship between gender role norms for one's own gender and personal career interest among LGB populations varied between countries. For descriptive purposes, we graphed this relationship for each country in Figure 2. Examining this figure highlights the overwhelmingly flat relationship between perceptions of societal gender role norms and personal career interest among LGB participants in this sample, with a few notable exceptions for HEES interest (Kazakhstan, North Macedonia, Bolivia, Ireland and Italy) and STEM interest (Kazakhstan, North Macedonia, Croatia, Pakistan and Palestine). A preliminary multilevel model with only random effects for the intercept and perceptions of societal gender role norms (z-scored) as predictors suggested that among LGB people in our sample, societal gender role norms did not predict HEES interest ($B = 0.05$, SE = 0.03, $t(130.15) = 1.77$, $p = 0.079$) or STEM interest ($B = 0.05$, SE = 0.03, $t(86.19) = 1.64$, $p = 0.105$). This is congruent with other analyses presented before. ICCs from these models were also small, suggesting that random effects account for very little of the variance on this model ($\text{ICC}_{\text{STEM}} = 0.046$, $\text{ICC}_{\text{HEES}} = 0.125$), though variance was somewhat larger for HEES careers. In contrast, exploratory comparison analyses with just

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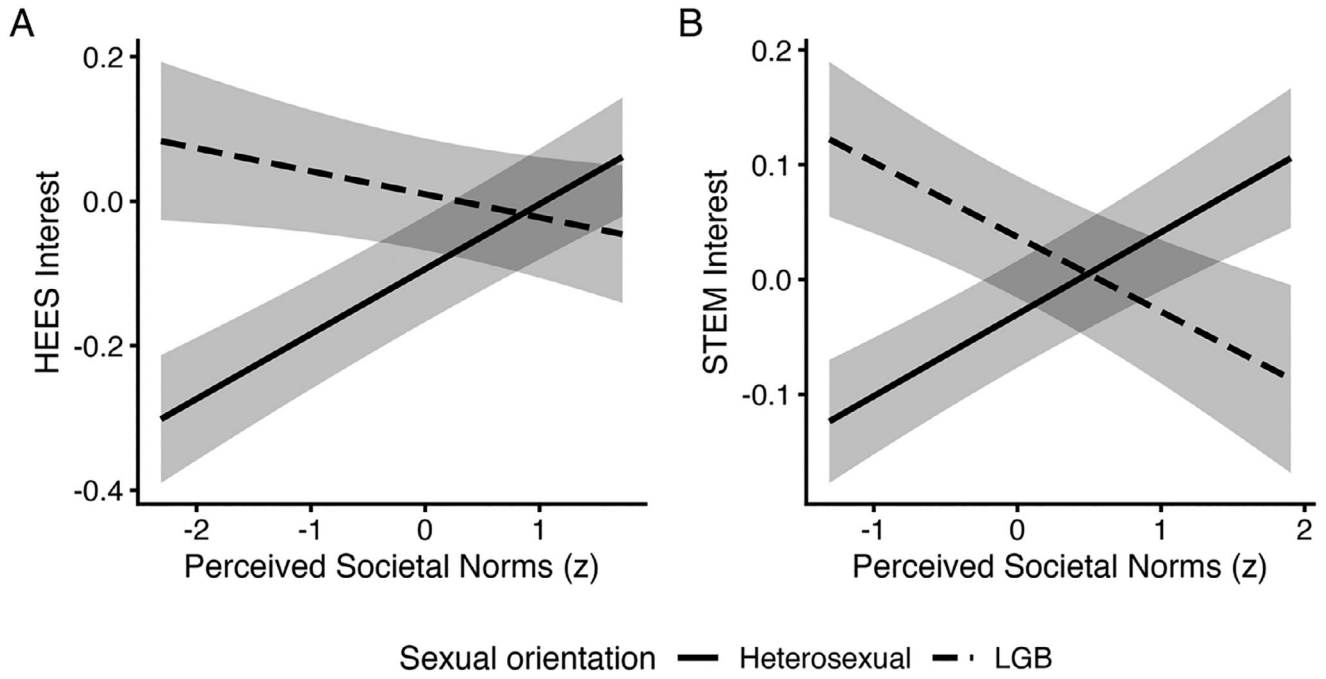


FIGURE 1 | The moderated relationship between perceived societal gender role norms and interest. *Note:* Plotted are fitted (i.e., predicted) values from multilevel models. Bands indicate 95% CIs.

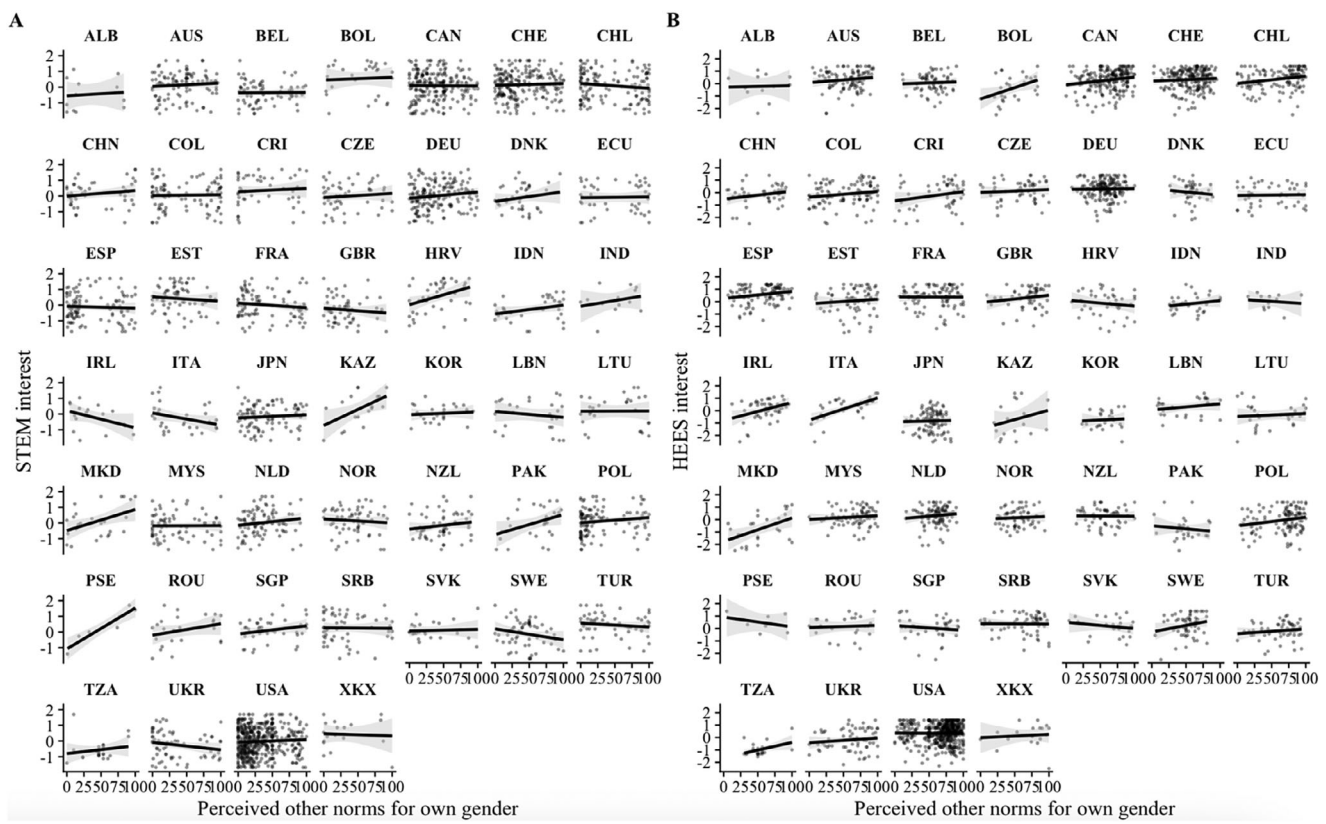


FIGURE 2 | Estimated relationship between societal norms and interest for LGB participants by country. Panel A shows predicting STEM interst, and Panel B shows predicting HEES interest. *Note:* This figure displays the bivariate relationship between perceptions of norms for one's own gender and career interest for each country.

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the subset of only heterosexual participants shows significant relationships between societal gender role norms and both HEES and STEM interest (see Tables S19 and S20 in supporting information). For descriptive purposes, we also plotted the relationship between societal gender role norms and HEES/STEM interest for heterosexual individuals separately in each country (see Figures S1 and S2 in supporting information), which further suggested a very consistent relationship between societal gender role norms and own interest in almost all countries (Palestine seems to be an exception, like in other analyses) for heterosexual participants.

We then tested the preregistered hypothesis that the relationship between perceptions of societal gender role norms and own career interest should be stronger among LGB populations in countries who are least accepting towards sexual minorities (i.e., low GAI score; H5). To test this, we used country-level LGBT acceptance (GAI score, centred to the mean of countries) as a predictor (i.e., moderator) of the relationship between perceptions of societal gender role norms and participants' own careers interest in HEES and STEM careers (relationship allowed to vary by country). Contrary to expectations, the interaction between country-level LGBT acceptance and perceptions of others' injunctive gender role norms was non-significant for both HEES ($B < -0.01$, SE = 0.01, $t(45.56) = -0.219$, $p = 0.827$) and STEM ($B = -0.02$, SE = 0.01, $t(29.05) = 1.47$, $p = 0.153$). These results remain the same for STEM, $B_{\text{interaction}} = -0.01$, SE = 0.01, $t(33.98) = -1.13$, $p = 0.268$, and $\text{HEES}_{\text{interaction}}$, $B = -0.004$, SE = 0.01, $t(46.01) = -0.40$, $p = 0.691$, after removing a country (Palestine), which had a very small sample of LGB participants. We thus found no evidence that country-level LGBT acceptance—as quantified by the GAI score—moderates the relationship between gender role norms and career interests in our sample. Furthermore, the model for STEM failed to converge, suggesting that we might be trying to fit an overly complex model to our data of LGB people. In addition, we ran additional exploratory analyses requested by a reviewer to examine whether our results are robust to controlling country-level gender equality (indicated by the Global Gender Gap Index; GGGI; World Economic Forum 2017). These analyses suggested all key effects are robust to controlling for GGGI and GGGI entered in place of GAI did not moderate the relationship between societal gender role norms and own interest for LGB people (see Tables S21–S26 in supporting information).

4 | Discussion

4.1 | Evidence of Rejection of Societal Gender Role Norms

While the influence of societal gender role norms on career aspirations is often assumed to be ubiquitous, little work to date has examined whether and how this might differ for LGB populations. Since LGB people face considerable challenges to surviving and succeeding in heteronormative work culture (Gedro 2009; Morgenroth, Kirby, & van der Toorn 2024; van der Toorn et al., 2024), understanding how gender role norms affect them uniquely is crucial. Past research and theory—focusing largely on samples of heterosexual men and women from Western countries—documented a strong relationship between societal gender role norms and career aspirations (Eagly and Koenig 2021). Focusing exclusively on Western samples can, however, lead substantial theoretical oversights (Muthukrishna and Henrich 2019). In addition, we presented a theoretical arguments that we cannot assume that this relationship applies to LGB women and men. Our research took advantage of a large cross-national sample of university students to preregister and test theoretically grounded predictions about societal gender role norms, career interests and their relationship in LGB (compared to heterosexual) women and men.

Past work with samples from Western countries has documented relatively more non-traditional career interest among LGB than heterosexual individuals (Ellis et al. 2012; Lippa 2008). We provide a recent replication of these differences in a sample that was larger and substantially more diverse than past work—using data from 46 countries. As hypothesized, LGB women and men in our sample expressed less gender-normative career interests than heterosexual participants. Specifically, lesbian and bisexual women in our sample showed more interest in STEM careers than heterosexual women did, and gay and bisexual men reported more interest in HEES and less interest in STEM than heterosexual men did. As such, the current sample provides important evidence for the robust effect of sexual orientation on career interest. In addition to this high-powered conceptual replication, the current study makes several important and novel contributions to the literature.

To our knowledge, this study is the first to demonstrate systematic differences in how gender role perceptions predicts the career aspirations of LGB students compared to heterosexual students. On average, LGB individuals in our sample personally endorsed more egalitarian gender role beliefs about careers, believing relatively more women should be in STEM and relatively more men should be in HEES careers, compared to heterosexual participants. This evidence is in line with qualitative research suggesting that members of the LGB communities are generally more likely to reject traditional gender role norms that uphold heteronormativity (Hopkins et al. 2013; Robinson and Schmitz 2021; Wagaman 2016), and with findings that LGB people opt into industries that they feel safer in (regardless of gender-based expectations; e.g., Collins 2015; Wright 2011). These findings raise the possibility that LGB individuals generally hold more egalitarian norms than heterosexual people. Indeed, additional exploratory analyses suggested that LGB people's own gender role beliefs were less tied to their perception of societal norms than those of heterosexual participants. It is also telling that LGB individuals had slightly more egalitarian views of societal gender role norms (see Table 3), possibly because they surround themselves with more egalitarian people. This points toward the possibility that LGB people tend to experience societal gender roles as less restrictive because they are part of a subculture that is less concerned with rigid gender roles.

It is further noteworthy, however, that even LGB participants' own gender roles beliefs were still not fully gender equal; even these participants, on average, reported a preference for slightly more men in STEM and slightly more women in HEES (see Table 3), which was significantly different from the 50/50 point of the scale. Therefore, while our results certainly support the idea that members of sexual minorities are more likely to resist

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traditional gender role norms about work, this resistance is not complete and societal norms are still internalized to some extent by at least some LGB individuals.

Notably, resistance was further evident in the key analyses on the relationship between perceptions of societal gender role norms and career interest. Whereas both LGB people and heterosexual women and men showed a general awareness of restrictive societal gender role norms about careers (see Table 3), we found important differences in how such norms were tied to LGB and heterosexual participants' career interests. Heterosexual individuals showed significantly more interest in a career the more they believed it was societally normative for their own gender. For LGB individuals, in contrast, perceptions of societal gender role norms were not related to HEES interest and negatively related to STEM interest, meaning that they showed *less* interest in STEM the more they perceived that other people in their country believe STEM is normative for their gender (note that these analyses also controlled for participant gender because societal norms were scored so that higher number meant norms in line of participants' own gender).

These findings demonstrated a level of resistance (or even counteracting reactance) against traditional gender role norms in LGB participants' career interests that would be atypical among heterosexual populations. There are several factors that may (possibly simultaneously) account for this resistance. Theoretical accounts of reactance posit that reactance arises out of the motivation to reclaim freedom when it is threatened by norms or outside authorities; leading people to refuse obeying social norms in the face of strong social pressures (Brehm 1966; Steindl et al. 2015). In the LGBTQ+ community, resistance and reclaiming freedom are central themes (Hopkins et al. 2013; Robinson and Schmitz 2021; Wagaman 2016). Yet, the current study is, to our knowledge, the first to empirically document LGB individuals directly resisting societal gender role norms in the context of their career interests. A related interpretation is that LGB people are simply not influenced by mainstream gender roles and stereotypes, but not free from gender roles per se. As previous research shows that LGB people are gender-stereotyped in distinct ways (Blashill and Powlishta 2009; Clarke and Arnold 2017), it is feasible that LGB people can resist mainstream stereotypes, but are beholden to a different set of stereotypes instead. Future studies will have to more clearly tease apart the exact nature of resistance against mainstream gender roles among LGB people.

4.2 | Little Evidence for Systematic Cross-National Variance

Whereas the large, cross-national nature of our sample is a major strength of the current study, it provides less conclusive evidence on what specific cultural characteristics shape the relationship between gender role norms and career interest for LGB individuals. While we had predicted that the relationship between perceptions of societal norms and career interest would be smaller for LGB, compared to heterosexual individuals, we also expected that a country's acceptance of sexual diversity would shape norm adherence among LGB members. Specifically, we predicted that countries that show low acceptance of LGBTQ+ individuals would force even LGB participants to orient their career interests towards traditional gender role norms. However, we found no evidence that levels of country-level LGBTQ+ acceptance (according to the GAI score) moderated the relationship between gender role norms and career interests for LGB individuals.

It is not fully clear how to interpret these non-significant results. Exploratory analyses suggested that the relationship between perceived norms and career interest was largely flat, even in countries that are known to be hostile to LGB populations. This could mean that the rejection of the influence of societal gender norms on one's personal career interests is a global phenomenon among LGB populations. This aligns with our theoretical proposition that just being a member of the LGB community often involves some level of rejection of mainstream gender role norms (either publicly or privately), which may make rejecting other gender roles easier. It is possible that our measure focusing on internal interest for careers (see later discussion) meant that even participants from countries that show low acceptance of LGBTQ+ were able to reject interest in gender-typical careers where they would, in practice, still choose such careers due to external pressures.

Another reason might be related to our non-significant moderation: The relationship between cultural LGBT+ acceptance and perceptions of gender role norms. While not the focus of the current paper, exploratory follow-up analyses suggested that a high GAI score at the country level was generally associated with more progressive perceived societal norms and more progressive personal gender role beliefs (see Tables S7–S10 in supporting information). Thus, our data suggest that countries that show higher acceptance for LGBTQ+ rights also tend to have less strict gender roles overall. As such, country-level LGBTQ+ acceptance might be related to less strict gender roles for both LGB and heterosexual individuals, but still render individual differences in norm perceptions within a country meaningful. In addition, other cultural variables could play an additional role, complicating the relationship between country-level LGBTQ+ acceptance, perceived norms and career interest. Cultural tightness (vs. looseness), which refers to the extent to which cultures tend to enforce strict social norms (Gelfand et al. 2011), has recently been shown to moderate the effect of sexual orientation on preference for realistic, investigative, artistic, social, enterprising and conventional characteristics in careers (Du et al. 2025). Thus, it is possible that tightness-looseness would further moderate interaction between sexual orientation and perceived gender role norms in predicting career interest. Future research, which a larger number of countries for which tightness-looseness scores are available could test this possibility.

However, we also want to acknowledge several spurious reasons that could have led to the lack of moderation by country-level LGBTQ+ acceptance. First, despite our large overall size at the individual level, 46 countries are still not a large sample for cross-level interactions in multilevel modelling. This alone can lead to non-significant results if effects are subtle. Importantly, it is possible that the moderating role of country-level LGBTQ+ acceptance is not linear and that only environments that are *extremely* punishing towards LGBTQ+ groups can reinforce heteronormativity in career aspirations. We find no such evidence when comparing the least accepting 25% of the sampled countries

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to the most accepting 75%. Indeed, exploratory analyses plotting the relationship between perceived societal norms and own career interest showed a flat line for almost all countries among LGB people and a positive relationship for almost all countries among straight people. This suggests the possibility that there is an amount of shared experience in how LGB and straight people in our sample relate to societal gender roles across countries.

However, the current sample is likely not representative of the level of LGBTQ+ acceptance in a country, since student samples tend to be more liberal than the broader population (Scott 2022). In addition, while the current sample contained some countries with very low GAI scores (e.g., Pakistan, Indonesia and North Macedonia), participants from countries with low GAI scores were still underrepresented in the current sample (see Table S1 in supporting information). Further work is therefore needed to clarify the role of country-level LGBTQ+ acceptance in LGB members' personal relationship to societal gender role norms about careers. Such future studies would likely benefit from using different country-level variables than an overall acceptance score indicated by the GAI, to have a more nuanced characterization of the different threats and privileges of LGB individuals in different countries. Further, it would be very interesting for such work to also try to obtain larger samples of members of sexual minority communities from countries in which such identities are highly stigmatized and often concealed. More care will have to be taken to deal with reporting biases in these countries. However, this would provide the opportunity to examine whether LGB people can still (at least internally) reject traditional gender roles about careers in such restrictive contexts.

4.3 | Limitations and Future Directions

Whereas the present research contributes important and well-powered evidence on gender role norms, career interest and their relationship in LGB versus heterosexual populations around the globe, several questions remain to be addressed by future research. First, future studies could make more precise comparisons between different groups of sexual minorities. Our preregistration was constrained by the existing dataset. This led to the need to form categories that do not fully distinguish the nuances of sexual and gender identities. For the purposes of well-powered analyses, we coded anyone who did not self-identify as 'heterosexual' as LGB, including those who identify 'mostly [but not fully] heterosexual', 'lesbian', 'gay', 'bisexual' and 'mostly homosexual'. Notably, our results hold with an alternative grouping (see supporting information for analyses). However, this grouped everyone who falls outside of the heterosexual norm (identifying as anything other than heterosexual) into one LGB category. It also potentially included transgender people who are attracted to the other gender than they identify with (who indeed are heterosexual, but have different experiences of gender roles than cisgender heterosexual people). While our theoretical justification was the overlap in the lived experience of rejecting heteronormative relationships among this group, this way of grouping people also overlooks important nuances. Different members of the LGBTQ+ community face challenges unique to their identities that interact in complex ways. LGB individuals experience some of the same forms of discrimination, such as internalized sexual prejudices, gender role conflicts, social stigma and physical discrimination and violence (Herek and McLemore 2013; Meyer 1995; Szymanski and Carr 2008). However, there are also important differences in experiences. For example, whereas bisexual individuals also face sexual prejudice from society at large (i.e., heterosexual majority), they also face additional pressures from the gay and lesbian community in a way that monosexual gay and lesbian people do not (Anderson and Maugeri 2024). In addition, our sample of participants who identify as sexual minorities also likely include participants who identify with gender minorities, which we were unable to assess with this existing data. A general LGB category may obscure the possible influences of interlocking sub-identities and eliminate our ability to test for the nuances of how these identities affect the development of gender role norms.

A further complicating factor is that different people may conceptualize heterosexuality differently (e.g., identity vs. attraction vs. behaviours). For example, people may identify as fully heterosexual but have engaged in same-gender sexual activity in the past or have expressed same-gender attraction. A study conducted with college students in the United States found that 30% of heterosexual-identifying women have had same-sex feelings (Hoburg et al. 2004). For others, any same-gender attraction or activity may be considered not fully heterosexual: Indeed, in a recent poll in the United Kingdom, despite 89% of the sample identifying as heterosexual, 49% of young people aged 18–24 identified as something other than 0 (exclusively heterosexual) on the Kinsey scale (YouGov 2015). The percentage of LGB participants per country in our sample ranged from 8% LGB individuals in Serbia to 32% LGB individuals in Estonia, a relatively large spread, showing that sexuality and identifying as LGB might have different meanings in different cultural contexts. It would be important for future research to explore in more depth how different sexual minority identities shape gendered norms and career interest.

In addition, we had some concerns about reporting accuracy in our sample. According to criteria that were set a priori, we excluded Ethiopia, Mexico and Russia, as they fell far above (Russia, Mexico) or below (Ethiopia) the mean proportion of non-heterosexual individuals in our sample. For Russia, there was a possible confusion in the survey translations, which should be remedied in future studies. Data from Ethiopia, which has a lower GAI score than any country in the sample, especially raised concern about reporting accuracy because same-sex relations are criminalized, and people may feel highly unsafe and unwilling to report their sexual minority status there. To reach LGB participants in these settings and understand their experiences with gender role norms, different approaches might have to be taken by future research to ensure participants can comfortably report their identity.

Due to concerns with cross-cultural variation of the meaning of self-reported asexuality, participants identifying as asexual were excluded from main analyses as per our preregistration. By the current definition in the psychological literature, asexual individuals experience little to no sexual attraction across the board. Under this definition, the population incidence of asexuality is estimated to be around 1% (Bogaert 2004). The percentage of individuals identifying as asexual in the current dataset (0.75%) mirrors these estimates. This definition is,

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however, not commonly shared, especially not in every country. A few countries in the current sample showed an implausibly high percentage of participants identifying as asexual (e.g., in Tanzania, 28.40% [25 out of 88 participants]). This suggests that our way of assessing asexuality was likely not sensitive to cultural variation of definition of the construct. In addition, we were unable to determine whether those identifying as asexual were heteroromantic, homoromantic, biromantic or aromantic, which could have important consequences for gender role pressures in their lives. We thus excluded asexual participants from the final analyses. Nevertheless, it would be interesting for future research to examine how asexuality impacts gender role norm adherence. The asexual community may experience discrimination due to their nonconformity with heteronormative standards, and they may face different patterns of discrimination from other non-heterosexual identities (Bogaert 2015; Chasin 2015). Within the LGBTQ+ community, they are sometimes but not always included (for instance, see Canning 2015 for a discussion of asexual inclusion). Many asexual individuals consider romantic and sexual attraction to be separate (meaning that it is possible to experience one form of attraction and not the other), and cisgender, heteroromantic asexual individuals are typically not considered LGBT (Canning 2015). As research on asexuality as an identity is sparse, it is unclear whether gender norms influence asexual individuals to a similar extent as heterosexual individuals. Our current sample does not include enough asexual participants to conclusively answer this question.

Another issue to be tackled by future research is to examine how different gender identities might influence the relationship between gender role norms and career interest. The current dataset did not include detailed response options on participants' gender identities; participants were only asked to report their self-identified gender without specifying if they were transgender. Based on prevalence estimates, approximately 0.4%–3% of our participants self-identifying as women and men could have been transgender women and men (Winter et al. 2016). On one hand, research suggests that transgender and gender-diverse individuals tend to internalize and adhere to norms and interests in line with their self-identified gender (Hässler et al. 2022; Olson et al. 2015). Importantly, gender identity and sexual orientation are distinct constructs. Thus, transgender, non-binary and gender non-conforming (TGNC) individuals can also identify as LGB or heterosexual. Furthermore, TGNC individuals are often underrepresented in LGBTQ+ research (Fiani and Han 2019; Hässler et al. 2024; Klysing et al. 2024), meaning that we know little about gendered career interests in this population. Like cisgender LGB individuals, TGNC individuals face pressure to conceal their identities and suppress gender differences at the risk of violence and discrimination if they do not conform to cisnormative standards (Lombardi et al. 2002; Nagoshi et al. 2017). However, TGNC individuals have unique needs, such as needs surrounding possible gender transition, including access to healthcare and legal gender changes—and this extends to needs in the workplace. For example, TGNC individuals report that transitioning socially and physically is important to feelings of fit, authenticity and belonging in the workplace (Martinez et al. 2017), while transitioning is not relevant to cisgender LGB individuals. For some transgender individuals, binary and essentialist definitions of gender may not align with their experiences and views (Nagoshi et al. 2012). As such, it is possible that transgender identity could be an additional moderating factor so that heterosexual transgender individuals are less influenced by perceptions of societal gender role norms than individuals who are cisgender and heterosexual, and LGB transgender individuals will be less influenced compared to LGB cisgender individuals. Future research should therefore extend our current findings in samples that specifically explore these questions among both gender binary and non-binary members of the TGNC communities.

Similarly, the current analysis did not focus on other minority groups that might show similar patterns of non-normative career interests, such as intersex people. While intersexuality is distinct from gender identity and sexual orientation, and intersex individuals may disproportionately identify as LGBT (T. Jones et al. 2016), they face similar threats of discrimination at school and at home, lack of representation and healthcare inequalities, especially surrounding gender-affirming surgeries (Simons et al. 2020; Zeeman et al. 2018). While LGBTQ+ research often does not include intersex people (Simons et al. 2020), intersex people may be perceived as disrupting the sex binary (Preves 2000), and might therefore have a similar impetus to resist gender- and sex-based norms. However, since research with intersex populations is currently scarce, it is not clear if intersex women and men would show similar patterns in gender role norms and career interests to non-intersex men and women.

More broadly, our study focused on assessing career interest, rather than assessing actual career choices over time. Career interest is a meaningful outcome and allows us to assess degree of interest in several careers at one timepoint rather than modelling a binary choice of career. Previous research suggests that when direct longitudinal evidence of realized career choice is unavailable, vocational interests are still meaningful because they represent relatively enduring preferences that guide self-selection into majors, training routes and work environments (Holland 1997; Lent et al. 1994; Low et al. 2005; Hanna and Rounds 2020; Nye et al. 2017). However, it is possible that LGB and straight people might differ in the extent to which career interest translates into actual choice down the line, if one group is more or less likely to make choices based on their own interests rather than other factors. Future research should therefore assess the trajectory of actual career choices and their relationship with norm perceptions in a longitudinal design.

4.4 | Conclusion and Implications

The current study strongly suggests that LGB people tend to hold significantly less gender-normative career interests compared to heterosexual students, and this effect is robust across LGB participants from diverse backgrounds. Importantly, novel findings demonstrate that, compared to heterosexual men and women, LGB women and men both hold more non-traditional norms themselves and reject societal gender role norms in their career interests. As such, our findings have important implications for career development among LGB women and men. LGB students face distinctive obstacles to success at work, impacting their representation in the workforce broadly, and particularly in participating in lucrative careers (Freeman 2020).

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The current findings suggest that rejection of traditional gender roles is an important aspect of the formation of career self-concepts in young LGB individuals. In some sense, societal gender role norms simply do not seem very personally relevant for career aspirations of the LGB individuals in our sample. However, as LGB individuals are more likely to express interest in non-normative careers, they would also become more likely to face discrimination with regards to gender norm violations at the workplace (Moss-Racusin 2014; Parnell et al. 2012; Ueno et al. 2018). Our findings thus also suggest that sensitive career counselling and support programs for young LGB members would need to reconcile the desire to reject traditional gender roles with the possible backlash in the workplace. In sum, with novel evidence from a large and diverse sample, the current study strongly suggests that it is necessary to understand intersections of gender and sexuality when explaining gendered career aspirations.

Author Contributions

The first 10 authors and the last author contributed to study design. K. Block, M. I. T. Olsson, S. Van Grootel and research assistants S. Wee and M. Sun oversaw data collection and prepared data for analysis. All authors collected data, worked on translations and checked questionnaires. K. Block originated this specific idea, led hypothesis development and spearheaded pre-registration of this particular project. Data analysis and preparation of the first draft of the manuscript was led by K. Block with substantial contribution of Jia Yue He. Joel Anderson contributed to the writing of the introduction and discussion. All authors provided feedback on the paper and approved the final manuscript.

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Ethics Statement

Ethical approval was obtained by each data collection site in accordance with the correct legal procedure of the given university of the data collection site. Participants completed informed consent before participation and no deception was involved. Extra steps are taken to avoid identifiability of data.

Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

Paper OSF page: https://osf.io/7pw6b

Hypotheses, data cleaning, and analyses for this specific project were pre-registered separately from the larger consortium data collection. The above link includes pre-registration, materials, and analysis code available for reviewers. Given the sensitive nature of sexual orientation in some countries, we decided not to share the full dataset with all demographics, as a combination of too many demographic factors might make people identifiable. We therefore share a reduced dataset on which others can verify results (which remain essentially the same, see also documented in supplementary materials).

This specific project was a sub-project of a large consortium data collection, which can be found here: https://osf.io/tp8jd

Endnotes

[1] Note that the current study focuses on sexual orientation as one prominent factor that intersects with gender roles. We do not include non-binary and other gender-diverse people in the present study as their relationship to binary gender norms is an additional broad topic that needs specific examination. Although this topic is not the focus of the current manuscript, we want to highlight that neither gender nor sex are truly binary concepts (Means and Morgenroth 2024; Morgenroth and Ryan 2021; Morgenroth et al. 2024). More research that embraces this diversity is needed.

[2] Terminology is a point of contention in the literature. LGBT, one of the oldest and most commonly used terms, is incorrect for us to use as it conflates sexuality and gender (because both heterosexual and LGB individuals can be either transgender [T] or cisgender). Some literature refers to 'sexual and gender minorities' (SGM) or 'sexual and gender diverse' (SGD) populations, but this is not yet common. When discussing past work and theory, this paper will use LGBTQ+ as an umbrella term unless another term is specified in the literature, as not all research includes all sub-groups of this community. Our own study primarily focuses on sexual orientation (rather than gender identity or variations to sex characteristics) and compares LGB individuals with heterosexual individuals. However, it is essential to consider that the LGBTQ+ community consists of many different subgroups differing in their sexuality and gender identity.

[3] Non-binary individuals may not internalize the widespread norms for binary women and men, and therefore could show an entirely different pattern of career interests, one not predicted by their perceptions of gender norms for binary individuals. In addition, our sample size is not big enough to run formal multilevel models with this population. However, our team is currently working on a separate paper on understanding gender roles among non-binary people in our data, as we believe the topic deserves careful consideration.

[4] As asexuality is widely misunderstood and was previously defined as abstinence from sexual activity, there were concerns that participants may have interpreted the term 'asexual' as abstinent or celibate in some countries (see Abbott 2001). Furthermore, we were unable to determine whether participants identified as asexual or aromantic, homoromantic, biromantic, heteroromantic, etc. Thus, asexual individuals cannot be clearly categorized as LGB or heterosexual without more detailed knowledge.

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[5] 'Other' was recoded as heterosexual when people entered something like '100% heterosexual'.

[6] In some cultures, for example, those with fully recognized third genders, the term 'non-binary' does not have the same meaning as in cultures who do not have such categories. The questionnaire was designed in 2017 and this was an unfortunate oversight. More current recommended practices for gender reporting are open-ended text boxes that allow people to self-identify (Cameron and Stinson 2019).

[7] When the interaction between sexual orientation and injunctive gender role norms was allowed to vary randomly by country as initially planned, the models yielded convergence errors, suggesting that we tried to fit an overly complex model to our data. Thus, as preregistered, we ran a model with the interaction as a fixed effect. Thus, we report these newer models without errors, although the original models with convergence errors showed the same significant results. However, model results are similar and can be compared in Tables S29 and S30 of the SI.

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