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Seeking equal opportunities and safe environments: research from a gender perspective

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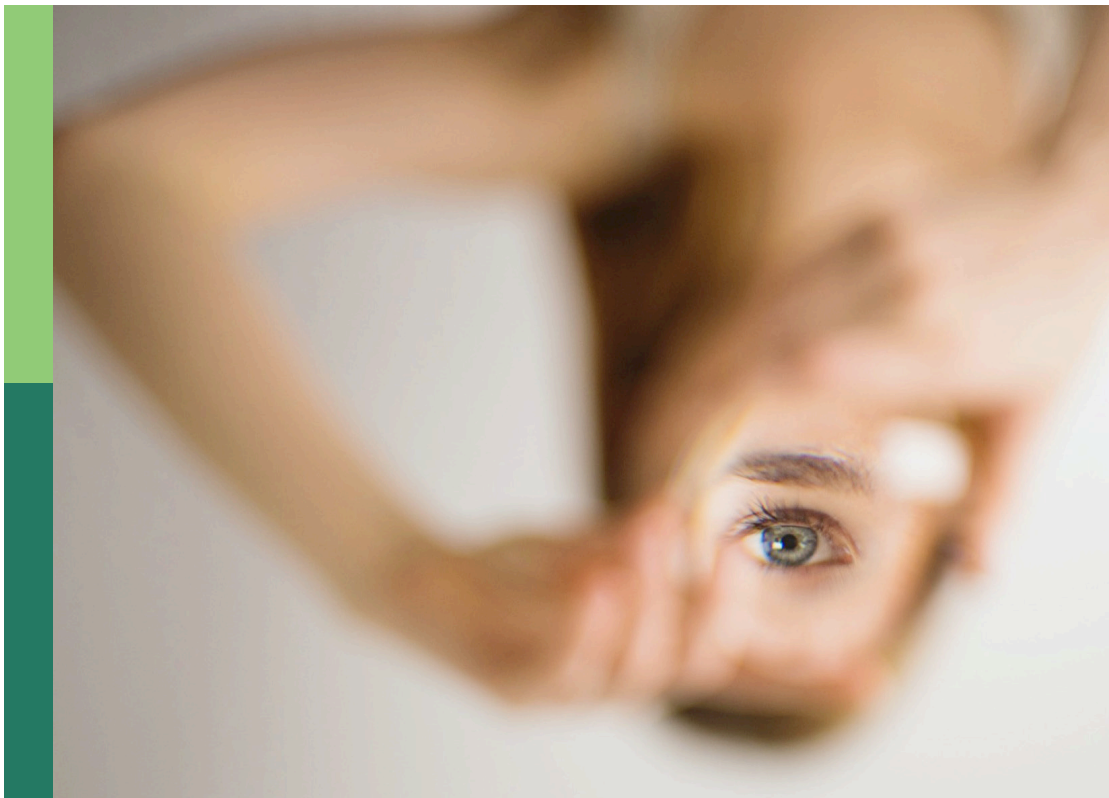

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Seeking equal opportunities and safe environments: research from a gender perspective

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Editorial: Seeking equal opportunities and safe environments: research from a gender perspective

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Editorial on the Research Topic
Seeking equal opportunities and safe environments: research from a gender perspective

The articles published in this Editorial collectively underscore key patterns in the study and prevention of gender-based violence and the pursuit of equal opportunities in society. Across various settings—academic institutions, workplaces, and family environments—these studies reveal that societal norms and institutional actions play crucial roles in either perpetuating or mitigating gender disparities and biases. There are some common and strong points:

1. **Dehumanization and gender norms**: research by Tanriverdi et al. highlights how nonconforming women experience mechanistic dehumanization, revealing subtle forms of marginalization in male-dominated environments. This underscores the importance of dismantling rigid gender expectations to foster inclusivity.
2. **Policy and institutional gaps**: studies by dos Santos Barbosa et al. and Hurtado-Reina et al. show how educational institutions and workplaces often lack policies addressing violence and representation, which can enable gender-based harassment or overlook female academic contributions. Both studies advocate for robust, zero-tolerance policies and greater visibility of women's work to achieve equity.
3. **Cultural and socioeconomic factors in violence**: Nwankpa et al. and Karamitanha et al. examine cultural beliefs and socioeconomic disparities, showing that gender biases within households and among partners contribute to violence and inequality. Their findings emphasize the need for targeted educational and economic interventions to transform attitudes about gender roles and empower women.
4. **Impact of gender-based violence**: the work of Athanasiades et al., Ganesan and Gopalakrishnan, and Chela-Alvarez et al. captures the psycho-emotional toll of harassment and abuse on women, emphasizing resilience and the normalization of harassment in precarious work environments. These studies highlight the need for comprehensive interventions that address workplace and academic settings to protect women's wellbeing.

5. **Promoting gender equity and inclusivity**: studies by Bae and Jeong, Wen et al., and Qin et al. highlight effective strategies to reduce gender bias and foster gender equity in STEM and other fields, such as brief video interventions and supportive university environments. These studies emphasize the importance of promoting educational opportunities and workplace equity to enhance women's self-perceived employability and reduce bias.

These findings collectively call for comprehensive policy reforms, educational programs, and cultural shifts to reduce gender-based violence and foster environments that value diversity and equality. They also highlight that the journey toward gender equity requires institutions to take proactive measures and implement targeted interventions to support marginalized and vulnerable groups in diverse social contexts.

The following is a brief summary of each of the articles published in this editorial, highlighting their key findings and proposals.

Tanriverdi et al.'s study examines how women who do not conform to gender expectations in tone of voice, occupation, and appearance may be subject to dehumanization. A between-groups factorial experiment was conducted in which participants evaluated a target woman with congruent or incongruent combinations of tone of voice, occupation, and appearance. Results showed that women with an incongruent tone of voice and occupation relative to their gender were more dehumanized, both mechanistically and animalistically. However, the interaction between tone of voice, type of occupation, and appearance was only significant for mechanistic dehumanization. This study reveals that women who deviate from gender norms in tone of voice and occupation face higher levels of mechanistic dehumanization, perceived as lacking warmth and traditional human qualities. These biases suggest that gender nonconformity leads to subtle marginalization, particularly in male-dominated settings, potentially impacting women's social and professional experiences.

The article from Royo et al. explores the limitations of traditional surveys in capturing the complexities of sex, gender, and sexual orientation. The authors argue that conventional binary categories inadequately reflect the diversity of identities, leading to the underrepresentation of marginalized groups. They propose an inclusive framework for survey design that incorporates a broader spectrum of gender identities and sexual orientations, aiming to improve data accuracy and inform policies that better address the needs of diverse populations.

dos Santos Barbosa et al., adopt a multi-level perspective to analyze factors contributing to violence against female students in university settings. Through in-depth interviews with 20 university students, both female victims and male aggressors, 41 analytical codes were identified, revealing three main categories: (1) Institutional Actions and Omissions: the lack of clear policies and institutional inaction in response to violence reports were found to foster an environment where such behaviors can proliferate. (2) Characteristics of Aggressors: some aggressors exhibited a predisposition toward violence, a sense of efficacy in their actions, and were influenced by their peer groups, which reinforced aggressive behaviors. (3) Dichotomy in Perception of Victims: women were viewed along a spectrum from vulnerable to strong, affecting their willingness to report incidents and seek support. The authors conclude that it is essential for universities to implement effective policies, promote a zero-tolerance culture toward gender-based violence, provide adequate support for victims, and establish reeducation programs for aggressors.

Nwankpa et al., investigates the attitudes of male and female household heads toward gender equity concerning the rights and privileges of young individuals in Nigeria. Utilizing a cross-sectional quantitative approach, data were collected from 605 household heads across six local government areas in Ebonyi State. The findings reveal that 46.32% of male and 62.81% of female heads disagreed with the statement, "a good woman never questions her husband's opinions, even if she is not sure she agrees with them." Additionally, male heads with the highest wealth index were 10.46 times more likely to have a positive attitude toward the rights and privileges of young girls compared to female heads. The study underscores the necessity of engaging household heads in interventions aimed at transforming beliefs about gender equity to enhance the health and wellbeing of young people.

Ganesan and Gopalakrishnan's study explores the lived experiences of teenage girls and boys who endured sexual abuse during the COVID-19 pandemic in Chennai, India. Utilizing interpretative phenomenological analysis, the researchers conducted interviews to delve into the spatial, corporeal, and temporal aspects of these experiences. The findings highlight the significant role of material and cultural contexts in the occurrence of sexual abuse and identify gaps in existing intervention mechanisms. The study advocates for enhanced prevention strategies that consider the material world and align with Sustainable Development Goals 5 and 16, aiming to promote justice, peaceful societies, and gender equality.

Athanasiades et al. investigate the prevalence and impact of various sexually harassing behaviors among university students, focusing on the influence of gender and psychological resilience. The research involved 2,134 students (70.5% women), both undergraduates (81%) and postgraduates (19%), who completed an online questionnaire assessing experiences of sexual harassment, its consequences, and levels of resilience. Findings indicate that offensive sexual comments, inappropriate remarks about one's body or sex life, and obscene gestures were the most common forms of harassment, predominantly affecting female students. Additionally, women reported more pronounced psycho-emotional and academic consequences as a result of such experiences. The study underscores the need for targeted interventions to address sexual harassment in academic settings, considering the differential impacts based on gender and individual resilience levels.

Aran-Ramspott et al. explore gendered perceptions of social media among Spanish adolescents through 14 focus groups (N = 76). The study identifies distinct gender patterns: young women linked Instagram and TikTok with social pressures on body image and fashion, while young men showed less awareness of these influences. Both genders valued social media for fostering belonging, though women noted self-esteem pressures from idealized images, while men associated it with confidence and enjoyment. Both groups expressed concern about these pressures' impact on women's body image. Findings highlight social media's role in reinforcing self-image

norms and the need for edu-communicative initiatives on gender inequalities.

The study by Hurtado-Reina et al. examines gender disparities in academic roles within Spain's Primary Education Degree programs. Using a qualitative-comparative analysis of 794 course syllabi, the study evaluates female representation in course leadership, coordination, and bibliographic resources. Findings reveal a predominantly male-centered bibliographic landscape, despite significant female participation in course direction. The research highlights a clear androcentric bias, where women's academic contributions are undervalued. This work underscores the need for systemic changes to ensure gender balance in educational materials and increased visibility of women's scholarly work, advocating for institutional policies that address gender equity in academia.

Estévez et al. investigate the unique characteristics of gambling disorder in women, as the onset age has recently equalized between genders. Using three discussion groups with 18 women aged 30–68 and an inductive coding process via Atlas.Ti 22.0, the research explores gambling motives, preferences, and related pathologies. Findings reveal that childhood abuse, family influence, and maladaptive emotion management are key factors in gambling initiation. Women often choose less visible games due to social stigma. High comorbidity with disorders like depression, anxiety, and substance use is noted. The study calls for more research to address women-specific factors in gambling disorder.

Qin et al. examine the relationship between years of education and subjective wellbeing among Chinese women, using data from the 2021 China General Social Survey. Employing an ordered Logit model and a coupling coordination model, the study finds that more years of education positively impact subjective wellbeing, with stronger effects in economically developed coastal regions. The research reveals that education enhances wellbeing through improved economic status, health, social and personal cognition, and environmental awareness. This study highlights regional disparities in education's impact, suggesting that policy adaptations are essential to address these differences and optimize women's access to educational benefits.

Chela-Alvarez et al. studied workplace bullying and sexual harassment among hotel housekeepers, using a mixed-methods approach including interviews, focus groups, and a cross-sectional survey ($n = 1{,}043$). Participants tended to normalize lower-severity harassment, perceiving it as intrinsic to their work environment. Qualitative findings reveal reluctance to label such experiences as harassment, especially in less severe cases. Quantitative results indicate a high prevalence of workplace bullying, significantly associated with increased stress, lower job and salary satisfaction, and diminished social support. These findings underscore the importance of interventions to address the normalization of harassment and highlight vulnerabilities in gendered labor within precarious roles.

Etxebarria-Perez-de-Nanclares et al. examined the unsafe school environment for trans individuals, highlighting issues such as discrimination, bullying, and a lack of teacher training. Using narrative research and interviews, they found that binary societal norms and insufficient gender identity content in education negatively impact trans students' experiences. Early transitions are shown to improve socioemotional wellbeing, but access to information is crucial for this. An important conclusion of the study is that it is the school that must undergo a transition to adequately address the needs of transgender children and youth.

Karamitanha et al. investigated intimate partner violence (IPV) against women in Zanjan city, Iran, revealing that 79.7% of participants experienced at least one form of IPV, with psychological violence being the most prevalent (76.6%) and economic violence the least (12%). The study also identified higher violence rates among women with lower household incomes, younger age, and husbands in self-employment. These findings underscore the need for targeted interventions and improved health policies.

Bae and Jeong conducted an online experiment using Video Interventions for Diversity in STEM (VIDS) to assess the effectiveness of shortened video interventions in reducing gender bias among Korean adults. Participants who watched gender bias videos showed significantly lower bias compared to the control group, with logical thinking enhancing the emotional immersion's effect on bias reduction. The study highlights the potential of brief video-based interventions to foster perspective-taking and decrease gender bias in society.

Xue and Xu investigated gender and geographic diversity within editorial boards of education journals, revealing that while gender diversity is relatively balanced (58.62% female editors-in-chief), geographic disparities are pronounced, with 93.52% of editors from developed countries. No correlation was found between impact factor and female representation. The study emphasizes the need for improved geographic diversity to ensure equitable representation from developing countries.

Wen et al. explored how curriculum experience, extracurricular activities, and faculty support influence the self-perceived employability (SPE) of female STEM students in China. The study, using data from 59,066 students, found that these factors positively impact SPE, though women still report lower SPE than men across all university tiers. The research highlights that university stratification affects female students' experiences and career expectations, with men benefiting more from college activities in most areas except academics.

Author contributions

AG-C: Conceptualization, Investigation, Project administration, Supervision, Visualization, Writing – original draft, Writing – review & editing. CP-F: Supervision, Writing – original draft, Writing – review & editing. PG-L: Supervision, Writing – original draft, Writing – review & editing. RD: Writing – original draft, Writing – review & editing. LV-G: Writing – original draft, Writing – review & editing.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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University students' experiences of sexual harassment: the role of gender and psychological resilience

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This study aimed to investigate university students' experiences of different types of sexually harassing behaviors, within academia, as well as the role of gender and psychological resilience regarding their victimization and its consequences. Overall, 2,134 students (70.5% women), both undergraduates (81%) and postgraduates (19%), completed a self-reported online questionnaire regarding the variables involved (sexual harassment, consequences, and resilience). According to the results, the most prevailing types of sexually harassing behaviors, which were experienced mainly by women students, included offensive sexual comments/jokes/stories, inappropriate comments about one's body/appearance/sex life, as well as obscene ways of staring, obscene gestures, and/or exposure of body parts causing embarrassment. Accordingly, the perceived psycho-emotional and academic consequences of sexual harassment were more pronounced in the case of women. Furthermore, psychological resilience was negatively associated with gender, making women with low resilience more vulnerable to experiences of sexual harassment and more affected by its consequences. This study highlights important aspects of this gender-based aggressive behavior in academia and emphasizes the necessity for the implementation of appropriate policies and interventions in higher education institutions against sexual harassment.

KEYWORDS

sexual harassment, perceived consequences, gender, resilience, academia

1. Introduction

The phenomenon of sexual harassment in academia is a complex and multidimensional issue that concerns all members of the academic community and raises significant challenges, particularly in terms of how to address it. According to the European Directive 2002/73/EC (also called the EU Gender Directive), the term sexual harassment refers to "any form of unwanted verbal, non-verbal, or physical conduct of a sexual nature, which has the purpose or results in violating the dignity of an individual, in particular when it creates a threatening, hostile, degrading, humiliating, or offensive environment" (Hoel and Vartia, 2018, p. 13). The abovementioned behaviors may occur either in the physical space (in a variety of social contexts) and/or in cyberspace; it appears to constitute harassment both for those who directly experience them as well as for those who perceive them indirectly (as witnesses) in their environment (Johnson et al., 2018; Kasdagli and Mourtzaki, 2020).

It is well known that sexual harassment affects mostly women—especially young working women, students, and minorities—at a much higher rate than men, with serious negative implications on their overall functioning, physical and mental health, and work or academic performance (European Union Agency for Fundamental Rights, 2014; Hoel and Vartia, 2018; Swedish Research Council, 2018). Several studies have confirmed the high epidemiological incidence of sexual harassment in university and research organizations, which are characterized by precarious working conditions and hierarchical relations between employees and students, along with a culture that normalizes gender-based violence and silences the phenomenon (Johnson et al., 2018; Bondestam and Lundqvist, 2020). Rates of sexual harassment against women students in European universities vary widely, ranging, on average, from 20 to 50%, with women students in the fields of medicine and engineering suffering more than the rest of the population (Swedish Research Council, 2018; Bondestam and Lundqvist, 2020). Studies carried out in American universities also report victimization rates of up to 48% (Cantor et al., 2015).

A recent large-scale study in Europe about gender-based violence and sexual harassment in research-performing institutions, in nine European countries (https://unisafe-gbv.eu/), found that gender-based violence is relatively uniform across countries and unrelated to the work or study environment/context (Humbert et al., 2022). In addition, respondents identifying as women were more at risk of sexual violence and harassment compared to men, who were more at risk of physical violence. Finally, the same study revealed that disclosing any form of gender-based violence is systematically associated with feeling less safe, feeling unwell, and with lower work productivity or study performance, especially for women and non-binary people (Humbert et al., 2022).

Regarding consequences of sexual violence and harassment, studies mention that university students, especially women, experience a serious impact on their wellbeing as they become vulnerable to psychological distress, substance abuse problems, depression, anger, low life satisfaction, and physical illnesses (Rospenda et al., 2000; Buchanan et al., 2009; Cantor et al., 2015; McGinley et al., 2016; Wolff et al., 2017; Jirek and Saunders, 2018). Furthermore, sexually abused students report limited academic engagement, low academic achievement, as well as a generalized sense of insecurity within the university environment (Cipriano et al., 2022).

In addition to gender, another factor associated with abusive experiences is psychological resilience. Resilience is defined as the individual's ability for positive adjustment despite the existence of difficult and adverse circumstances and despite exposure to risk factors (Masten, 2001; Luthar, 2006). Resilience in early adulthood tends to be considered a crystallized psycho-emotional trait (Connor and Davidson, 2003), which is likely to act, in general, as a protective factor against risky behaviors (Scales and Leffert, 2004; Silbereisen and Lerner, 2007; Hinduja and Patchin, 2017). In other words, individuals who feel that they can successfully overcome new, unexpected, and/or difficult situations (high resilience) are considered less vulnerable and are less likely to become victims of bullying and/or harassment (Moldovan and Macarie, 2019; Thambo et al., 2019). However, since recent findings suggest that students' psychological resilience does not seem to predict their sexual harassment (Jenkins et al., 2021), more research is needed to better determine this relationship and whether resilience is a protective factor against victimization or not for women and men students.

Nevertheless, the issue of sexual harassment in academia, especially in countries and universities of South Europe, is still significantly under-investigated. It seems that more research is needed to better understand the nature and extent of the phenomenon as well as the factors that contribute to its perpetuation, which should be taken into account in the development of appropriate interventions (Grigoriou, 2010; Kambouri, 2021).

This study aimed to investigate university students' experiences of different types of sexually harassing behaviors, within academia, as well as the role of gender and psychological resilience regarding their victimization and its consequences. The study is part of a wider research project on the issue of gender-based violence in higher education institutions, conducted under the auspices of Aristotle University's Gender Equality Committee and the Center for Social Research and Decision-Making. The research took place in a large public university in a southern European country (Greece), where there is still no institutionalized provision for the prevention and response to such incidents against students and staff. More particularly, the hypotheses formulated are as follows:

Hypothesis 1: Reported experiences of different types of sexually harassing behaviors will differ based on gender and will be of a greater extent for women (Swedish Research Council, 2018; Bondestam and Lundqvist, 2020).

Hypothesis 2: Perceived consequences of sexually harassing behaviors will be worse for women students compared to men (Rospenda et al., 2000; Buchanan et al., 2009; Wolff et al., 2017; Jirek and Saunders, 2018).

Hypothesis 3: Psychological resilience will be associated both with the reported experiences of different types of sexual harassment (3a) and the perceived consequences of harassment (3b) although in a different way between genders (Moldovan and Macarie, 2019; Thambo et al., 2019).

2. Method

2.1. Procedure

After securing the study approval from the University's Research Ethics Committee (REC), data were collected from November 2021 to February 2022. The participants completed a self-reported online questionnaire anonymously. The questionnaire was uploaded on a web-based form via LimeSurvey, accompanied by a cover letter clarifying all the necessary information about the study. Without being able to locate the students' IP addresses, the link of the questionnaire was sent to all students' academic emails twice (in November 2021 and January 2022) until the necessary number of completed questionnaires was collected. As required by the study's ethics protocol, data collection followed all the principles and guidelines of the REC.

2.2. Sample

The sample comprised 2,134 university students (81% undergraduates). Regarding gender, 70.5% of the students identified as women, 27.0% identified as men, while 2.5% either did not identify their gender or identified as "other" in relation to gender identity. Due to the limited numerical representation, this last category of students' gender was included only in the descriptive statistics. Students' ages ranged between 18 and over 40 years old (distribution: 78.5% 18–24; 11.0% 25–29; 6.4% 29–39; and 4.1% <40). In terms of year of study, students were classified as follows: 30.3% were freshmen, 21.4% were sophomores, 16.4% were juniors, 14.7% were seniors, and 17.2% were in their fifth year or higher. Finally, students came from the following fields of study: humanities (25.3%), social sciences (20.5%), natural/physical sciences (29.8%), technological sciences (13.5%), and medical/health sciences (10.9%).

2.3. Instrument

The instrument of the study was an online questionnaire, which included initial demographic questions and the following two main parts:

(a) *Sexual harassment scale*. For the investigation of the students' experiences of sexually harassing behaviors and their perceived consequences, a part of a larger questionnaire, created for the same purpose by the Association of American Universities, entitled "Campus Climate Survey on Sexual Assault and Misconduct" (Cantor et al., 2020), was applied. After securing permission from the authors, the questionnaire was translated into Greek and adapted to the needs of this study. This part of the questionnaire included seven questions concerning different types of sexual harassment (see, Table 1), which were answered dichotomously (yes/no), as well as four questions regarding the perceived consequences of sexual harassment on academic achievement, academic involvement, academic environment, and physical and mental health (i.e., "to what extent the experience of harassment affected your academic achievement?" or "to what extent the experience of harassment created a hostile or offensive academic environment?"). These questions were answered on a 5-point Likert scale (from 1 = *Not at all* to 5 = *Very much*). The internal consistency coefficients Cronbach alpha for the two parts were 0.77 and 0.84, respectively.

(b) *Resilience scale*. Students' psychological resilience was measured through the short Greek version of the Connor-Davidson Resilience Scale (CD-RISC-10) (Connor and Davidson, 2003), following the authors' permission to use the scale. Since the multifactorial structure of the original scale (25 items) is often considered unstable, the short version was chosen whose unifactorial structure seems to have good psychometric properties ($\alpha = 0.85$) in a sample of university students (Campbell-Sills and Stein, 2007). Thus, in the short version of the CD-RISC, resilience is measured through 10 representative statements/proposals (e.g., "I am able to adapt to change" or "I can handle unpleasant feelings"), which reflect individuals' ability to tolerate experiences such as change, personal problems, illness, pressure, failure, and painful feelings. The answers are given on a 5-point Likert scale (from 0 = *Not at all true* to 4 = *Almost always true*). Testing the psychometric properties of the scale, confirmatory factor analysis showed a high fit of the measurement model [$\chi^2 = 126.609$, $df = 35$, $p < 0.001$; CFI = 0.991; TLI = 0.988; GFI = 0.995; RMSEA = 0.032; 90% CI of RMSEA = (0.029; 0.042); SRMR = 0.037; NFI = 0.987], while reliability analysis using Cronbach's Alpha (α) and McDonald's omega (ω) also indicated high internal consistency, $\alpha = 0.836$ and $\omega = 0.839$, respectively.

3. Results

The statistical analyses included the following variables: gender, students' experiences of different types of sexually harassing behaviors, students' perceived consequences of sexual harassment, and resilience. Descriptive statistics, bivariate tests, such as *t*-test for independent samples, chi-square test, correlations analysis, and multivariate modeling, such as analysis of covariates (ANCOVA) and binary logistic regression, were carried out to explore the association among the variables under study.

3.1. Descriptive statistics and bivariate tests

Regarding the different types of sexual harassment, Table 1 shows that, among the total sample of students, the most frequent responses were (a) offensive comments about one's body, appearance, or sex life (30.46%), (b) offensive sexual comments or sexual jokes or sexual stories (22.36%), and (c) obscene staring, obscene gestures, or exposure of body parts (20.42%). The frequencies for women were in all cases higher than the corresponding frequencies for men and chi-square tests showed that the differences between genders were all statistically significant ($p < 0.001$). Among those who reported sexual harassment, rates among women (compared to men) were particularly high, exceeding 80% for the following types of harassing behaviors: (a) obscene staring, obscene gestures, or exposure of body parts, (b) unwanted insistence for a date, for drinks, or for sex, and (c) unwanted kissing or touching.

Table 2 presents the mean and standard deviation for the perceived negative consequences of sexual harassment for the two genders. The significance of the differences between the two genders was tested through *t*-tests for independent samples. According to the results, women students perceived that sexually harassing experiences had affected their academic performance, their participation in academic life, the creation of an intimidating/hostile academic environment, and their physical or mental health to a greater extent compared to men.

As far as resilience, men students (*Mean* = 3.55, *SD* = 0.656) expressed a statistically higher perceived level of resilience compared to their women peers (*Mean* = 3.32, *SD* = 0.649, *t* = 6.938, *df* = 2,077, $p < 0.001$).

In addition, a correlation analysis between perceived negative consequences of sexual harassment and resilience for both genders

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TABLE 1 Descriptive statistics-different types of sexual harassment between genders.

During your studies so far, has there been a time when a member of the student community or any other person working in the university...		Women		Men		"Other"		Total	
		N	%	N	%	N	%	N	%
D1	...made offensive sexual comments or sexual jokes or told sexual stories that offended you?	272	76.40	66	18.54	18	5.06	356	22.36
D2	...made inappropriate or offensive comments about your or someone else's body, appearance, or sex life?	357	73.61	105	21.65	23	4.74	485	30.46
D3	...made rude or vulgar sexual comments to you or tried to get you to talk about sexual matters when you didn't want to?	101	71.63	30	21.28	10	7.09	141	8.86
D4	...insisted on asking you out on a date, for drinks or sex, even though you had already refused?	112	87.50	13	10.16	3	2.34	128	8.04
D5	...used the internet or social media to send or distribute sexually offensive comments/jokes/stories/photos/videos to or about you?	43	67.19	18	28.13	3	4.69	64	4.02
D6	...stared at you in an obscene way (e.g., at parts of your body) or made obscene gestures (e.g., whistling, winking) or exposed parts of his/her body, causing you embarrassment?	290	89.23	18	5.54	17	5.23	325	20.42
D7	...kissed or caressed/touched you against your will?	78	83.87	12	12.90	3	3.23	93	5.84
	Total number of references							**1.592**	**100.0**

TABLE 2 Descriptive statistics for students' perceived consequences of sexual harassment between genders, and *T*-tests for the differences between genders.

Perceived negative consequences	Gender	*N*	Mean	SD	*T*-test		
					t	*df*	Sig.
To academic performance	Women	516	1.66	0.968	−3.297	636	<0.001
	Men	122	1.37	0.835			
To participation in academic life	Women	516	1.74	1.080	−2.685	636	<0.01
	Men	122	1.48	0.964			
To the academic environment	Women	516	2.20	1.157	−3.915	636	<0.001
	Men	122	1.74	1.205			
To physical/mental health	Women	516	2.14	1.162	−5.235	636	<0.001
	Men	122	1.58	1.027			

5-point Likert scale, SD, Standard Deviation.

was performed. Specifically, the results showed that in the case of men students, there were negative correlations between resilience and all perceived consequences of harassment, that is, in relation to academic performance, participation in academic life, the academic environment, and physical/mental health (from $r = -0.188$, $p < 0.05$ to $r = -0.344$, $p < 0.01$). In the case of women students, however, there was a negative correlation only between resilience, on the one hand, and the way they perceived the academic environment as intimidating or hostile ($r = -0.137$, $p < 0.01$) as well as their physical/mental health ($r = -0.188$, $p < 0.01$), on the other hand.

3.2. Multivariate models

To investigate the association of students' gender with their experiences of different types of sexually harassing behaviors, considering resilience as a covariate variable, a binary logistic regression (BLR) (Agresti, 2007) was implemented. In the BLR, the $\log_e$[odds] of declaring an experience of a type of sexual harassment vs. the $\log_e$[odds] of not declaring it is modeled as a function of gender and resilience. Odds express the relative probability of the two possible responses. The results are depicted in Table 3, where the coefficients B's represent the magnitude of

the effects, and the Wald statistic tests the null hypothesis (Ho) that B = 0. Larger absolute values of B denote greater effects. B's for resilience were negative in all cases, that is, the lower the resilience, the greater the relative possibility to report the particular type of sexual harassment. The interpretation is provided by Exp (B). This suggests that the estimated odds for declaring a type of sexual harassment is multiplied by the Exp (B), as resilience decreases by one unit. The findings were theoretically anticipated and interpretable.

Regarding gender, the group of comparison was men, and B represents the increase in effect with respect to women. For example, in the first type of sexual harassment (D1) for women, the effect increases by 0.480 compared to men, and for women, the estimated odds of this type of sexual harassment are increased, multiplied by 1.616. Note that interaction terms between gender and resilience were not statistically significant.

To investigate the association between students' gender and their perceived consequences of sexual harassment, an analysis of variance with resilience as covariate (ANCOVA) was implemented. The results are shown in Table 4, wherein the coefficients Bs represent the magnitude of the effects and the *T*-tests account for rejecting the null hypothesis (Ho) that B = 0. Larger absolute values of B denote greater effects. All B's for resilience were negative, that is, the lower the resilience, the greater the perceived consequences of sexual harassment.

Regarding gender, the group of comparison was men, and B represents the increase in effect with respect to women. For example, in the perceived consequence of reduced academic performance, an increase of 0.257 is observed for women students compared with men students. Note that interaction terms between gender and resilience were not statistically significant.

4. Discussion

The present study aimed to investigate students' experiences of different types of sexually harassing behaviors, within academia, as well as the role of gender and psychological resilience regarding their harassment and its consequences.

According to the university students' self-reports, the most prevailing types of sexually harassing behaviors in academia included offensive sexual comments, jokes, or stories, inappropriate or offensive comments about one's body, appearance, or sex life, as well as the obscene way of staring (e.g., at parts of your body), the obscene gestures (e.g., whistling and winking), or the exposure of one's body parts that causes embarrassment. In all cases, types of sexually harassing behaviors were primarily manifested against women students, with reporting rates exceeding 70% (among those students who reported incidents of sexual harassment). This finding supports Hypothesis 1 as well as recent related studies that reveal mainly women's sexual victimization in academia (Swedish Research Council, 2018; Bondestam and Lundqvist, 2020; Humbert et al., 2022). These percentages may be attributed both to the absence of long-term measures to prevent and address sexual harassment within the academic context, as well as to a broader social culture that encourages sexist attitudes and silences the phenomenon (Alldred and Phipps, 2018; Kambouri, 2021). It should be emphasized that the abovementioned harassing behaviors are examples of gender-based violence, as they affect women disproportionately compared to men, constituting a mechanism of sexist discrimination against women (Vaiou et al., 2021; Humbert et al., 2022).

Accordingly, the study showed that the perceived consequences of the different types of sexual harassment seemed to be significantly more pronounced in the case of women students. This finding supports Hypothesis 2 and is in parallel with related international studies (Rospenda et al., 2000; Cantor et al., 2015; McGinley et al., 2016; Wolff et al., 2017; Jirek and Saunders, 2018; Cipriano et al., 2022). More particularly, the effects of the phenomenon seem to impact primarily the women students' levels of physical and mental health, their academic performance, as well as their involvement in academic life, creating an overall intimidating and offensive academic environment.

Furthermore, the findings showed that the students' perceived level of resilience was associated negatively with their reported experiences of sexual harassment. To the extent that women students reported lower levels of resilience than men, as well as more experiences of sexual harassment, this may suggest a vulnerability toward victimization, as has been reported elsewhere (Touloupis and Athanasiades, 2022). However, from the analysis of covariates, it was shown that independent of the resilience effect, being a woman was associated with further reported experiences of sexually harassing behaviors.

It is worth mentioning that the negative association between resilience and harassment against women was supported not for all but only for specific types of sexual harassment, such as offensive sexual comments/jokes/stories, inappropriate/offensive comments about one's body/appearance/sex life, and being kissed or caressed/touched against one's will (see D1, D2, and D7 in Tables 1, 4). Therefore, the above finding confirms partially Hypothesis 3a, as it was expected that the perceived level of resilience will be negatively related to all types of sexual harassment against women. This is likely since the above types of sexual harassment (e.g., offensive sexual comments or jokes, inappropriate or offensive comments about one's body or appearance, and being touched unwillingly) are among the most common in the academic environment of the participants. Undoubtedly, due to the scarcity of related findings regarding all these different types of sexually harassing behaviors included in this study, future studies need to further clarify whether the negative interaction between resilience and sexual harassment against women concerns other types of harassing behaviors as well. Overall, the above findings reflect similar studies, which have reported that resilience is acting as a protective filter against sexual harassment (Moldovan and Macarie, 2019; Thambo et al., 2019). However, as previously mentioned, this study adds empirical evidence that the female gender *per se* is a predictive factor for experiencing sexual harassment.

Similarly, it was found that the students' perceived level of resilience seemed to be negatively associated with their perceived consequences of sexual harassment, while an effect of gender is present. Women perceived negative consequences of sexual harassment, especially in their academic environment as well as in their physical and mental health, were more intense compared to men. This finding supports Hypothesis 3b. Resilience, which theoretically has the potential to buffer the effect

TABLE 3 Results from a logistic regression applied to declared experiences of different types of sexual harassment, as a function of gender and resilience.

Dependent variables (different types of sexual harassment)	Predictors	B	S.E.	Wald	Sig.	Exp(B)	95% C.I. for EXP(B)	
							Lower	Upper
D1	*Gender*	0.480	0.148	10.474	0.001	1.616	1.209	2.162
	Resilience	−0.258	0.091	7.960	0.005	0.773	0.646	0.924
D2	*Gender*	0.279	0.125	4.965	0.026	1.322	1.034	1.689
	Resilience	−0.259	0.081	10.229	0.001	0.771	0.658	0.904
D3	*Gender*	0.228	0.216	1.115	0.291	1.256	0.823	1.919
	Resilience	−0.195	0.138	2.013	0.156	0.823	0.628	1.077
D4	*Gender*	1.195	0.299	15.992	0.000	3.302	1.839	5.931
	Resilience	−0.255	0.142	3.238	0.072	0.775	0.587	1.023
D5	*Gender*	−0.146	0.288	0.256	0.613	0.864	0.491	1.521
	Resilience	−0.250	0.197	1.616	0.204	0.779	0.530	1.145
D6	*Gender*	1.976	0.249	62.931	0.000	7.211	4.426	11.748
	Resilience	−0.130	0.097	1.787	0.181	0.878	0.726	1.062
D7	*Gender*	0.849	0.316	7.217	0.007	2.337	1.258	4.342
	Resilience	−0.461	0.164	7.910	0.005	0.630	0.457	0.869

The regression coefficient B, standard deviation (B), Wald Test value, significance (sig), Exp(B) and the 95% confidence intervals of Exp(B). For gender, the group of comparison is men.

TABLE 4 Results of ANCOVA of students' perceived consequences of sexual harassment, with gender as independent variable and resilience as covariate.

Dependent variables (perceived negative consequences of sexual harassment)	Independent variables	B	Std. Error	*t*	Sig.	95% Confidence Interval		Partial n^2	Observed Power
						Lower	Upper		
To academic performance	Gender (Women)	0.257	0.095	2.69	0.007	0.070	0.444	0.011	0.767
	Gender (Men)	0[a]							
	Resilience	−0.136	0.055	−2.48	0.013	−0.244	−0.029	0.010	0.699
To participation in academic life	Gender (Women)	0.234	0.107	2.19	0.029	0.024	0.444	0.007	0.588
	Gender (Men)	0[a]							
	Resilience	−0.153	0.062	−2.49	0.013	−0.274	−0.032	0.010	0.700
To the academic environment	Gender (Women)	0.400	0.117	3.42	0.001	0.171	0.630	0.018	0.928
	Gender (Men)	0[a]							
	Resilience	−0.279	0.067	−4.14	0.000	−0.411	−0.147	0.026	0.985
To physical/mental health	Gender (Women)	0.478	0.113	4.24	0.000	0.256	0.699	0.027	0.988
	Gender (Men)	0[a]							
	Resilience	−0.364	0.065	−5.60	0.000	−0.491	−0.236	0.047	1.000

[a]Group of comparison.

of students' experience of sexual harassment on their psycho-emotional state and their involvement in academic life and duties (Moldovan and Macarie, 2019; Thambo et al., 2019), appeared lower for women, and this could partially explain why women reported more intense consequences of sexual harassment than men. Nevertheless, independent of resilience, female gender *per*

se is a predictive factor for high perceived consequences of sexual harassment.

Undoubtedly, the above findings should be interpreted cautiously due to specific limitations. More particularly, results were based on a convenient sample, while the rates of different types of sexual harassment reflect the students' responses and not the actual cases of harassment. The conduction of the study immediately after a long period of social isolation and confinement, due to the restrictive measures of the COVID-19 pandemic, may have influenced the participants' responses, regarding both sexual harassment and resilience. For example, because of distance education, a portion of the sample had not been able to fully experience student life within the university campus. In addition, further research could focus exclusively on the student community or on specific minority groups of students (i.e., women students from specific faculties, LGBTQ+ students, and students with special educational needs and disabilities), using a qualitative methodology, which would enhance the above findings, highlighting other qualitative parameters of this issue. Furthermore, besides gender and resilience, other risk factors of sexual victimization, such as stress, anxiety, depression, and sense of belonging, could be explored.

Nevertheless, the results shed light on important aspects of the phenomenon, providing a baseline for the implementation of appropriate policies and interventions in academic institutions against sexual violence and harassment. Measures that are specifically targeted to the student population (as well as to all members of the academic community) to overturn a culture of tolerance toward gender-based violence and harassment are considered important. Such measures include, for example, training seminars or information and awareness-raising campaigns for women and men on gender relations, gender equality, and acceptance of diversity. At the same time, the actions could aim at enhancing students' resilience as well as their level of wellbeing and connectedness to the wider academic community. In accordance with the relevant literature (Johnson et al., 2018; Bondestam and Lundqvist, 2020), it is recommended that academic institutions organize the above initiatives at the following levels: (a) at the policy level, by adopting firm and transparent measures against gender-based violence; (b) at the level of awareness-raising and sensitization of the academic community, aiming at an inclusive environment that honors and respects equality and diversity; (c) at the level of managing individual cases, through the establishment of relevant bodies and procedures; and (d) at the level of supporting mechanisms for the victims, independently of formal complaints.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Ethics statement

The studies involving human participants were reviewed and approved by Research Ethics Committee of the Aristotle University of Thessaloniki (protocol number 148172/2021). The patients/participants provided their written informed consent to participate in this study.

Author contributions

CA and HC: conceptualization, investigation, resources, and funding acquisition. CA, TT, and DS: methodology, validation, data curation, writing—original draft preparation, writing—review and editing, and visualization. DS: software. CA and DS: formal analysis. CA: supervision and project administration. All authors have read and agreed to the published version of the manuscript.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Publisher's note

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Exploring the psychosocial characteristics of women with gambling disorder through a qualitative study

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Introduction: Gambling disorder is a behavioral addiction that has been primarily male, but in the last few years, the age of onset has been equated between the sexes. The profile of female gamblers could be different from that of men. Consequently, this study analyzes the testimonies of women with gambling disorder to determine their specific characteristics (gambling motives, gambling preferences, and associated pathologies).

Method: The sample comprises 18 women with gambling disorder aged between 30 and 68. Three discussion groups were held, and a "blind" inductive process was carried out to extract categories. The Atlas.Ti 22.0 program was used to recode and analyze the data.

Results: Results show that women may start gambling due to abuse suffered in childhood, and often family members initiate women into gambling. Likewise, the onset of gambling could be a maladaptive way to manage negative emotions. Also highlighted is the predominance of feelings of social stigmatization, which can be reflected in women's choice of games where they are not visible. Comorbidity with other disorders such as depression, anxiety, bipolar disorder, personality disorders, and the use of other substances are noteworthy.

Discussion: The factors explaining why female gamblers do not seek treatment compared to male gamblers are analyzed. More studies on women's experience with gambling are needed to address the specific characteristics of gambling disorder in women.

KEYWORDS

gambling, women, gender perspective, social stigmatization, qualitative

Introduction

Gambling disorder is categorized as a behavioral addiction characterized by recurrent and persistent gambling behavior, which produces emotional distress and leads to economic, social, and legal problems [American Psychiatric Association (APA), 2013]. Despite that gambling has traditionally been considered a male activity (Merkouris et al., 2016), studies show that these differences are decreasing because an increasing number of women are gamblers, and the starting age is becoming equal in both sexes (Lamas et al., 2018; Macía et al., 2022).

However, the profile of the female gambler is different from that of men, either due to their gambling motives or other factors such as gambling frequency and intensity (Francis et al., 2015;

Kaufman et al., 2017). In fact, gambling, especially online, is increasing faster in women than in men, and women could even show more severe gambling problems (López-Gonzalez et al., 2020). This could be partly attributed to advertising campaigns targeting female audiences (Kairouz et al., 2017) and to the many gambling options currently available—which eliminates the stigma of going to physical places (McCarthy et al., 2022)—. Another factor could be the so-called telescopic phenomenon—an accelerated progression of the addiction, which is more common among women (Marks and Clark, 2017).

Regardless of their sex, people with gambling problems often find it difficult to seek help and only consider treatment as a last resort or when they have reached a critical point (Suurvali et al., 2009). However, problem gambling among women is not always recognized, and the barriers to treatment they encounter tend to be ignored, although they perceive those barriers more than men do (Holdsworth et al., 2012; Kaufman et al., 2017; Althaus et al., 2021). According to Althaus et al. (2021) among the most frequently mentioned obstacles are the desire to handle the problem personally, shame and/or stigma, the inability to admit the problem, lack of knowledge about treatment options, difficulties in going to therapy, lack of social support, lack of childcare, and issues with the treatment itself. In addition, women have more significant comorbidity with other mental disorders and tend to have a biographical history with higher rates of childhood neglect, abuse, and trauma (Li, 2007; Poole et al., 2017; Althaus et al., 2021).

Regarding gambling preferences, previous studies show that men prefer strategy games such as cards or sports betting and face-to-face games such as casino games. In contrast, women prefer non-strategic games such as bingo or slot machines (Granero et al., 2018). Concerning gambling motives, sex differences seem more evident. Men's motivations include wanting to be in control, the playful nature of the game, sensation-seeking, and the expectation of winning large amounts of money (Estévez et al., 2017; Macía et al., 2023). By contrast, women do not gamble as much for these reasons or social reasons but as a maladaptive mechanism to escape from problems or improve their mood (Granero et al., 2018; Macía et al., 2022). Women use gambling to cope with personal issues such as loneliness, boredom, and dysphoria, so emotional distress could be a factor that maintains maladaptive gambling behavior (Ciccarelli et al., 2017; Poole et al., 2018; Estévez et al., 2023). These findings could be related to female gamblers' increased depressive and anxious symptoms and poorer emotion regulation (Ronzitti et al., 2016). Emotion regulation is a risk factor for addictive behavior or making it harder to quit, as gambling may function as a way to escape (Weatherly and Miller, 2013). Likewise, gambling is increasingly recognized as a public health problem that requires prevention and support strategies to minimize damage in gamblers or at-risk people (Price et al., 2021). In this regard, it seems that social perception largely determines gambling-related damage. Studies such as that by López-Gonzalez et al. (2020) point out that stigma—a social construct produced by a negative perception based on stereotypes—could affect gamblers' self-esteem and make it a barrier to early detection of the disorder and help-seeking.

Stigmatization is related to the double penalty women suffer for being women and gamblers, as these behaviors are considered masculine. Therefore, women gamblers do not conform to traditional gender roles (Martínez-Redondo and Arostegui-Santamaría, 2021). This could affect women's self-esteem, as they face not only their addiction but also prejudices such as being branded as bad mothers, inferior workers, or evil persons who spend money that is not theirs. When gambling, they must also face sexism, verbal aggression, and micro chauvinism (Rius-Buitrago et al., 2021).

On the other hand, many studies have shown that social support is related to more successful treatment, abstinence, and lower relapse rates in gambling disorder (Tan, 2019). In contrast, lower perception of social support is linked to increased gambling-related symptoms and greater severity of gambling behavior (Yi et al., 2019; Tessier et al., 2021). In addition, studies like that of Rius-Buitrago et al. (2021) point out that female gamblers who receive treatment do so with less family support than men, and their primary support usually comes from other women (sister, mother, daughter, friend).

In the study of female with gambling disorder, it is crucial to have direct testimonies from women who suffer from gambling disorder because they provide insight into specific elements that are not easily identifiable with a quantitative approach. Consequently, we shall study the conditioning factors and particular characteristics in the development of gambling disorder in women, such as gambling motives, preferences, and/or associated pathologies that have been studied previously (Baño et al., 2021), although rarely from a qualitative perspective.

Methods

Participants

The sample was comprised of 18 women divided into three focus groups, aged between 30 and 68. These women were in treatment for gambling disorder, in associations belonging to the Spanish Federation of Rehabilitated Gamblers (FEJAR).

Procedure

The result of the participation of these associations implied a non-probabilistic approach, specifically intentional sampling (Patton, 2009). The research team established the criteria to select the sample of people interviewed. These criteria were the diagnosis of a gambling disorder, being over 18 years, being a woman, and being or having been in treatment in the rehabilitation centers that were contacted. We recruited the most diverse and representative sample of women gamblers possible, so that different contexts and perspectives could be considered.

For this purpose, the associations were contacted online to send them information about the aim of the study and organize discussion groups. Before starting the study, we informed the participants their involvement was voluntary and anonymous, and we read the informed consent. At the same time, we requested their permission to record the focus groups, explaining that the recordings would be used for future transcription, but the confidentiality of the obtained data would be preserved.

The focus groups lasted about 80 min, and a semi-structured guideline was used to organize the conversation among the participating women. The pattern of the discussion group focused on the issues of understanding female gamblers' characteristic behaviors and experiences of gambling. The sessions were audio-recorded, and the recordings were transcribed for data coding. All the testimonies were anonymized. At the beginning of each group, we attempted to identify the contextual factors

of gambling that the participants considered most relevant and explanatory to understanding their current situation. Then, at a second moment, we addressed in more detail how certain elements are critical to dependence on gambling in women.

Ethics statement

The research obtained the ethics committee's approval from the first author's university.

Design and data analysis

An inductive study was designed based on the principles of grounded theory, in which the previous literature was used to make theoretical inferences about gambling disorder (Strauss and Corbin, 1998). At the same time, a "blind" inductive process was performed to extract the categories to approach a theoretical model without excessive contamination from previous theoretical frameworks. This strategy proposed by the research team was based on the need to study the emerging factors of the direct testimonies of women with gambling disorder in more detail.

The qualitative information program Atlas.Ti 22.0 was used to recode and analyze the data. The coding process was carried out by applying summarized descriptions or live codes to the transcriptions of the testimonies in the groups. To increase the reliability of the results, they were shared with different experts and some of the participants to increase the validity of our interpretations (Nag et al., 2007).

Results

Using the grounded theory approach, the following coding phases were proposed: open, axial, and selective. They also included different coding cycles of the transcriptions of the testimonies of the women participating in the three focus groups. These three phases led to a "theoretical model" of the most outstanding factors of disorders linked to gambling. In the first phase, the predominant empirical themes in the transcripts were identified. Next, the themes were conceptualized, and finally, a theoretical model was developed showing how women's gambling disorder have specific elements.

Phase 1: identification of the predominant themes

Each focus group was coded in the first phase, conducting three coding cycles (Table 1).

TABLE 1 Focus group codification.

Open coding phase	Data	Number
CAB1.	Nr of quotations	621
CAB2.	Nr of codes	220
CAB3.	Nr of categories (12) and subcategories (70)	82

Substantial concepts were identified through the analytical process and the recoding of the most relevant fragments, converging into higher-order categories.

Phase 2: conceptualization of the salient categories

In the second phase, axial coding (Strauss and Corbin, 1998) was specified to compare the emerging themes. Axial coding refines the first-order codes to higher-level categories. In this research, there were 15 axial categories. The axial coding of gambling disorder in women linked three axial categories (Figure 1), which coincide with three moments of the process in which the participants relate their experiences of dependence on gambling.

The first category comprised those moments when women say they started gambling casually and without continuity. They perceived this onset of gambling as a way to have fun, although other testimonies indicated a need for money. A more in-depth analysis of these testimonies suggested that the context of problems and stressful life events drive these women to seek a way of escape by gambling. One of the testimonies mentioned attempting to avoid loneliness and discovering how to escape from this feeling through gambling.

> "I think that is when I said, I need to go 'See, I'm at home, I feel lonely, the boys have gone for a walk, they hang out; my husband is watching football, or he does not want to go out; I'm going out by myself" 3:214 ¶ 58 Group 1.

The increase in gambling causes progressively compromising situations because the need to obtain money forces the women to seek different sources of "financing" such as loans, theft of money and jewellery from relatives and friends. This became the interviewed women's general pattern as a way to be able to gamble. At this moment, they admit having developed a painful skill for themselves: the construction of stories helps them to conceal the situation in which they are involved. Lying becomes a constant in their lives.

> "I wasn't O.K.; I lied to everyone and said: I want one euro, give me one euro, give me two euros" 2:123 ¶ 41 in Group 2.

> "I told them that I was short of money because I needed to pay for something, and I lied, I lied a lot" 2:153 ¶ 51 in Group 2.

These situations led them to become aware of the seriousness of their condition. However, they could not face the magnitude of the dynamics in which they are involved and, in some cases, manifest suicide attempts. They described two types of situations at some moment of clarity: on the one hand, the group of women who were discovered by chance and, on the other hand, those who stated that they provoked their discovery as an unconscious strategy to escape from the unbearable situation they were experiencing.

The sum of these three axial categories with their subcategories led to calling the analyzed phenomenon the gambling spiral. The participants' experiences described a continuous and vertiginous

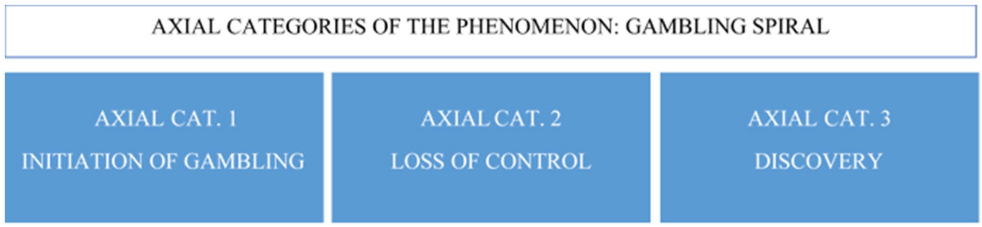

FIGURE 1
Axial categories that make up the phenomenon of gambling disorder.

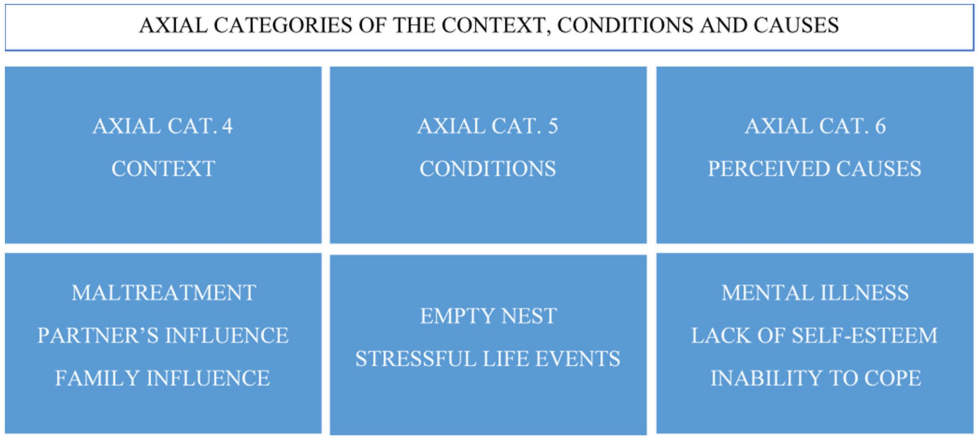

FIGURE 2
Axial categories of the context, conditions, and causes of the phenomenon.

process, with an accumulation of feelings and emotions, including anguish and pain. These emotions were difficult to control due to the different contextual variables and conditions in their lives.

Among the contextual variables in the women's testimonies, some reported childhood abuse, including sexual abuse by parents and abuse by partners. In some cases, they were unaware of the seriousness of the impact of this maltreatment in their lives. The normalization of the attacks found in the testimonies was surprising. It was common to find in most of them a partner or a family member with alcohol problems or a consumption and/or gambling disorder that induced them to gamble.

At the same time, a series of circumstances or conditions had a catalytic effect on this spiral. The participants pointed to stressful life events such as the death of a mother, loneliness, or a child's intellectual disability as crucial elements of their disorder. In addition, the lack of support, the inability to face problems, or the lack of self-esteem produces depression and stress. They share a feeling of overwhelming loneliness that drove them to seek an external incentive to help them to forget their stressful context and conditions, even for a few moments. This was reflected in the testimony of one of the participants (Figure 2).

> "What led me to gamble? I guess loneliness, I've always been alone: I lied, I disappeared for three days, so many things happened to me, and later I had my son, I got pregnant and had my son" 2:141 ¶ 51 in Group 2.

Regarding the research participants' actions related to the gambling disorder, the analysis of results showed three new axial categories, forming the axis-category called rehabilitation (Figure 3). The therapy was considered a time where they can talk about personal things, a meeting space, and an opportunity for emotional venting. In therapy, these women could express their feelings of regret and shame, especially in the initial phases of treatment. As a result, they discovered that everything they had experienced is recognized as a disease, and this recognition helped them deal with the stigma of vice surrounding this disorder.

As these testimonies reflected:

> "At the beginning (in therapy), I was ashamed because I said 'I have not stolen to eat'; if I had stolen to eat, it's less of a crime, I'm going to pay for it, it is still a crime, but I took money to gamble" 2:213 ¶ 65 in Group 2.

> "It is embarrassing to admit that you have an illness and you need to go to therapy" 2:248 ¶ 98 in Group 2.

Concerning psychological support, the participants pointed out that support from their family environment was crucial, beginning with their mothers or their children. Their children's support seemed essential to overcome guilt and shame and find strategies to control gambling relapses.

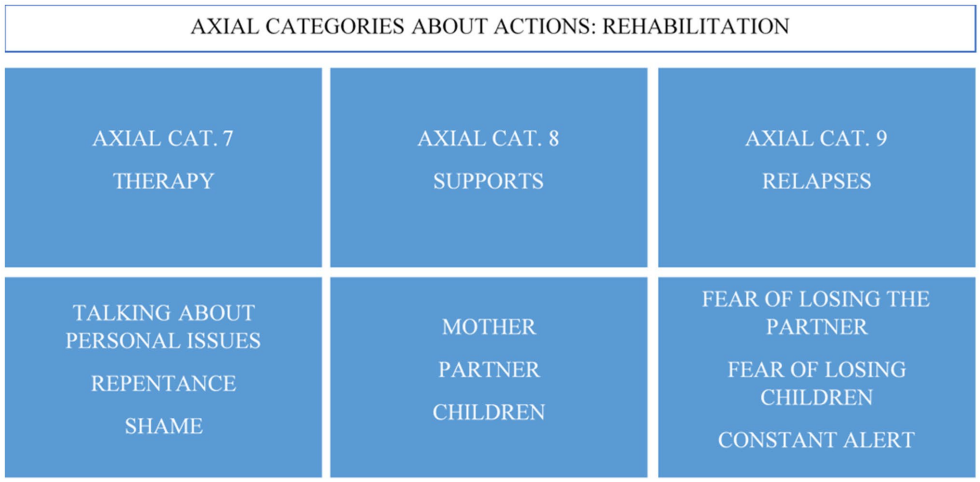

FIGURE 3
Axial categories of the actions related to gambling.

> "They do not come to therapy because they are very ashamed. It bothers them; they say they need time for that, but the truth is that they are always there. They have not left me, nor do they feel resentment. On the contrary, now is when I need support the most" 3:370 ¶ 211 in Group 1.

> "I came with my partner and my daughter, and they were shocked, they did not understand and, well, I started coming here" 4:101 ¶ 37 in Group 3.

Their children adopt the role of supervisors of the financial statements of the family unit and other indicators that can warn about a relapse. Regarding the partner's support, their individual situations were varied. Although it was considered important, some women lost their partner's support or had to end the relationship because it exacerbated their disorder.

> "My husband came to me and told me once and no more, 'that is nothing', but in fact, after three months of my therapy, he said 'goodbye, good afternoon.' But I was not terrified that he would leave me. I was terrified that they would take my son from me for leaving him without any food. I was terrified that they would take my son away from me" 3:343 ¶ 195 in Group 1.

Relapses were another fundamental axial category in rehabilitation. It was build up through a feeling of fear, as could be seen in these words:

> "If you start paying attention to your head, you go back, you relapse, and after what I've been through, I do not want to go through it again" 2:127 ¶ 41 in Group 2.

Whether it was the fear of losing one's partner or losing the support of one's children, this fear is a stimulus to be alert to possible relapses and, in some cases, a threat that weighs on them.

Rehabilitation may be where differences between women and men with gambling disorder are most noticeable. Co-participation in mixed therapies of both women and men made the participants directly witness the differences between the sexes. Once these axial categories were detected, work was carried out on the other axial categories, leading to the verification of the differences specified in three axial categories: the weight of gender roles, differentiated experience, and the social stigma associated with women (Figure 4).

Family responsibilities weigh differently on women and men. A cross-sectional reading of the testimonies of the axial categories of context, conditions, and support-related categories revealed differentiated elements between women and men with gambling disorder. In most cases, family responsibilities linked to the care which rests on women generated an excessive burden that these women cannot face. The issue of the empty nest was an example of this concept.

Women pointed out that they feel more guilt, in contrast to men's reluctance to acknowledge the disorder or their display of arrogance.

> "Women have more difficulties recognizing it than men. Well, actually, it may be less difficult for women to recognize it, but there is a greater difficulty for them to take the step of telling the family, both about the gambling and when they are immersed in gambling and do not want to be seen. In general, men care less" 3:182 ¶ 42 in Group 1.

Participants also pointed out that the roles assigned to women, such as house care, family responsibilities, etc., were a differentiating element in how they deal with rehabilitation because they become added difficulties.

> "It is complicated because, as you said, there is a line between 'I am responsible for money, I am responsible for the home, I am responsible for the family…' Men do not have these responsibilities" 3:321 ¶ 147 in Group 1.

Participants even found differences in one of the key elements, the partner's support. The participants who were also therapy partners found that the female partners were more unconditional and understanding about these men's illness.

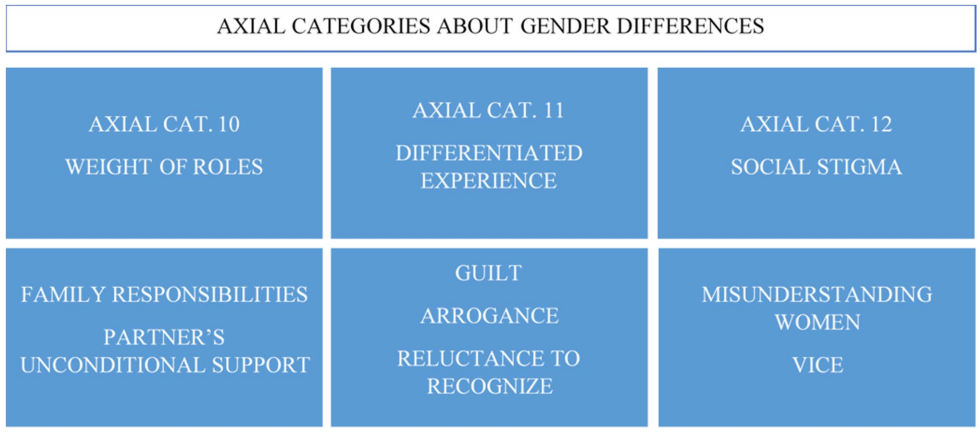

FIGURE 4
Axial categories of gender differences.

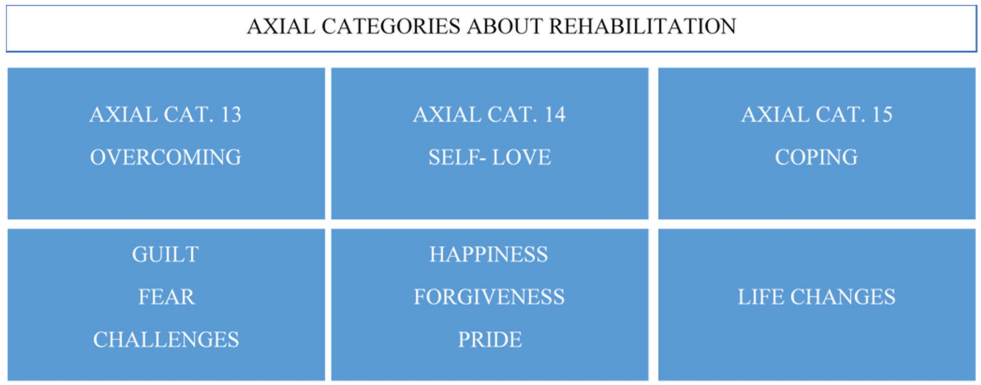

FIGURE 5
Axial categories of benefits of rehabilitation.

> "In the case of men, their partner makes everything much easier for them. It may be a generalization, but it is a reality" 3:186 ¶ 46 in Group 1.

The last axial category, "social stigma," was constructed with two elements linked to the differentiated social perception of women with gambling disorder. The participants in the study regretfully stated that they feel misunderstood as women due to their being considered negligent mothers during the spiral period of gambling. Women suffer more blame than men for this social targeting. This testimony was a clear reflection:

> "We are more ashamed than men" 2:231 ¶ 79 in Group 2.

At the same time, this situation was aggravated by the social conception of dependence on gambling as a vice. The consideration of gambling disorder as a disease has not yet impacted society, which penalizes women more due to their female condition, a woman seen just as a mother with family responsibilities. Finally, in this phase of the axial categorization, the women participating in the rehabilitation phase described the benefits associated with the actions. These benefits are specified in Figure 5.

Participants recognized the benefits of the different strategies and actions undertaken during the rehabilitation phases. Life changes, such as decisions about work and their personal lives, had strengthened these women and provided them with the self-recognition of their improved ability to cope with their lives in general. Learning to value themselves led them to go from acknowledging the damage caused to self-forgiveness. This leads to a state of well-being and personal gratification for the road traveled and for escaping from gambling, a path not exempt from fears, guilt, and challenges, which has culminated in the feeling of succeeding.

Phase 3: development of the theoretical model

In this last phase, the main categories were converted into aggregate dimensions. In general, first-order emerging themes became the salient categories that will form the aggregate dimensions of the theoretical framework.

Table 2 summarizes the central themes that produce the theoretical framework of the invisibility of gambling disorder in women.

TABLE 2 Main topics of the theoretical model.

Axial categories	Topics	Quotations
Axial Cat. 1 Axial Cat. 2 Axial Cat. 3	Mental disorder Persistence in the strategies to maintain gambling behavior	3:139 ¶ 3 in Group 1 It has been sort of intermittent; I have always related it to circumstances occurring in my daily life, problems, and so on that ended up going that way.
		3:217 ¶ 58 in Group 1 I started by saying that I wasn't having any fun since my son left home; I gambled, like, "Let the world know."
		2:123 ¶ 41 in Group 2 I wasn't O.K. I lied to everyone and said: I want one euro, give me one euro, give me two euros
		2:181 ¶ 65 in Group 2 I was a compulsive liar when I was playing, no? But I had to lie. I must lie; I believe that for me, lying was the normal thing to do
		3:258 ¶ 75 in Group 1 We become liars, we become manipulative, and finally, we become like children.
Axial Cat. 4 Axial Cat. 5 Axial Cat. 6 Axial Cat. 10 Axial Cat. 11 Axial Cat. 12	Overload of gender roles Weight of social stigmatization	3:325 ¶ 155 in Group 1 We are bad mothers, bad wives, useless… they criticize you, even the relatives of someone who has gone through the same thing as you; they criticize you for gambling when you have to be with husband and your son. And about being a bad mother, that's hard.
		2:172 ¶ 65 in Group 2 With the excuse that I had nowhere to go, I endured and endured, he also drank a lot, plus he also gambled.
		4:133 ¶ 47 in Group 3 In a month or so, the pandemic arrived, and I could not stand my partner any longer. Initially, my partner was very loving, but I did not realize that with all the problems and all, I was "used to" that behavior. He accommodated himself to our relationship, but in the end, I was very weak, no? I no longer had a personality or anything because he had normalized his way of being continuously on my back, not leaving me any space: "What are you doing? You have not done this right., Where are you going dressed like this? I'm ashamed to go out with you."
		3:324 ¶ 155 in Group 1 They are sick; we are vicious
		2:116 ¶ 37 in Group 2 He had a headache, and I used to ignore it. I was in my own world; it was only me and gambling; I would often say: "fuck! If I love my son more than my life, how can I become a bad mum?" because, later, I considered myself bad because I was bad.
		3:321 ¶ 147 in Group 1 It is complicated because there is, as you said, a line between "I have to be responsible for money, I have to be responsible for the house, I have to be responsible for the family…" men do not have this responsibility.
		2:206 ¶ 65 in Group 2 I thought I was vicious; it took a lot of effort to recognize that it was an illness
Axial Cat. 7 Axial Cat. 8 Axial Cat. 9	Professional support Family support	3:362 ¶ 209 in Group 1 They directly cut off contact, they did not want to spend Christmas with us, and that's very hard, and it hurts a lot. You always say, "and why did I do this and why…" and you relate everything that happened to "if you had not done some things, it would not have been your fault, and would not have happened." 3:347 ¶ 203 in Group 1 My son is the one who helped me. In fact, in his room, on his board, he has a photo of him and me.
		4:102 ¶ 37 in Group 3 Going to a psychologist is always complicated, and if you do not connect well… I connected very well with her, and she with me, and then I decided that I needed more than one session per month, so I talked with her, and she said yes, she would attend to me, but I needed to tell this in the association. So I informed them in the association, and they said there was no problem with that, so since then, I've been going once a week.
Axial Cat. 13 Axial Cat. 14 Axial Cat. 15	Resilience	2:114 ¶ 37 in Group 2 I have been here 14 months, but until I was here for 9 months, I did not realize that I must love myself: love myself so I can love others.

(Continued)

TABLE 2 (Continued)

Axial categories	Topics	Quotations
		4:83 ¶ 27 in Group 3 I'm very proud of myself, very proud to have gotten out, so I do not care what others think
		3:201 ¶ 56 in Group 1 Any problem you have at home, but now, I'm happy with myself. In fact, I found a permanent job. I got my driving license when it was unthinkable that I could have achieved it because it was something... it was taking a steering wheel, and I got my driving license.
		4:157 ¶ 59 in Group 3 I'm studying, and I passed two courses in a year. And I have gotten excellent grades. I have seen my classmates and could laugh with them, although I still cannot appreciate it sometimes. When I think that I have done it… I do not recognize it yet, but I hope to go forward…

Discussion

This study has aimed to analyze women's gambling experience. The results lead to a theoretical model that addresses the problem of gambling disorder in women based on two axes: a first axis that indicates the excessive burden of gender roles in the gambling spiral, which remains in the rehabilitation and therapy phases; and a second axis, in which professional and family support are combined, becoming the resilient strategy to address women's dependence on gambling. The results have shown that women may start gambling due to childhood ill-treatment and/or abuse (generally perpetrated by parents or very close figures), partner abuse, or a family history of relatives who have problems with alcohol, substance consumption, or gambling disorder. In this latter case, it is often the family members themselves who initiate the women into gambling. Likewise, the testimonies show that the initiation of gambling could be due to difficulty coping with stressful life events (e.g., the death of one of the parents or relatives, loneliness, or a child's illness). This difficulty can lead to a lack of self-esteem, depression, and/or stress. In this sense, gambling could become a tool to deal with loneliness and manage emotions. The study participants' accounts reinforce previous studies of female gamblers, which state that gambling becomes a maladaptive way of managing negative emotions or childhood experiences of neglect, trauma and/or abuse (Poole et al., 2017, 2018; Lelonek-Kuleta, 2022; Estévez et al., 2023).

Regarding social stigmatization, stories about feeling misunderstood predominate. It has been observed that female gamblers are branded as negligent, vicious, and bad mothers during the gambling spiral, generating feelings of guilt. Traditionally, family caregiving responsibilities have disproportionally fallen on women, which is still prevalent nowadays (Lamas et al., 2018). However, their status as "female gamblers" seems to distance them from the role of caregivers and mothers from the social perspective, generating feelings of rejection even in their family environment (spouses and/or children). Previous studies show that stigmas, prejudices, and gender roles could lead to self-messages and feelings of guilt and shame, affecting mental and somatic health, as well as help-seeking and rehabilitation (Dunn et al., 2012; Lamas et al., 2018; Rius-Buitrago et al., 2021).

Another essential aspect is the small number of women who attend gambling rehabilitation resources. Macía and Estévez (2022) point out that socially, women with gambling problems continue to be considered "vicious" and not sick people. This could help to explain why only a few women obtain and persist in treatment. These observations provide hints about how to adjust treatment for women with gambling disorder. Often, female gamblers do not have enough family or social support to rehabilitate and may even suffer contempt or abuse by their partners (Lamas et al., 2018). Conversely, men seem to receive more family support and social justification (Echeburúa et al., 2014; Martínez-Redondo and Luján-Acevedo, 2020). This aspect is critical to rehabilitation. In their accounts, the women highlight that their children's support is vital to overcome guilt and shame and that family accompaniment is a protective factor against relapses. It would be interesting to develop this line of research further and implement practices that promote increased support from the immediate environment.

On the other hand, women with gambling disorder frequently present comorbidity with psychiatric disorders such as depression, anxiety, bipolar disorder, personality disorders, and the use of other substances (Desai and Potenza, 2008; Ronzitti et al., 2016; Macía et al., 2023). Comorbidity is highly related to the severity of gambling problems and their consequences, which include suicide, the leading cause of death in female gamblers (Althaus et al., 2021).

The data from this study raise the possibility that suicidal thoughts emerge as a consequence of debts, depression, lack of support, loneliness, and coping difficulties. However, recent studies indicate that psychiatric comorbidity does not entirely explain the relationship between gambling and suicidal ideation, suggesting other underlying mechanisms, such as financial stress, feelings of loneliness, the impact on family life, or relational arguments (Wardle et al., 2020). Therefore, it would be interesting to consider comorbidity with other disorders and the typical experiences of gambling addiction as risk indicators for suicidal ideation and behavior so that suicide prevention protocols can be implemented.

Finally, women seem to prefer games that consume time but do not have the aim of socializing, such as scratch cards, bingo, or slot machines, data that agree with those obtained by Marcos and Choliz (2019) and by Li (2007). In this sense, even though loneliness is a risk factor for women with gambling disorder, testimonies suggest that women prefer games that allow them to gamble without being seen, in order to avoid social stigma. They mostly avoid going to places like betting houses because they feel judged, sometimes receiving disparaging comments from others, even other gamblers. However, despite the different consequences and the social perception of women with gambling disorder, there is still a lack of research and resources incorporating the gender perspective.

Limitations

Despite the study's contributions, it is not exempt from limitations. This study is a first approach to the specificities of gambling disorder in women from a gender perspective, but future studies should contrast these findings with a group of men. This would serve to objectify the perceived gender differences in gambling disorder. Another limitation of the study is the sample. Women approach resources less than men, so finding a group of women is difficult (Braun et al., 2014; Lamas et al., 2018). However, evidence indicates that women attend primary care resources more frequently than men (Markez et al., 2004), which could explain the lack of women in gambling rehabilitation centers. On the other hand, despite being part of the same association, the women who made up the groups in this study frequently did not know each other, which could have affected them when they shared their experiences.

Conclusion

To date, there has been limited research in women's gambling experience. However, factors such as prejudice (especially against women who violate social norms) and support-seeking seem crucial to understanding the distinctive phenomenon of gambling in women and conducting gender-specific treatments and preventions. In addition, a better understanding of the mechanisms and stigmas underlying gambling disorder in women may serve as prevention for risky behaviors, such as suicidal ideation.

Data availability statement

The datasets presented in this article are not readily available because data is not available due to confidentially reasons. Requests to access the datasets should be directed to lauramacia@deusto.es.

Ethics statement

The Institutional Review Board of the first author's university approved the study (ETK-17/20-21). This study was performed following the principles of the Declaration of Helsinki. Informed consent was obtained from all the participants included in the study. Written and oral informed consent was obtained from the individuals for the publication of any potentially identifiable data included in this article.

Author contributions

AE: Project administration, Resources, Supervision, Writing – review & editing. LM: Conceptualization, Funding acquisition, Methodology, Supervision, Writing – review & editing. AO: Investigation, Writing – original draft. MA: Formal Analysis, Writing – original draft.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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The impact of college experience on female students' self-perceived employability in STEM majors

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Introduction: The under representation of women in STEM fields is a persistent issue worldwide. In China, although women have made significant progress in pursuing STEM degrees in recent years, they continue to face challenges in the workforce. Given the importance of the self-perceived employability (SPE) of female STEM students in China, the research questions are: How do curriculum experience, extracurricular experience, and faculty supportive activities affect the SPE of female STEM students in Chinese universities? To what extent does university stratification affect the relationship between college experience and female STEM students' SPE?

Methods: We analyzed the 2018 data of the Chinese College Student Survey (CCSS) consisting of a sample of 59,066 students, and six focus group interviews.

Results: The findings suggest that curriculum experience, extracurricular experience and faculty supportive activities have a positive impact on the SPE of female students, but the gender gap in SPE is still valid as reflected by the fact that women have lower SPE than men in each tier of universities and that men benefit more in terms of the increase in SPE from most types of college activities and support except academic ones.

Discussion: This study reveals that the different tiers of universities in China affect female students' SPE in different ways, and provides valuable evidence for academic as well as university administrators and policymakers regarding how college experience affect women and how university stratification can affect female students' college experience and their career expectations and paths.

KEYWORDS

STEM education, female college students, Chinese higher education, hierarchical higher education system, gender disparities

Introduction

The gender gap between academic fields in higher education is still valid despite the worldwide increase in women's access to higher education. Unequal gender representation is particularly obvious in STEM-related fields (STEM, refers to science, technology, engineering and mathematics); globally, only 30% of the female student population chooses STEM-related majors. Female students' enrollment is particularly low in ICT (3%), the natural sciences, mathematics and statistics (5%), and engineering,

manufacturing and construction (8%) (UNESCO, 2017). How women perceive themselves and evaluate their achievements in traditionally male-dominated fields such as STEM largely affects their choices in university and in the workforce (Broyles, 2009; Beede et al., 2011). Women often have reported lower perceived achievements than men even if they obtain higher demonstrated achievements (Astin and Sax, 1996). In many studies that have addressed the disadvantaged positions of women in STEM fields, women's lack of self-confidence and lower evaluation of themselves are often regarded as the most important reasons that deter women from choosing or remaining in STEM majors and from seeking better employment when they enter the workforce (Hall and Sandler, 1982; Brainard and Carlin, 1998; Rothwell and Arnold, 2007; Sax, 2008; Qenani et al., 2014).

Self-perceived employability (SPE) refers to an individual's perception of his or her likelihood of obtaining and maintaining sustainable employment appropriate to the individual's qualification level (Ridgeway and Correll, 2004; Rothwell and Arnold, 2007; Vanhercke et al., 2014). SPE is closely related to individuals' capability within the labor market to realize their potential through sustainable employment and may be a key goal for individuals in managing their careers (Rothwell and Arnold, 2007). However, the literature has some limitations. First, research on STEM women's employability often considers the ways external factors, such as social bias, gender discrimination, and institutional type and ranking, shape their employability in the workforce (Ceci et al., 2009; Cho et al., 2009). However, this research rarely considers that college experience might be an important factor that shapes SPE in addition to other social influences and personal factors. Second, the impact of academic achievement and academic experience in college on female students' SPE is unclear (Dovidio et al., 2012; Jackson and Wilton, 2017). Many universities provide opportunities for female students to develop their confidence in seeking employment (Wakefield et al., 2009), but there is a lack of knowledge of female students' perceptions of the effectiveness of college activities in enhancing their SPE. Finally, most existing studies on SPE only focus on one or several universities (Qenani et al., 2014; Jackson and Wilton, 2017; Ma and Bennett, 2021), and there is little discussion of the levels of different universities in the national higher education system. In addition, due to limited accessibility of the data, the samples used in many published studies are too small to be nationally representative, and extensive sample studies covering different types of schools and various disciplines are lacking (Donald et al., 2018; Vargas et al., 2018; Wong et al., 2018; Monteiro et al., 2020). This research aims to fill the gap in the literature by examining the role of college experience in influencing women's self-perceived employability.

The present study investigates the extent to which the college experience of female students in STEM majors influences their SPE in Chinese universities. It is critical to incorporate institutional contexts into the study of female students' SPE. In relevant studies, it is quite common for students from higher-ranking universities to show higher perceived employability (Walters, 2004; Chen, 2016; Lee and Song, 2018) because university reputation contributes to the accumulation of human capital. However, in many cases, female students from elite universities have lower SPE than their demonstrated employability, as documented in a study on Australia's Go8 (Group of Eight) elite universities (Jackson and Wilton, 2017) and a study on female graduates' employability in the top 3 universities in Korea (Lee and Song, 2018). Students from elite universities might have higher expectations for employment, which affects their self-evaluation of their employability. It is yet to be determined whether upper-tier universities empower female students to develop self-confidence in their employability or whether these universities widen the gender gap in SPE.

In the case of China, its higher education system is stratified by several governmental projects to build world-class universities. 'Project 985' (research-extensive universities, called Tier-1 universities in our study) and 'Project 211' (research universities, called Tier-2 universities in our study) stratify the universities in larger society and send important signals to the job market. A degree from these universities can improve students' employability, and applicants are considered in a hierarchical order with 'Project 985′ graduates on top, followed by 'Project 211′ graduates and then undergraduates from other universities (teaching-extensive and vocational-oriented universities, called Tier-3 universities in our study). There are significant differences among the three tiers of universities in terms of the resources and funding they can obtain from the government. According to 2013 statistics from the Ministry of Education, 39 Tier-1 universities received approximately 52% of government funding, 73 Tier-2 universities received 19%, and 1,100 Tier-3 universities received approximately 28% (Zeng and Li, 2014). Whether the hierarchy of Chinese universities differentiates the college experience for female students in STEM majors will be examined in this research. Additionally, the gender culture of China and Chinese universities is important to consider and helps in assessing the generalizability of the results of this study on the influence of college experience on female students' self-perceived employability.

This research aims to address the issue that women and men may not be affected in the same way by their undergraduate experience, which includes experience in the curriculum, extracurricular activities, and faculty support related to career development. This study provides evidence of how female students' perceptions of their employability in STEM careers are affected by their undergraduate experience. Moreover, this study sheds light on how the type of university can affect students' employability in a hierarchical higher education system. This research can serve as a resource for academic affairs and student affairs professionals and other campus practitioners and for policymakers who are concerned with ways in which the return of college education might vary for students of different genders at different universities.

A literature review on the self-perceived employability of female students in STEM majors

Research have shown that females were faced with more challenges in the job market that affect their employability in job market. Relatedly, due to unfavorable factors that prevent them from obtaining employment, female students often show lower self-perceived employability than males (Rothwell and Arnold, 2007). Self-perceived employability refers to the individual's perception of his or her possibilities of obtaining and maintaining employment (Ridgeway and Correll, 2004; Rothwell and Arnold, 2007; Vanhercke et al., 2014). Males often have higher self-perceived employability before entering the market as they were aware of their gender advantage in the job market (Qenani et al., 2014).

Studies conducted in the context of China have recognized that the low self-perceived employability of female students in STEM fields was valid. They found that female students' low self-perceived

employability can also be associated with a few internal factors such as personalities and parents' high expectations (Kong, 2007; Huang, 2011; Zhao, 2011; Li and Yang, 2016).

Furthermore, some scholars brought the influence of the college experience into the discussion of female students' self-perceived employability. Academic achievements have been identified as a factor influencing self-perceived employability of female students in college; however, the impact is unclear. For example, Zhang and Zhen (2011) found that females students' demonstrated advantages in academic performance during college did not instill confidence in them when it came to seeking employment. Moreover, student–faculty interaction was recognized as another important indicator of female's self-perceived employability, as it may bolster or dampen women's ambitions and self-confidence in areas that are traditionally viewed as masculine, such as science and technology (Hall and Sandler, 1982; Sax, 2008). Factors that may discourage women from persisting in STEM majors include the 'chilly climate' prevalent in the culture and pedagogy of STEM classes (Hall and Sandler, 1982) and dissatisfying experiences with the curriculum and interactions with faculty members and peers (Shapiro and Sax, 2011).

The positive relationship between undergraduates' human capital and employability has been confirmed by many studies (Ben-Porath, 1967; Griliches, 1997; Smith, 2010). Students' participation in work-integrated learning in college, such as internships or part-time work, can be important investments for the accumulation of human capital, which contributes to their employability in the job market (Becker, 1962) and enhances their confidence and perception of their own capabilities when preparing to enter the workforce (Jackson and Wilton, 2017). Ben-Porath (1967) formalized the investment-in-education process and noted that individuals add to their own human capital with their own time and other market resources. As such, university reputation largely develops the foundation for students' human capital accumulation, and a diploma from a national flagship university serves an important 'signaling' or 'screening' role when graduates enter the workforce. Thus, students' career management activities in college and their SPE should be closely related to the prestige of the universities they attend. How the reputation related factors of university can affect female STEM students' SPE needs further investigation.

A few studies have documented that institutional characteristics play a crucial role in students' sustained engagement in STEM majors (Wu and Li, 2020). Griffith (2010) found that students at institutions with more undergraduates than graduate students had higher rates of persistence in STEM careers because undergraduate-oriented institutions may create a more welcoming environment for students. An increase in the ratio of research to educational expenditures had a positive impact on persistence rates for men but a negative impact on persistence rates for women (Ehrenberg, 2010; Griffith, 2010). It is recognized in past studies that students' college experiences shaped by institutional characteristics have different impacts on male and female students.

The existing body of research extensively explores the relationship between college experiences and self-perceived employability (SPE) among female students in science, technology, engineering, and mathematics (STEM) disciplines across various countries. However, a notable gap exists when applying these findings to the unique context of Chinese higher education that is characterized by a hierarchical structure, with universities classified into different tiers based on academic excellence and prestige. A study that captures the effects of different tiers of institutions on female's SPE is needed in the Chinese higher education context. Hence, the following research questions were put forward:

> RQ1: To what extent do gender disparities exist among Chinese college students enrolled in STEM majors with respect to their self-perceived employability?
>
> RQ2: To what degree does gender play a role in the influence of college experiences on individuals' self-perceived employability?
>
> RQ3: How do the classifications of universities contribute to variations in the impact of college experiences on the self-perceived employability of female Chinese students majoring in STEM fields?

Methodological research framework

This study utilized survey data from the 2018 Chinese College Student Survey (CCSS), which was adapted from the National Survey of Student Engagement (NSSE) developed in the United States and is the largest survey for students in colleges and universities in China. The survey data, collected between May and September 2018, underwent data cleaning from October to December of the same year. We specifically opted for the 2018 data due to minor adjustments in the questionnaire items in subsequent years, which did not align with our requirements for items related to self-perceived employability.

The analytic dataset utilized included 59,066 undergraduate students in STEM majors in 30 full-time HEIs, including 4 Tier-1 universities, 9 Tier-2 universities and 17 Tier-3 universities. In phase I, universities across China were chosen based on type and geographic area. Subsequently, in phase II, students were randomly selected by grade and major within each university. In each institution, sampling weights were applied according to the students' grade and major to ensure the representativity of the sample. A summary of the participants' characteristics is shown in Table 1.

TABLE 1 Participant characteristics.

Variable	Subgroup	Number	Percent (%)
Gender	Male	40,086	67.87
	Female	18,980	32.13
Grade	Freshman	11,858	20.08
	Sophomore	17,060	28.88
	Junior	16,618	28.13
	Senior	13,530	22.91
Ethnicity	Han	53,214	90.09
	Minorities	5,852	9.91
University type	Tier 1 (985 project)	3,567	6.04
	Tier-2 (211 project)	24,483	41.45
	Tier 3 (Others)	31,016	52.51

TABLE 2 Instruments description.

	Factors	Variables	Items
Dependent Variable	SPE (self-perceived employability)	Self-perceived employability	12
Independent Variables	Curriculum experience	The degree to which the professional curriculum enhances job seeking	1
		Academic challenge	1
		The degree to which the curriculum improves the ability to solve problems	1
	Extracurricular experience	Internship experience	1
		English language learning outside class	1
		Research experience	1
		Participating in academic competitions	1
		Application for professional qualifications/certificates	1
	Faculty supportive activities	Student–faculty interaction: with course instructors	1
		Student–faculty interaction: with mentors	1
		Student–faculty interaction: with *fudaoyuan*	1

To test the hypotheses, we examined the effect of female students' college activities on self-perceived employability (SPE) in all three tiers of universities. All the dependent variables and independent variables are listed in Appendix 1. The dependent variable SPE refers to students' confidence in their personal abilities and consists of 12 items grouped into one factor. An example item is 'I have adequate knowledge and skills to fit my future job'. The reliability coefficients of the factor (Cronbach's α) were higher than 0.8. We conducted exploratory factor analysis, and the sampling adequacy measure (KMO) was 0.92 (>0.9), and Bartlett's test with $p < 0.001$ indicated the suitability of the self-perceived employability scale for factor analysis. Utilizing Principal Component Analysis, we extracted one factor. The results revealed a cumulative explanatory variation of 64.82%, with all items displaying a maximum factor loading greater than 0.5.

The Independent variable, students' perceived gain from college experience, consisted of three factors: curriculum experience, extracurricular experience, and faculty supportive activities (see Table 2). Curriculum experience refers to students' learning experience of the outlined objectives, content, and assessment required to earn a specific academic degree (McCaslin and Good, 1996). In this study, three questions were used to measure students' perception of gains from the formal curriculum: to what extent does the professional curriculum empower students' job seeking, how challenging are the professional courses, and to what extent does the formal curriculum enhance students' ability to solve practical problems? Extracurricular experience refers to a set of momentary experiences that students aggregate and internalize with varying degrees of awareness and satisfaction that are deliberately arranged by the university or students in addition to the formal curriculum (McCaslin and Good, 1996). This study measured students' perception of gains from extracurricular activities using five categories of activities closely related to career development: frequency of internship, extracurricular English language learning, academic competition, certificates, and research participation. Faculty supportive activities refer to the informational, instrumental, emotional, or appraisal support given by teachers in any environment (Lei et al., 2018). This study used student–faculty interaction frequency to measure students' perception of faculty supportive activities. Notably, there are two kinds of special faculty members in the Chinese higher education system: college counselors (*fu dao yuan*) and mentors (*ban zhu ren*). Counselors (*fu dao yuan*) who are senior-year students or new graduates serve as role models or ideological mentors who take care of students' college affairs. Because of their similar age, they frequently develop close relationships with undergraduate students (Wang and Xie, 2013). Mentors are faculty members who provide academic and career guidance for students. The reliability coefficients of the three factors of students' perception of college experience were all higher than 0.6. Exploratory factor analysis was conducted on the scale of students' perception of college experience, KMO = 0.76, Bartlett's test $p < 0.001$, showing that the scale was suitable for factor analysis. Three factors were extracted by PCA and the varimax method. The results showed that the cumulative explanatory variation of the three factors was 63.39%, and the maximum factor loading of all items was greater than 0.5.

The quantitative analysis utilized survey data from 50,699 students in STEM majors and consisted of two parts: an ANOVA that compared the SPE and college experience between female students and male students in STEM majors and a heterogeneity analysis that examined the ways the tier of the university shapes the impact of the college experience on female students.

In phase II of the research, focus group interviews were conducted with female STEM students in the three tiers of universities to understand their views on SPE. We selected participants who were in their senior year of undergraduate study or the first year of graduate school to ensure that they had thoughts or experience related to career plans after college graduation. Six focus groups were formed: 2 groups consist students from a Tier-1 university, 2 groups consist students from two Tier-2 universities, and 2 groups consists students from two Tier-3 universities (Table 3). The authors acted as moderators. After guided the participants with structured questions, the authors encouraged the participants to express themselves freely on topics of interest.

Findings

The findings of this study shed light on the self-perceived employability (SPE) of male and female students in different university tiers, revealing nuanced gender disparities and their impact on career

TABLE 3 Data about participants of focus group interviews.

Group	Participants
Tier-1G01	3 first-year master's students from T University majoring in automation
Tier-1G02	4 senior students from T University majoring in chemistry and chemical engineering
Tier-2G01	4 senior students from W University majoring in electronic engineering and material sciences
Tier-2G02	3 first-year master's students from L University majoring in mechanical engineering and biology
Tier-3G01	3 senior students from Q University majoring in civil engineering, photonics engineering, and engineering mechanics
Tier-3G02	3 senior students from H University majoring in software engineering, automotive engineering, and material sciences

outcomes. Table 4 presents a comprehensive overview, illustrating that SPE varied not only by gender but also by university tier. Further analysis through ANOVA unveiled intricate interaction effects between gender and university tier on SPE. In exploring specific aspects of university experiences, gender differences were found to be statistically insignificant in curriculum and some extracurricular domains across all university tiers. The results of a focus group interview, providing valuable insights into the perspectives of female STEM students across different university tiers and their encounters with gender-based challenges in the pursuit of employment opportunities.

Self-perceived employability of male and female students

Mean values presented in Table 4, provide a measure of central tendency, offering insight into the average level of SPE across different groups. Table 4 shows that SPE varied by gender and by university tier. Students in Tier-2 universities scored higher in SPE compared to those from the other two groups. Moreover, female students' SPE scores were significantly lower ($p < 0.001$) than those of male students in the same university type. The ANOVA results, as shown in Table 4, reveal that the interaction effects of gender and university tier on SPE were complex. Considering the large sample size, we employed the Bonferroni correction method to control for Type I error inflation due to multiple comparisons. All p-values reported in Table 4 were adjusted by multiplying them by the number of comparisons conducted.

In examining university settings across all tiers, gender differences were found to be non-significant in the formal curriculum. However, within extracurricular activities, notable distinctions emerged. Female students exhibited greater enthusiasm for self-directed English study outside of class and actively participated in research, whereas their male counterparts reported more internship experiences. Interestingly, females attending Tier-2 and Tier-3 universities displayed a heightened interest in acquiring certificates compared to their male peers, possibly reflecting a proactive effort among female students to validate and demonstrate their competencies in the competitive labor market.

Moreover, females from Tier-2 and Tier-3 universities reported a higher frequency of student–faculty interactions than those in Tier-1 universities. Despite this, female students, across all tiers, reported significantly lower interaction frequencies with faculty compared to their male counterparts. This gender gap may be partly attributed to concealed gender discrimination, as highlighted in previous studies (Hall and Sandler, 1982; Sax, 2008; Liu et al., 2011; Cohen, 2018). Additionally, the underrepresentation of female faculty in universities contributes to the observed lower frequency of interactions between female students and faculty members.

Effects of college experience in different universities on self-perceived employability

As shown in Table 5, curriculum, extracurricular activities and faculty supportive activities have significant positive impact on SPE. The effect of the curriculum on SPE showed no significant differences between female STEM students among various universities. Nevertheless, it is worth noting that the curriculum remains the most influential factor on SPE among all of the independent variables. The STEM professional curriculum, in particular, is a crucial pathway to empower female STEM students. Previous studies have found that perceptions of belonging to this major and to the classroom environment support female students to form an engineering identity, and a lack of belongingness may be most prevalent among students who switch out of STEM fields (Foor et al., 2007; Verdín, 2021).

We measured several extracurricular activities closely related to employability development, including the frequency of participation in academic competitions, the duration of internships and part-time jobs, and the frequency of professional qualification certificates. Different extracurricular activities had varied impacts on female STEM students in different types of universities. In terms of English self-study and professional qualification certificates, the positive effect on female students in Tier-2 and Tier-3 universities was significantly larger than that of Tier-1 universities. Moreover, the positive effect of research participation of Tier-3 female students was significantly larger than that of Tier-1 and Tier-2 universities. One possible explanation for these findings is that Tier-2 and Tier-3 female students may believe that their university reputation is of limited help in employment, so they may need to enroll in better universities for graduate studies or study abroad. Therefore, English language learning and research participation may be highly beneficial to achieving these goals.

Social support refers to the assistance that an individual can access through social ties with other individuals, groups, and the broader community. In this study, we measured social support through student–faculty interactions. Interestingly, the positive effect of student–faculty interaction on the SPE scores of female students in Tier-1 and Tier-3 universities was significantly lower than that of students in Tier-2 universities. This difference in student–faculty interaction may be related to the positioning of Tier-2 universities in China's higher education system. The resources and reputation of

TABLE 4 Mean values of variables in different subgroups.

Factors	Variables	T1-M	T1-F	T2-M	T2-F	T3-M	T3-F	*p* value
Self-perceived employability	SPE	60.931	55.760	61.393	57.463	58.973	53.904	$p < 0.05$
Curriculum experience	Professional curriculum-job seeking	61.466	60.767	60.376	60.592	59.541	60.213	$p > 0.05$
	Academic challenge	61.984	63.521	60.088	62.927	59.618	61.427	$p > 0.05$
	Curriculum – solving problems	77.924	80.185	75.104	77.047	74.863	76.600	$p > 0.05$
Extracurricular experience	Internship	24.710	20.030	28.410	25.550	33.020	29.980	$p < 0.05$
	English language learning outside class	16.950	20.850	14.940	18.690	14.150	14.770	$p < 0.05$
	Academic competitions	29.020	29.180	23.060	27.440	22.280	22.630	$p < 0.05$
	Certificates	29.660	30.700	31.780	41.910	31.630	39.390	$p < 0.05$
	Research experience	8.670	12.460	7.790	9.430	6.610	5.840	$p < 0.05$
Faculty supportive activities	Student–faculty interaction: instructors of courses	34.183	30.491	38.341	33.291	43.335	38.796	$p < 0.05$
	Student–faculty interaction: class teacher	33.848	29.624	37.166	32.056	40.785	34.748	$p < 0.05$
	Student–faculty interaction: fudaoyuan	30.684	24.564	34.508	28.163	38.487	31.416	$p < 0.05$

Tier-2 universities are far better than those of Tier-3 universities, while the employment orientation is stronger than that of Tier-1 universities. The goal of Tier-1 universities is to 'lay a solid foundation for China to become a moderately developed country' and to cultivate research-oriented talent who can serve the country's development (MOE, 2004). The goal of Tier-2 universities is to 'solve the major problems of economic construction and social development.' Compared with the political and social significance of Tier-1 universities, Tier-2 universities emphasize economic factors to a greater extent (Xu and Wang, 2007). Conversely, Tier-2 universities, with a focus on addressing major economic and social challenges, align more closely with employment-oriented objectives. The superior resources and reputation of Tier-2 institutions compared to Tier-3 counterparts likely contribute to a more robust infrastructure for fostering meaningful student–faculty interactions. This heightened emphasis on employment outcomes in Tier-2 universities could explain the observed stronger positive effect of these interactions on the SPE scores of female students (Table 6).

Results of the focus group interview

Female STEM students at Tier-1 universities: the individual gap among female students is wider than the female–male gap

Female participants from the sampled Tier-1 university stated that the university reputation was a stepping stone for them to seek jobs, but they did not think their university experience offered much help in raising their individual SPE. Female STEM students at such universities had relatively high SPE and believed that gender differences were much smaller than individual differences in general. For example, a master's student at a Tier-1 university (Tier-1G01) said she felt no different from her male peers. She elaborated as follows:

> Because of the good reputation of my school, an employer will quickly give me a chance. On the other, people may have higher expectations of me. I worry that my work ability is not worthy of the school brand, so I often feel less confident. But in general, SPE comes from individual ability, and I do not think I'm any different from my male peers. (Tier-1 G01)

Interestingly, female students at a Tier-1 university from other majors in the senior year (Tier-1G02) showed considerable confidence in their personal capabilities. A student in chemical engineering said,

> My admission to this university proves that I can do my job to some extent. Based on my personal experience, my colleagues tend to ignore gender and will not take care of me just because I am a girl. (Tier-1G02)

As a whole, female students were not highly aware of the gender gap during the job-seeking process, and they were enthusiastic about improving themselves to enhance their SPE. Not all Tier-1 female STEM students were so confident, however. Depending on their personal experiences, their views on gender differences were somewhat subtle. Female students who had already been exposed to the job-seeking process, such as summer internships, were more pessimistic and perceived the plight of STEM women indirectly by observing the career development of their female colleagues, while female students who were not exposed to the workplace had difficulty perceiving the existence of a gender gap.

TABLE 5 Impact of college experience on SPE.

		b(se)	*t*
Curriculum experience	Professional curriculum-job seeking	0.213 (0.005)	41.71***
	Academic challenge	0.055 (0.005)	11.09***
	Curriculum – solving problems	0.097 (0.005)	19.65***
Extracurricular experience	Internship	0.013 (0.002)	5.07***
	English language learning outside class	0.034 (0.003)	11.11***
	Academic competitions	0.023 (0.003)	8.43***
	Certificates	0.005 (0.002)	2.26*
	Research experience	0.025 (0.004)	6.04***
Faculty supportive activities	Student–faculty interaction: instructors of courses	0.050 (0.005)	9.56***
	Student–faculty interaction: class teacher	0.040 (0.007)	5.81***
	Student–faculty interaction: fudaoyuan	0.087 (0.007)	13.31***
Controlled variables		Yes	
Sample size		18,953	
R-squared adjusted		0.3251	
F value		829.46***	

*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.

Female STEM students at Tier-2 universities: the gender gap demands extra effort from women

For female students at Tier-2 universities, the issue of sexism becomes more subtle and complex. Tier-2 universities have a brand effect in the job market, and quality teaching helps students acquire competitive knowledge and skills. However, compared to their male peers, female STEM students feel being discriminated to a certain degree. They actively participate in various activities to enhance their resumes to prove that they can do better than male students and are not less competitive than male students. Some female students from Tier-2 universities (Tier-2G01, Tier-2G02) reported that employers made no secret of their preference for men in the recruitment process. A student said,

> In some job-hunting processes, companies will not hesitate to recruit male students rather than female students with the same qualifications. I often feel helpless because even if the girl is better than the boy in many ways, the company will hire the boy. (Tier-2G01)

Another female student echoed this point and said,

> If I hadn't attended last fall's recruiting season, I would have thought there was no gender gap. Overall, the jobs we found were good but generally worse than those of men of the same major and level. (Tier-2G02)

Compared to peers at Tier-1 universities, female students from Tier-2 universities were fully aware of the gender gap and were resentful that they did not have the same opportunities as their male peers.

Female students at Tier-3 universities: individual efforts are negligible when facing sexism

Female students in Tier-3 universities recognized the apparent gender discrimination in workplaces. They felt female students' efforts were meaningless and that the gender differences in employment were far greater than individual differences. As a result, many female STEM students either chose to pursue postgraduate education in a higher-ranked university or chose a career in non-STEM fields. An engineering student studying at a Tier-3 university said,

> In many tests, such as those requiring rote memorisation or a lot of practice, girls are better than boys. But in the actual interview process, employers will not look at these scores and certificates and directly reject girls because of gender. (Tier-3G01)

For female students at Tier-3 universities, the gender gap is no longer just a negative factor that produces extra difficulties in job hunting; it changes their career choices. A student from a Tier-3 university elaborated,

> Male preference has become the basic rule in our job-hunting process, and our efforts to improve grade points or to obtain certificates on campus seem to be meaningless for job hunting. Most of the time, our efforts are just to change majors or to further our education. (Tier-3G02)

Discussion

The findings of this study reveal the differences in self-perceived employability of female students in STEM majors in three tiers of universities in China.

TABLE 6 Moderated effect size of female students in different subgroups.

		Female in Tier-1	Female in Tier-2	Female in Tier-3
Curriculum experience	Professional curriculum-job seeking	0.000 (reference)	0.011	0.003
	Academic challenge	0.000 (reference)	−0.022	−0.031
	Curriculum- solving problems	0.000 (reference)	0.031	0.016
Extracurricular experience	Internship	0.000 (reference)	0.007	0.001
	English language learning outside class	0.000 (reference)	0.022**	0.037***
	Academic competitions	0.000 (reference)	0.002	0.013
	Certificates	0.000 (reference)	0.011*	0.013*
	Research experience	0.000 (reference)	0.021	0.068***
Faculty supportive activities	Student–faculty interaction: instructors of courses	0.000 (reference)	0.014*	0.013
	Student–faculty interaction: class teacher	0.000 (reference)	0.004	0.007
	Student–faculty interaction: fudaoyuan	0.000 (reference)	0.014*	0.011

*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.

One of the major findings has confirmed that the hierarchical higher education system has positioned female STEM students in the bottom universities in a very difficult position. There is a steep hierarchy in the Chinese higher education system that leads to varied college experience and different SPE of female students from universities of different tiers. In contrast to the higher education system in Western countries, Chinese universities are deeply embedded in their political system and rely on the government for resources (Zha et al., 2017). Marginson (2011) developed the concept of the 'Confucian model' to define the close link between academics and national governance in China and other Asian countries. In Confucian society, the reputation of a university is determined by the government-assigned 'tier' regardless of the real outcomes, and employers believe that enrolling in a Tier-1 university counts more than graduating with good GPA from a Tier-3 university (Han and Guo, 2015). According to our quantitative analysis, formal curriculum experience is the leading factor in STEM students' SPE, but academic performance on campus may be covered up by the tier of the university. Some scholars have criticized that the main function of China's higher education system has been reduced to simple social stratification (Wu and Guo, 2018; Luo et al., 2021), which significantly affects college students' expectations for their future career paths and their college experience.

We found that female students in STEM majors in Tier-2 and Tier-3 universities made tremendous efforts to develop their resumes through a wide array of extracurricular activities, reflecting their awareness of their dual disadvantaged position in the job market with regard to gender and institutional reputation. Female students from Tier-3 universities have a much stronger motivation to prove their capability through various kinds of certificates or qualifications, in part to compensate for the recognition that a diploma from their own universities cannot provide much help in getting them good jobs. However, unlike female graduates from Tier-1 or Tier-2 universities who are exposed to a wider range of science and engineering jobs, female students in Tier-3 universities are more likely to be matched to more labor-intensive jobs (such as processing and assembly), which puts them in more disadvantaged positions when competing with male applicants. In addition, women's careers are easily interrupted by childbirth, resulting in the phenomenon of 'leaving early' in their careers. In China, female students in Tier-1 universities have more opportunities to join government organizations, state-owned enterprises, and public institutions, whereas most female STEM students in Tier-3 universities are employed outside the state-owned system. They are more likely to be forced to resign after giving birth and find it difficult to return to work after lactation (Li, 2016; Ding and Xie, 2020).

Another major finding of this study highlights the fact that gender has not gained sufficient attention in Chinese universities regardless their tiers in the stratified higher education system. This study finds that faculty members and college students have insufficient gender awareness, and universities do not have adequate agency to narrow the gender gap. Some gender researchers in China have analyzed the reasons for the lack of gender awareness of contemporary Chinese people from a historical perspective. They believe that in contrast to the feminist movement in the West where women pursued their own rights, China's 'women's liberation' is a byproduct of China's social revolution, and gender equality in law and policy is ahead of the public's personal consciousness (Yu, 2011). We found that female students had a significant disadvantage compared with their male peers in terms of informal curriculum experience and the frequency of student–faculty interaction, but universities rarely offer specific measures to narrow the gender gap. In addition, given the gender discrimination in employment commonly faced by female STEM students, universities rarely provide sufficient support through employment guidance in advance, so female students only realise the existence of gender differences when they participate in the job-seeking process.

The results of this study have several important implications for theory, research, policy, and practice. First, there is a need to reflect on and expand the use of human capital theory of gender disparity in the studies of higher education in the different national contexts. Human capital theory posits that engaging in career-related activities can enhance the self-perceived employability of female STEM students. As

some scholars have found, female STEM students in lower-tier universities need academic competitions and professional qualification certificates as human capital to prove their work ability due to the weak signaling role of their universities in the labor market (Zhang and Zhen, 2011; Zhao, 2011). However, the outcomes of this research reveal a departure from this theory, like a few studies conducted in the context of other developing countries (Dao, 2012; Fatima, 2013). In the context of China and similar developing economies, the established dynamic mechanism linking career-related activities to improved self-perceived employability appears to be attenuated. The physical power gap becomes a prominent factor shaping female students' self-perceived employability in developing nations, which overshadows the impact of college experiences, potentially leading to a scenario where female students find themselves disheartened about investing in career related activities.

With regard to research, the academic significance of this research lies in its innovative approach, providing an intersectional perspective that delves into the underrepresentation of female students in STEM disciplines through the lens of both gender and university tier. This unique analytical framework offers a complement to previous institutional theories by uncovering the intricate dynamics shaping the experiences of female STEM students within the hierarchical structure of the Chinese higher education system. While prior research has primarily focused on the institutional factors influencing educational and career outcomes, our study enhances this perspective by elucidating how the stratification within the Chinese higher education system intertwines with gender dynamics, thereby influencing the self-perceived employability of female STEM students (Dheer et al., 2019; Gaweł and KRSTIĆ, 2021). This adds to scholarship on gender inequality in China, which previously focused on the societal effects on female students' educational outcomes and career choices rather than on female students' reflexive experience. By analysing female students' experience and self-perceived employability in different tiers of universities, this study captured a nuanced understanding of female students in STEM majors in Chinese higher education, which extends the generalizability of the results of research on females in STEM fields conducted in Western countries and documents the current landscape and challenges for females in STEM majors in China for future international comparative research. Additionally, the impact of national culture, particularly gender culture, on female students' experience and employability can be revisited in future studies to identify the reasons for the differences found in female students' self-perceived employability and college experience across countries.

In terms of implications for policy, the results highlight the varied impact of college experience on female students in STEM majors in universities of different tiers. The world-class university movement of China stratifies Chinese universities, which has a large influence on the ways the Chinese job market perceives and hires university graduates and strongly shapes college students' perceived employability. The results of this study can help policymakers critically reflect on the potential ramifications of the university stratification of the Chinese higher education system and reduce the negative effects of the stratification for certain groups of students accordingly in broader society.

In terms of implications for practice, this research provides valuable evidence for academic and student affairs practitioners as well as university administrators and policymakers to understand how university activities affect female students who enroll in traditionally male-dominated fields of study. By highlighting the importance of enhancing female students' self-perceived employability, this research hopes to encourage universities of different tiers to provide a wider array of work-integrated learning opportunities for female students and invite faculty members, mentors, and staff to spend more time interacting with female students in STEM majors.

Conclusion

The findings of this study unfold distinctive patterns across Tier-1, Tier-2, and Tier-3 universities, shedding light on the varied experiences and challenges faced by female STEM students within this stratified higher education system. The findings highlight the importance of recognizing that, within a hierarchical higher education system, female students may perceive different impacts based on the position of their university. It is important to have context-specific considerations in shaping strategies for empowering and advancing the careers of female STEM students in developing countries or countries with stratified higher education system.

While this study provides valuable insights into the self-perceived employability of female students in STEM majors across different tiers of universities in China, it is important to acknowledge certain limitations that may impact the generalizability and interpretation of the findings. First, this study provides a snapshot of the situation at a specific point in time. Given the dynamic nature of societal and educational systems, the findings may not capture potential changes or developments that could occur in the future. Second, this study primarily focuses on the intersection of gender and university tier, while did not bring other potential intersectional factors into the research such as socioeconomic status or regional differences. Future research will explore these intersectional factors so as to provide a more comprehensive understanding of the challenges faced by female STEM students. Third, faculty perspectives are not extensively explored in this study. Including faculty viewpoints could provide a richer exploration of the factors influencing self-perceived employability.

Data availability statement

The datasets presented in this article are not readily available because the datasets generated and/or analyzed during the current study are not publicly available to protect the participants' privacy. Requests to access the datasets should be directed to LZ, zhoul22@mails.tsinghua.edu.cn.

Ethics statement

The studies involving humans were approved by Institute of Education, Tsinghua University. The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study. Written informed consent was obtained from

the individual(s) for the publication of any potentially identifiable images or data included in this article.

Author contributions

WW: Conceptualization, Project administration, Supervision, Writing – review & editing, Writing – original draft. LZ: Formal analysis, Methodology, Writing – original draft, Writing – review & editing. DH: Project administration, Writing – original draft, Writing – review & editing. MZ: Data curation, Methodology, Writing – review & editing. ZY: Data curation, Methodology, Writing – review & editing. XT: Writing – review & editing.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Publisher's note

Supplementary material

The Supplementary material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fpsyg.2023.1282934/full#supplementary-material

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Workplace bullying and sexual harassment at work among hotel housekeepers in the Balearic Islands (Spain)

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Introduction: Hotel housekeepers are close to being a 100% feminized occupational group in Spain. This fact, coupled with some features of the job, places them at high risk of sexual harassment at work and bullying in the workplace. This study aims to explore experiences of sexual harassment at work and workplace bullying among hotel housekeepers in the Balearic Islands. Second, it aims to describe and estimate the prevalence of both phenomena.

Methods: This is a mixed-methods study. Ten semi-structured interviews were conducted with key informants, and six focus groups were held with hotel housekeepers. Additionally, a quantitative cross-sectional study (n=1,043) was undertaken.

Results: Most participants in focus groups had been sexually harassed at work. However, they had normalized this kind of situations, not labeling themselves as victims of sexual harassment; and harassment events were seen as unimportant, normal, and unquestioned, as well as being part of their daily work. Hotel housekeepers who were sexually harassed indicated high levels of stress at work and low social support. The prevalence of different workplace bullying behaviors was quite high among hotel housekeepers working in the Balearic Islands. Some were associated with poorer self-rated health, less satisfaction with the job and the salary, lower social support, and higher levels of stress. Despite this, qualitative methods informed us that less severe behaviors were normalized and perceived by hotel housekeepers as intrinsic to their job.

Discussion: The results show the high tolerance to less severe expressions of sexual harassment at work and workplace bullying, as well as difficulties in or reluctance to labeling this kind of experiences as such.

KEYWORDS

sexual harassment at work, workplace bullying, hotel housekeepers, self-rated health, mixed-methods study, job satisfaction, wage satisfaction, job stress

1 Introduction

1.1 Justification, objectives, and benefits

Sexual harassment at work (SHaW) and workplace bullying (WB) constitute workplace injustice or discrimination and are a workplace health and safety problem (Campbell and

McFadyen, 2017). In addition, SHaW and WB undermine equality at work and constitute an attack on civil and human rights (ILO, 2020).

SHaW and WB occur in many occupational settings and economic sectors, including the tourism sector. The tourism sector makes an important contribution to the Spanish economy. In 2021, it was estimated to represent 8.0% of the gross domestic product (INE, 2021). In the Balearic Islands, 13.2% of the employed population was in the accommodation services (3rd quarter of 2022). It is estimated that approximately 13,000 hotel housekeepers (HHs) work in the Balearic Islands. HHs, mostly women, are mainly in charge of cleaning guests' rooms and common areas (i.e., the lobby). Hotel housekeeping is a precarious job because most HHs work in a recurring-seasonal manner, which implies not having a stable income throughout the year. Furthermore, the combination of feminization of the job and low job status has been directly related to their vulnerability to harassment (Hoel and Einarsen, 2003).

Most definitions of sexual harassment are based on Mackinnons' work, for whom "sexual harassment (…) refers to the unwanted imposition of sexual requirements in the context of a relationship of unequal power"(MacKinnon, 1979:1). Although sexual harassment can affect anyone, it particularly affects women (United Nation Women, 2018; International Labour Organization (ILO), 2020). The International Labor Organization (ILO) describes two key elements in the definition of SHaW. The first one, the *quid pro quo* element, refers to any kind of conduct of a sexual nature that is unwelcome and offensive to the recipient and is used to make work-related decisions. The second one is that this kind of conduct creates a hostile work environment for the recipient but also for the witnesses (Hauge et al., 2007; International Labour Organization (ILO), 2020) and negatively impacts recipients' health (Okechukwu et al., 2014; Hershcovis et al., 2016). Behaviors and actions involving sexual harassment include verbal comments and dirty jokes, sexual gestures, and touching. Furthermore, SHaW includes behaviors coming from those in positions of authority, subordinates, or clients (Fitzgerald and Cortina, 2018).

Even though SHaW is a problem that has been studied over the last few decades, its actual prevalence remains unknown (Fitzgerald and Cortina, 2018), and only estimations are available. Several meta-analyses and population-based studies recently carried out estimated the prevalence of sexual harassment or violence at workplaces (Zeng et al., 2019; Basile et al., 2020; Lu et al., 2020; Worke et al., 2020; Ranganathan et al., 2021). The prevalence differed among studies, depending above all on the geographical context (north vs. middle-and low-income countries), the occupational group, and the method or questions used, as specifically indicated in Ilies et al. (2003). Morgan and Pritchard (2019) stated that SHaW is especially prevalent in the hospitality sector. Data from the 'Survey on violence against women in the European Union' (European Union Agency for Fundamental Rights, 2012) showed that among European women who had experienced sexual harassment at least once since the age of 15, about 32% reported the perpetrator to be somebody in their job context; this percentage was 20% in the case of Spain. More current data from the Spanish mega-survey of 'Violence against women' (Subdirección General de Sensibilización, 2020) revealed that out of the women who had suffered sexual harassment and answered the question about who the perpetrator was, about 17.3% declared to have been sexual harassed by a man from their work and 1.1% by a woman from their work. Additionally, out of the women who suffered stalking—when the harassment is repeated—4.1% was by their boss and 7.3% was by a man at their workplace (Subdirección General de Sensibilización, 2020). The rest were harassed by an unknown person or a person from a non-work context.

Hotel settings have been identified as one of the settings with most cases SHaW and WB (Milczarek, 2010). The #Metoo movement, which spread globally in October 2017 (Ram, 2021) and in which people shared their experiences of sexual harassment through social networks, raised the visibility of sexual harassment in hospitality settings. In the tourism industry, HHs can be harassed by guests, supervisors/managers, and/or co-workers. Hotels' recommendations to HHs to leave the door open while cleaning and tidying acknowledge HHs' vulnerability to guest-initiated sexual harassment (Nimri et al., 2020).

1.2 Theoretical and previous findings

1.2.1 Sexual harassment at work

Some characteristics of the hotel housekeeping job explain HHs' vulnerability to sexual harassment by guests, such as working alone, away from busy and common spaces (i.e., the lobby), and interacting with customers (Hunter and Watson, 2006; ILO, 2017; Mensah, 2022). HHs usually clean the room when guests are not present, but sometimes they find somebody inside the room or guests come in while they are working (Hunter and Watson, 2006). These characteristics, coupled with the fact that guests are away from home and away from their daily constraints, might increase the likelihood of unethical tourist behaviors (Hunter and Watson, 2006). One study found that 44 out of 46 HHs experienced sexual approaches by male guests, many being international guests (Kensbock et al., 2015).

Kensbock et al. (2016) reflect on two characteristics of the HHs' job encouraging SHaW: being female and performing a traditional role. Uniform style was a way to sexualize HHs, a fact perceived by HHs as encouraging guests to sexually harass them (Kensbock et al., 2016). Additionally, the tasks involved are associated with domestic work, underscoring women's traditional roles; housekeeping is considered unskilled work, because the skills needed are conceived to be inherent to females, and it has been labeled as 'dirty work' (Nimri et al., 2020). In this line, Kensbock et al. (2016) reported HHs' perceptions of inferiority and invisibility. Overall, these locate HHs on two axes of inequality or discrimination: being women and having a low socioeconomic status (Kensbock et al., 2016), thereby facing structure-related violence not only from their supervisors but also from guests and male co-workers (Ram, 2018).

The results of several meta-analyses highlighted that organizational factors are more important than individual ones to predict SHaW (Ilies et al., 2003; Willness et al., 2007; Cantisano et al., 2008). Organizational factors include "men being numerically, structurally and stereotypically dominant"(Cortina and Areguin, 2021; p. 295); organizational climate of tolerance toward sexual harassment behaviors; and masculinity contest cultures—characterized by hard competition, disdain for personal relationships, displays of strength, etc. (Fitzgerald and Cortina, 2018; Cortina and Areguin, 2021).

Outcomes of SHaW include the creation of a hostile work environment, personal suffering, damage to the victim's reputation, the victim's loss of dignity and self-esteem, and blaming the victim's behaviors by relatives, friends, and peers (ILO, 2020). Some health consequences associated with SHaW are neck pain (Stock and Tissot, 2012),

psychological distress (Jung and Yoon, 2020), and post-traumatic disorder symptoms (Ho et al., 2012). Even less intense (but frequent) forms of SHaW have been identified as decreasing the victim's wellbeing (Sojo et al., 2016). SHaW also entails experiencing more stress at work (Leskinen et al., 2011), increasing job and co-worker dissatisfaction (Willness et al., 2007; Leskinen et al., 2011; Merkin and Shah, 2014), and negative economic consequences for the victim, including changing their job, reducing working hours, financial losses, and a negative impact on their career progression (Fitzgerald and Cortina, 2018; McLaughlin et al., 2018; ILO, 2020) SHaW also involves economic costs for the organization; it negatively affects its functioning (ILO, 2020), increasing worker burnout (Jung and Yoon, 2020), turnover intentions (Ilies et al., 2003; Willness et al., 2007; Cantisano et al., 2008), and absenteeism (Merkin and Shah, 2014).

1.2.2 Workplace bullying

There is no consensus regarding the definition of WB. Despite this, Einarsen et al. (2003) defined WB as "the systematic mistreatment of a subordinate, a colleague, or a superior, which, if continued, may cause severe social, psychological, and psychosomatic problems in the victim." WB includes behaviors such as assigning unpleasant tasks to the victim; excluding or ignoring them at work; and insulting them or spreading rumors about them (Hershcovis et al., 2016).

Not only is the frequency and duration of the situation important in order for it to be labeled as WB, but also in this situation the victim is unable or has difficulties in defending themselves (Leymann, 1990, 1996; Einarsen and Skogstad, 1996). One systematic review reported that women were more likely to suffer WB than men (Feijó et al., 2019).

The predominant framework explaining the antecedents of WB is the *work environmental hypothesis*, which states that stressful and poorly organized work environments might lead to conditions that make bullying situations emerge (Milczarek, 2010; Hershcovis et al., 2016; Feijó et al., 2019). Accordingly, previous empirical evidence suggests that the main factors associated with WB among hospitality employees were related to working conditions (Bohle et al., 2017; Ariza-Montes et al., 2018). Ariza-Montes et al. (2018) found that these factors were working at high speed, the perception that one's health was at risk because of work, dissatisfaction with working conditions, and interacting with angry customers. The results by Bohle et al. (2017) indicated that disorganization and regulatory failure were positively related to WB.

Health-related and organizational outcomes have been described among hospitality workers who had suffered from WB. Several studies reported that WB was negatively related to employees' wellbeing (Ram, 2018; Hsu et al., 2019; Hayat and Afshari, 2021) and positively associated with emotional exhaustion (Srivastava and Agarwal, 2020). These studies also found that organizational factors (i.e., perceived organizational support and organizational justice) reduced the negative effect of WB on wellbeing. At the organizational level, an increase in burnout and higher intentions to quit have been described (Bohle et al., 2017; Ram, 2018; Srivastava and Agarwal, 2020). Regarding the general working population, health problems coupled with organizational outcomes of WB imply a rise in absenteeism and staff turnover, and subsequent economic costs for organizations (Milczarek, 2010; Hershcovis et al., 2016).

Thus, the fact of the job being low socioeconomic status and linked to the feminine sphere (due to the tasks involved in the job) might exacerbate the risk of violence and harassment of HHs. Given the characteristics of HHs and the strong effects that SHaW and WB might have at several levels (human rights, health, emotional, economic, organizational), this study wants to fill the existing gap in the literature regarding SHaW and WB experiences of HHs and their prevalence. Hence, the aim of this study was (i) to explore experiences and perceptions of SHaW and WB among HHs in the Balearic Islands and (ii) to describe and estimate the prevalence of SHaW and WB among HHs in the Balearic Islands.

2 Materials and methods

This is a mixed-methods study consisting of two distinct phases, qualitative and quantitative, conducted in the primary healthcare setting in the Balearic Islands. This study is part of a wider project, "Hotel Housekeepers and Health," which is aimed at exploring the hotel housekeeping job and HHs' health problems, as well as improving HHs' quality of life and health.

The qualitative study was carried out between February and June 2018. Ten semi-structured interviews were conducted with key informants, and six focus groups (FG) were held with HHs. Taking into account all the information generated and analyzed in the qualitative study, the quantitative study took place between November 2018 and February 2019.

2.1 Participants

2.1.1 Qualitative study

HHs participating in FGs were recruited through purposive sampling. General practitioners in different healthcare centers identified potential participants according to sociodemographic and labor variables and informed them about the research. This was the most feasible and effective way to contact them and obtain their participation. Afterward, researchers contacted and invited them to participate in FGs and set the date. Selection criteria included being 18 years of age or older and having worked as a HH during the previous season (2017). Additionally, profiles regarding different variables—age, years working as a HH, hotel star rating, and kind of contract (permanent, temporary, or recurring-seasonal employment contract)—were included to ensure generating rich information. Key informants were selected through purposive sampling to obtain different perspectives and rich information about the HH job.

2.1.2 Quantitative study

HHs who were at least 18 years old, had health coverage in the Balearic Public Health System, worked as HHs during 2018, and were willing to participate in this study were included after signing the informed consent. Those with language barriers to understand the informed consent, the survey, and the questions in FG and interviews in Spanish were excluded.

2.2 Sample and data collection

2.2.1 Qualitative study

Empirical material was collected through FGs with HHs—performed in different healthcare centers—and semi-structured

interviews of key informants. Four FGs were held in Mallorca, one in Menorca, and one in Ibiza; so each participant attended the FG taking place in the primary health center closest to their home. FGs ranged from 60 to 90 min and interviews from 25 to 80 min, all of which were conducted by the first author. Interviews were recorded digitally, and FGs were video-recorded as well. Data collection was undertaken until saturation of the information was reached.

Thirty-four HHs participated in FGs—between four and eight in each one. A total of 64 HHs were invited: 20 of them refused to participate, and although 10 had initially agreed, in the end, they did not attend the FG. HHs participating in FGs did not receive any financial compensation, but they did receive a small "thank you" gift after their participation (i.e., a bottle of extra-virgin olive oil).

Sociodemographic characteristics of FG participants are displayed in Table 1 and key-informant profile in Table 2.

2.2.2 Quantitative study

An initial list of about 13,000 possible HHs was available from the Balearic Health Services. The sample had to reach 978 HHs to estimate population parameters with a 3% precision and a confidence of 95%.

TABLE 1 Sociodemographic characteristics of participants in the focus groups.

Age (n = 34)	
$\bar{X}$	50 years
SD	10 years
<30	5.9%
30 to 39	5.9%
40 to 49	23.5%
50–59	52.9%
>59	11.8%
Years working as HHs (n = 34)	
$\bar{X}$	19.5 years
SD	11.5 years
<10	17.6%
10–14	20.6%
15–24	32.4%
≥25	29.4%
Tenure (n = 34)	
Permanent[1]	2.9%
Recurring-seasonal contract[2]	88.2%
Temporary[3]	8.8%
Hotel category (n = 34)	
2*	6.1%
3*	45.5%
4*	42.4%
5*	6.1%

$\bar{x}$, mean.
SD, standard deviation.
[1]HHs working the whole year.
[2]HHs working only some months per year (usually spring, summer, and autumn), but the company commits to hiring them again the following year.
[3]HHs with a contract that lasts a pre-established number of months.

We foresaw including 1,115 HHs with 10% of losses; therefore, for each HH selected, three other HHs were identified—with the same age and from the same area—who could be selected as a replacement.

Health professionals (nurses) were trained to conduct the researcher-administered survey and were put in charge of recruiting HHs. Survey administration lasted for 1 h approximately and was carried out in the HHs' primary healthcare centre.

We enrolled 1,043 HHs: 773 in Mallorca, 89 in Menorca, 137 in Ibiza, and 44 in Formentera. Table 3 shows the sociodemographic, individual, and labor characteristics of the HHs included in the sample.

2.3 Variables

2.3.1 Qualitative study

Based on the literature review, we developed a script to explore the areas identified as relevant and approach them in a similar way across all FGs and interviews (see Table 4). The initial script was completed as the data collection was progressing. The areas approached in FGs and interviews were the characteristics and organization of the HHs' work; positive and negative aspects of the HHs' job; equipment and materials available; relationships between hotel workers and between HHs; stress factors; SHaW and WB; and health problems. This study focused on the analysis of the information related to SHaW and WB.

2.3.2 Quantitative study

2.3.2.1 Dependent variables

SHaW and WB were measured through seven questions inspired by the Leymann Inventory of Psychological Terror Scale (Leymann, 1990) and Cisneros Scale (Fidalgo and Piñuel, 2004). The questions were as follows: "Check the corresponding box if any of the following situations have occurred at your workplace: I. personal or professional scorn; II. feeling ignored or invisible; III. verbal intimidation (threats, raised voice, yelling); IV. malicious and humiliating comments; V. excessive supervision (schedules, work, strict control over work); VI. physical threats; VII. indecent sexual advances or propositions." () answers were "never," "a few times a year," "once a month or less," "a

TABLE 2 Codes and key-informant profiles of interviewees.

Code	Key-informant profile
HHi1	HH belonging to a union
HHi2	HH belonging to a union
HHi3	HH belonging to a HH association
HHi4	HH belonging to a HH association
SUP	HH supervisor
GP	General practitioner in a coastal practice
PInsp	Physician in public inspection service
HRDir	Director of human resources (HR) in a hotel chain
Prev	Head of the occupational risk prevention service in a hotel chain
OHealth	Head of occupational health department in a hotel chain

TABLE 3 Sociodemographic, individual, and labor characteristics.

	Median	IQR
Age (years)	43.3	36.0–51.02
Years working as HHs	8.0	4.0–15.0
Months worked previous season	7.0	6.0–8.0
Hours worked per week	40.0	40.0–40.0
Number of rooms cleaned/day	18.0	15.0–22.0
	***n*%**	**95% CI**
Nationality (*n*=1,043)		
Spanish	563 (54.0)	50.9–57.0
Double nationality	182 (17.4)	15.2–19.9
Latin America	169 (93.9)	89.2–96.6
Africa	9 (5.0)	2.6–9.4
Asia	2 (1.1)	0.3–4.4
Foreign	298 (28.6)	25.8–31.4
Latin America	131 (44.6)	38.9–50.3
Africa	89 (30.3)	25.3–35.8
Asia	2 (0.7)	0.2–0.3
European non-EU countries	10 (3.4)	1.8–6.2
EU-countries	62 (21.1)	16.8–26.2
Level of studies (*n*=1,041)		
Illiterate/ primary incomplete	34 (3.3)	2.3–4.5
Compulsory education (primary and secondary)	591 (58.6)	53.7–59.8
Post-compulsory secondary education	98 (28.6)	25.9–31.5
University	118 (11.3)	9.5–13.4
Type of contract (*n*=1,016)		
Permanent	63 (6.2)	4.8–7.9
Recurring-seasonal contract	551 (54.2)	51.1–57.3
Temporary	402 (39.6)	36.5–42.6
Type of establishment (*n*=1,043)		
Hotel	625 (59.9)	56.9–62.9
Apart-hotel	351 (33.7)	30.8–36.6
Rural hotel	42 (4.0)	2.9–5.4
Others	25 (2.4)	1.6–3.5
Hotel category		
1*	9 (1.0)	0.4–1.8
2*	37 (4.0)	2.8–5.4
3*	210 (22.5)	19.9–25.3
4*	574 (61.5)	58.3–64.7
5*	103 (11.0)	9.1–13.2

*Hotel category in stars.

few times a month," "once a week," "several times a week," and "every day."

These variables were dichotomized according to Leymann's statistical definition concerning the frequency by which harassment actions occurs (Leymann, 1990); it was assumed that all participants who reported at least once a week were actually suffering from SHaW or WB. Hence, response options "never," "a few times a year," "once a month or less," and "a few times a month" were grouped as "non-harassed," and "once a week," "several times a week," and "every day" were grouped as "harassed."

2.3.2.2 Independent variables

Sociodemographic variables include age, nationality (Spanish, double nationality, or other), and level of studies.

Labor variables include years working as HHs, months worked during the previous tourist season, hours worked per week, number of rooms cleaned per day, type of contract (permanent, recurring-seasonal, or temporary), accommodation type (apartment, hotel, etc.), and hotel category.

Level of stress at work was measured with the question, "Globally and taking into account the conditions in which you carry out your work, indicate how you consider the stress level of your work on a scale from 1 (very stressful) to 7 (not at all stressful)."

Satisfaction with the job was measured with the question, "Taking into account the characteristics of your job, indicate to what extent you consider your job as satisfactory on a scale from 1 (not satisfactory at all) to 7 (very satisfactory)."

Satisfaction with the salary was measured through the question, "To what extent are you satisfied with your salary? Please, circle the number that describes how you feel. To do so, use the following response scale." Answers ranged from 1 (lowest level of satisfaction) to 7 (highest level of satisfaction).

Self-rated health: on the day the researcher administered the survey, participants were asked to rate their overall health on a 0–100 vertical visual analog scale taken from the EuroQoL-5D-5L, a generic instrument for describing and valuing health (Herdman et al., 2001).

Social support was measured by DUKE-UNC-11 (Broadhead et al., 1988), an 11-item questionnaire to assess functional elements of social support (including confident and affective support) validated in the Spanish population (de la Revilla Ahumada et al., 1991; Bellón Saameño et al., 1996). A sample item was "Do you receive visits from your friends and relatives?." Each item is valued on a 5-point scale (ranging from 1 "far less than I would like" to 5 "as much as I would like"). A final score ranging from 5 to 55 is obtained; 32 points or below correspond to low social support, and over 32 points correspond to adequate social support (Bellón Saameño et al., 1996).

2.4 Data analysis

2.4.1 Qualitative study

FGs and interviews were transcribed literally. An alphanumeric code was assigned to each HH to guarantee confidentiality but also to be able to identify the contributions of each person. Each contribution of FG participants was identified by "HH" (meaning 'hotel housekeeper') and two numbers separated by a dot: the first number corresponding to the FG (ranging from 1 to 6) and the second number pertaining to the individual who made the contribution. A code was also assigned to key informants to guarantee their confidentiality (see Table 2).

The contents of FGs and interviews were analyzed jointly, for the purpose of identifying both similarities and differences in the narratives. Thematic analysis was undertaken following the steps established by Braun and Clarke (2012). First, a code tree (Table 5) was elaborated according to the objectives of the research and the reading

TABLE 4 Sample questions from the script of interviews and focus groups with hotel housekeepers (qualitative study).

1. How is a working day of a hotel housekeeper?
2. How would you describe the relationship among co-workers? And with supervisors and managers?
3. Do you have any health problem?
4. Have you ever received contemptuous comments towards you or towards the work you had done by a client or co-worker? If this is the case, how did you react? Did you report it to a supervisor?
5. Have you ever suffered sexual harassment from a client or co-worker? If this is the case, how did you react? Did you report it to supervisor? What was his/her response? How did this response make you feel?

TABLE 5 Code tree regarding sexual harassment at work and workplace bullying.

Sexual harassment	
	Behaviors involving sexual harassment
	People who perpetrated sexual harassment
	Reactions to sexual harassment
	Response obtained from hotel management
	Assessment of the response obtained from hotel management in cases of sexual harassment
Bullying	
	Behaviors involving bullying
	People who perpetrated bullying
	Reactions to bullying
	Response obtained from hotel management
	Assessment of the response obtained in cases of bullying

of some FG transcriptions. This code tree was checked by a second researcher. To guarantee internal validity, both researchers encoded and analyzed the transcriptions separately. Finally, analysis of each code was discussed, and conclusions were agreed. Software NVivo11 was used to assist this analysis.

2.4.2 Quantitative study

Categorical variables (such as nationality, level of education, type of contract, etc.) are presented in absolute numbers along with percentages and 95% confidence intervals (95% CI), while quantitative variables (years working as HHs, months worked/year, etc.) are presented as medians and interquartile range (IQR).

Statistical analysis using SPSS for Windows version 23.0 was used for descriptive analysis and estimations of 95% CIs. Bivariate analysis was used to assess the relationship between sociodemographic, individual, and labor variables and the prevalence of SHaW and WB. The chi-square test and Mann–Whitney U-test were calculated. *P*-values of less than 0.05 were considered statistically significant (two-sided tests).

2.5 Ethics approval

The study was approved by the Balearic Islands Research Ethics Committee (IB3738/18 PI). An information sheet and informed consent were given to the participants before undertaking the FG or interview and before being enrolled in the quantitative study. Signed agreement of the forms was compulsory to participate.

3 Results

3.1 Qualitative study

Regarding SHaW, when the general and open question was posed ("Have you experienced sexual harassment in your workplace?"), HHs spontaneously gave a negative answer, mentioning that they had not experienced it. However, when the moderator gave some examples of situations of sexual harassment, participants in all FGs and HHs interviewed as key informant reported to have experienced them either personally or by a co-worker. However, the most severe situations were perceived as unusual by HHs.

> *Moderator (M): Guests that are naked when you go into the room…*
>
> *HH 3.1: Oh well, yeah, that yes.*
>
> *HH 3.2: That yes, that's why we see it as normal.*

According to FGs and interviews, all sexual harassment situations were guest-initiated. From more to less common, the following situations were mentioned by HHs:

- Guests were naked when HHs went into the room to clean it. HHs deemed this kind of sexual innuendo or indecent exposure as mischief.

> *HH 6.5: And it's happened to me, that you knock the room and the man's naked and you say, "Oh! Sorry, I'll come back later." And they say to you, "No, come in, come in." And he's naked.*
>
> *HH 4.5: I had a guest who always waited until his wife went to the swimming pool and when I was opposite, well he went inside and got undressed. And then, he was waiting for me to knock on the door. When I knocked on the door, he did this. He would get naked like this. Every day he did the same.*

- Guests chasing HHs through the hotel.

> *HH 6.8: Last year we had one man who chased the housekeepers, but the hotel manager was very quick.*
>
> *M: Because, what do you do in those cases?*
>
> *HH 6.1: Warn them not to make up that room.*
>
> *HH 6.2: Or the executive housekeeper goes up, so the girl does not have to go alone, or she sends another co-worker, so they make up the room together.*

- Unwanted sexual comments or propositions from guests.

> *HHi4: Let us see, sexual harassment from guests, yes. More than from co-workers […]. And coming in drunk and asking you to masturbate them […]. This year I had one workmate that this happened to with a client. Opening up to her naked. The guest came out, he did not want any cleaning, but he propositioned her, asking her if she could masturbate him, and she came to me crying to tell me about it and I said to her, "Come on, we are going down to tell the executive housekeeper." Her fear was that she'd be sacked. The thing is, on top of everything, you blame yourself. That's still happening nowadays.*

- Guests who closed the door once the HH was inside the room.

> *HH 4.7: I took advantage that they were on their way out, I told him if I could do the room for them, they said yes, they went to the pool. When I realized, I'd made the beds and everything. I went into the bathroom, you know, a small bathroom, the door. The guy came in, I saw him come in, "Oh, hello." As I'd seen him go out, I knew he was the guest in this room. When I realized, he had me cornered in the bathroom, touching my bum, and speaking to me in German, which I did not understand.*

- Unwanted touching.

> *SUP: Sometimes a guest wanted to go too far. If the guest is drunk, for example. But well, no. This issue cannot be judged as harassment (…)*
>
> *M: What happened, for example?*
>
> *SUP: Well, a guest arrived and gave a little slap on the backside, for example.*
>
> *M: But there are cases…*
>
> *SUP: Very, very, very, very isolated.*

The HHs' attitude was to normalize this kind of behaviors, giving little importance to these situations or even not acknowledging them as SHaW.

> *HH 6.1: Harassment, not harassment, no. But have not you ever had the case of someone coming out naked? […]. Or you are on a balcony and there's someone naked on the next-door balcony. Or they open the door to you stark naked and they say, 'come in, come in'. 'Later, I'll come when you are not in'.*
>
> *HH 6.7: Ah, that has happened, yes.*

When faced with these situations, HHs reported being alone because there was no co-worker nearby they could ask for help. HHs explained that when they reported this kind of situation to the supervisor, it was their word against the guests. However, HHs stated that once they reported it, despite not opening a formal claim against the client, hotel management and the supervisor gave a response to that situation, such as talking to the guest, not cleaning the room during the whole stay, or going in pairs to clean the room.

> *HH 2.2: About co-workers, yes. A young girl, erm, she was going to do the room and the guest closed the door on her. And – well, it happened two days, and on the third the executive housekeeper went with her.*

Despite this quite permissive response, HHs valued it positively because they felt supported. On many occasions, HHs also reacted to these sexual harassment situations with humor, above all, in the situations in which the client was naked inside the room when they entered to clean it.

> *HH 2.1: Now, for them to open the door to the room while naked, that does happen. I say, "Well, I'll come back at another time." They're completely unconcerned (she laughs). That's why I laugh, because "shame on them."*

Finally, participants reported that HHs received advice in training courses organized by hotels about how to avoid situations of sexual harassment by guests.

> *HRDir: Some nonsense from a guest… But nothing relevant, no. From guests, they (HHs) always have to be very careful. Of course, a lot of emphasis is placed on always leaving the door open, "Oh, I'm staying inside, you can close the door." No, no, the door always open, there must be communication….*

The open question about WB was "Have you been bullied by any co-worker or have you received any humiliating comments of scorn from a guest?" Although the first answer was a negative one, some HHs in the FGs reported not being well-treated by the executive housekeepers (their immediate supervisor), not receiving recognition for work well-done and perceiving that some guests looked down on them (although HHs perceived that most guests treated them with respect).

> *HH 5.3: people are very pleasant, but it's true that some people come and look down on you as if they were saying…I'm above and you are below.*
>
> *HH 6.2: Not contempt, but the guests do usually treat you badly sometimes.*
>
> *HH 6.8: I've seen an executive housekeeper call us all lazy and slobs. Because we did not know how to clean.*

Despite this, in the FGs, HHs only reported one serious case of bullying by a co-worker, in which the hotel reacted immediately by replacing the person who was bullying. While HHs did not report cases that fitted into the definition of bullying in the FG, the interviews

revealed that WB situations were quite common. Probably, the fact that the HHs interviewed were members of HH associations or unions made them more familiar with the term of WB and more exposed to receiving information on bullying cases. Moreover, the interview technique makes it possible to delve further into topics and explanations than FGs; so, interviewees were able to better explain the topics.

> *HHi2: They have to prepare them [the managers or executive housekeepers] to be tactful, because that's another thing there is; they treat people like shit, in capital letters, do not they? Honestly. And that's the saddest thing of all. That you go to work and they are constantly disrespecting you, because I've had loads of problems with that, not personally with me (…). But I know many people who have had lots of problems and what happens is that they do not want to say anything.*

> *HHi4: Then you have workplace bullying; they give you more work, they send you less help. Or they give you a lower rank, the places that are furthest away …*

Key informants working in hotels described these cases as unusual. The occupational health manager of a hotel explained that hardly any cases of WB occurred in the hotel. Despite this, he did report one case of bullying and how the existing protocol was applied.

> *OHealth: In some cases, there might have been, both vertical and transversal. What happens is that now, when there's a case of bullying, we already have a protocol.*

3.2 Quantitative study

Table 6 displays the results of the prevalence of SHaW and WB situations suffered by HHs.

Proportions of HHs who had suffered physical threats or sexual harassment at least once a week were 0.9 and 0.8%, respectively. In total, 39% HHs reported suffering the bullying behaviors included in the questionnaire at least once a week, in particular, excessive supervision (27.8%), feeling ignored or invisible (17.1%), personal or professional scorn (14%), receiving malicious and humiliating comments (12.9%), and verbal intimidation (11.9%).

The results of the analysis regarding the association between age, nationality, hotel category, and type of contract, and the different situations of SHaW and WB are shown in Table 7. By age, those who suffered bullying behavior at least once a week were statistically significantly younger (median = 42.4; SD 10.3) than those who did not (median = 43.8; SD = 10.0) ($p = 0.033$). A more detailed analysis revealed that significant differences by age were related only to personal or professional scorn, with victims turning out to be younger (median = 40.9; SD = 10.1) than non-victims (median = 43.6; SD = 10.1) ($p = 0.002$).

Statistically significant differences were found for verbal intimidation by hotel category ($p = 0.027$), such that higher percentages of victims worked in 4- and 5-star hotels, and for malicious and humiliating comments by type of contract, whereby more victims were among those with a temporary contract ($p = 0.040$). No statistically significant differences were found regarding nationality.

The results of the association between SHaW and WB and self-rated health, stress at work, satisfaction with job and salary, and social support are displayed in Table 8. There is a statistically significant association between poorer self-rated health and suffering from professional or personal scorn ($p \leq 0.001$), feeling ignored or invisible ($p \leq 0.001$), verbal intimidation ($p \leq 0.001$), receiving malicious and humiliating comments ($p = 0.001$), and excessive supervision ($p = 0.001$).

Furthermore, HHs suffering from professional or personal scorn ($p \leq 0.001$), feeling ignored or invisible ($p \leq 0.001$), verbal intimidation ($p \leq 0.001$), receiving malicious and humiliating comments ($p \leq 0.001$), excessive supervision ($p \leq 0.001$), and sexual harassment ($p = 0.009$) reported higher levels of stress at work.

Participants who reported professional or personal scorn ($p \leq 0.001$), feeling ignored or invisible ($p \leq 0.001$), suffering from verbal intimidation ($p \leq 0.001$), receiving malicious and humiliating comments ($p \leq 0.001$), and excessive supervision ($p \leq 0.001$) reported lower levels of satisfaction with their job.

HHs who suffered from personal scorn ($p \leq 0.001$), feeling ignored or invisible ($p \leq 0.001$), suffering from verbal intimidation ($p \leq 0.001$), receiving malicious and humiliating comments ($p = 0.001$), excessive supervision ($p \leq 0.001$), and physical threats ($p = 0.029$) reported lower levels of satisfaction with the salary.

HHs who suffered from professional or personal scorn ($p = 0.009$), verbal intimidation ($p = 0.001$), malicious and humiliating comments ($p = 0.012$), excessive supervision ($p = 0.001$), and sexual harassment ($p \leq 0.001$) reported low social support.

There was a statistically significant association between suffering WB and poorer self-reported health, higher levels of stress at work, lower levels of satisfaction with the job and salary, and lower levels of social support (Table 8). Additionally, HHs suffering from SHaW reported higher levels of stress at work and lower social support.

4 Discussion

This mixed-methods study aimed to explore the situation of HHs in the Balearic Islands regarding SHaW and WB. HHs are close to being a 100% feminized occupational group with a precarious job, with some features of the job increasing the risk of SHaW and WB (i.e., working alone, working in contact with the public, and working in intimate spaces) (ILO, 2017).

The results of the qualitative study point out that the participants in FGs did not self-label themselves as being sexually harassed when the question posed was generic, except for the most severe situations. However, when given examples about behaviors that constitute SHaW, most of them acknowledged having experienced some of them. Although most participants in FGs had been sexually harassed, they normalized this kind of situations (above all, less severe situations); they did not associate them with the term 'sexual harassment', and these events were seen as unimportant, in line with the results of Onsøyen et al. (2009). They were also perceived as normal and unquestioned, and part of their daily work (Guerrier and Adib, 2000; ILO, 2017). Although we did not find studies including HH self-labeling, other studies found that a significant proportion of women who reported an experience associated with sexual harassment did not

TABLE 6 Prevalence of workplace bullying and sexual harassment at work.

	Never *n* (%) *95% CI*	A few times a year *n* (%) *95% CI*	Once a month or less *n* (%) *95% CI*	A few times a month *n* (%) *95% CI*	Once a week *n* (%) *95% CI*	Several times a week *n* (%) *95% CI*	Every day *n* (%) *95% CI*	TOTAL *n* (%)
Excessive supervision	560 (53.7) *50.6–56.8*	83 (8.0) *6.4–9.8*	41 (3.9) *2.8–5.3*	69 (6.6) *5.2–8.3*	46 (4.4) *3.2–5.8*	104 (10.0) *8.2–12.0*	140 (13.4) *11.4–15.6*	1.043 (100)
Feeling ignored or invisible	579 (55.6) *52.5–58.6*	106 (10.2) *8.4–12.2*	62 (6.0) *4.6–7.6*	117 (11.2) *9.4–13.3*	32 (3.1) *2.1–4.3*	98 (9.4) *7.7–11.3*	48 (4.6) *3.4–6.1*	1.042 (100)
Personal or professional scorn	511 (49.0) *45.9–52.1*	185 (17.7) *15.5–20.2*	81 (7.8) *6.2–9.6*	121 (11.6) *9.7–13.7*	31 (3.0) *2.0–4.2*	80 (7.7) *6.1–9.5*	34 (3.3) *2.3–4.5*	1.043 (100)
Malicious and humiliating comments	633 (61.0) *58.0–54.0*	121 (11.7) *9.8–13.8*	74 (7.1) *5.6–8.9*	84 (8.1) *6.5–9.9*	28 (2.7) *1.8–3.9*	64 (6.2) 4.8–7.8	33 (3.2) *2.2–4.4*	1.037 (100)
Verbal intimidation	671 (64.4) *61.4–67.3*	126 (12.1) *10.2–14.2*	56 (5.4) *4.1–6.9*	65 (6.2) *4.8–7.9*	34 (3.3) *2.3–4.5*	63 (6.0) *4.7–7.7*	27 (2.6) *1.7–3.7*	1.042 (100)
Physical threats	1.007 (96.7) *95.5–97.7*	19 (1.8) *1.1–2.8*	4 (0.4) *0.1–1.0*	2 (0.2) *0.0–0.7*	2 (0.2) *0.0–0.7*	2 (0.2) *0.0–0.7*	5 (0.5) *0.2–1.1*	1.041 (100)
Indecent sexual advances or propositions	954 (91.8) *90.0–93.4*	51 (4.9) *3.7–6.4*	13 (1.3) *0.7–2.1*	13 (1.3) *0.7–2.1*	0 *0–0.4*	4 (0.4) *0.1–1.0*	4 (0.4) *0.1–1.0*	1.039 (100)

label it as sexual harassment (Orchowski et al., 2013; Buchanan et al., 2018).

This might partly explain why they reacted to these less severe situations without getting angry and with humor, a strategy to respond to sexual harassment also reported by HHs in other studies (Guerrier and Adib, 2000; Kensbock et al., 2015, 2016). This kind of strategy allows HHs to reject a guest's advances without offending them while maintaining a show of respect (Kensbock et al., 2015). More severe situations were perceived as unusual. Despite this, HHs and key informants acknowledged that training courses offer advice to avoid sexual harassment by guests, such as fixing room doors open while inside the room cleaning, in accordance with previous studies (Hunter and Watson, 2006; Kensbock et al., 2015). This indicates that everyone in the sector is aware of this risk.

Narratives of HHs showed no hesitation in reporting the most severe episodes of sexual harassment to the executive housekeeper or to managers and key informants reported that there were protocols for action in case of a sexual harassment incident. Kensbock et al. (2015) also explored the protection given in the workplace to HHs in case of sexual harassment and found that although protocols existed, these were not always appropriate for reporting. Kensbock et al. (2015) reported that sometimes managers or supervisors were not able to properly assess the severity of a certain situation and HHs interviewed also highlighted the power guests can exert through negative evaluations in the satisfaction surveys. Contrary to Kensbock et al.'s results, HHs in our study assessed the response given by hotel managers as reasonable, a feature that might lead HHs to more easily report these events.

The little importance attributed to, and low awareness of, sexual harassment events at work reported in the qualitative study is consistent with the results of the quantitative study (i.e., 0.8% of the participants reported indecent sexual advances or propositions at least once a week). This percentage is slightly different from the results of the European Working Conditions Survey (EWCS); in Spain, 0.6% women reported sexual harassment, while 1.7% reported unwanted sexual attention (Eurofound, 2015). Although some studies performed in the general working population showed a positive relationship between precarious employment and SHaW (Torres et al., 2016; Reuter et al., 2020) and HHs are in precarious employment, our results do not point to a higher prevalence of sexual harassment among them. This might be explained in part by the difficulty HHs have in labeling certain situations as SHaW.

Given that HHs did not identify some situations mentioned in FGs as SHaW, we consider that using the behavioral experience method—whereby a range of behavioral experiences is presented to participants—might better reflect the prevalence and experiences of SHaW than self-labeling methods—which consist of asking participants whether they have been sexually harassed (Orchowski et al., 2013; Buchanan et al., 2018). Given these results, future research might consider including both methods.

An explanation for the normalization of SHaW lies in the symbolic structure of patriarchy, that is, the values, ideas, and social definitions that uphold society and make it work (Galarza et al., 2016). The symbolic structure of patriarchy associates women with nature, sexuality, and feelings, while men are related to culture and rationality—traits that are considered superior—and try to impose a model of femininity in which women are depicted as objects—and thus, as inferior—at the service of masculine power, and there to satisfy their sexual desire (Cobo Bedia, 2015). As MacKinnon (1979) stated, sexual harassment contributes to keeping women feeling in an inferior social status. This idea also explains the behavior of clients who initiate sexual approaches: Men understand that women are available to them to satisfy their sexual needs and wishes. To sum up, the fact that hotel housekeeping is socially considered unskilled (Nimri et al., 2020) and that job roles are related to domestic tasks emphasizes their position of inferiority with respect to customers; this, coupled with the fact that the job is performed in private spaces (i.e., the room) and that part of this job consists of satisfying guests' needs, might lead to HHs being at risk of being more vulnerable to sexual harassment.

Both key informants and FG participants perceived more extreme situations of SHaW as less frequent than mild situations. These

TABLE 7 Results of the association between workplace bullying and sexual harassment at work and individual and labor variables.

	Professional or personal scorn			Feeling ignored or invisible			Verbal intimidation			Malicious and humiliating comments			Excessive supervision			Physical threats			Indecent sexual advances or propositions		
	At least once a week	Less than once a week	*p*-value	At least once a week	Less than once a week	*p*-value	At least once a week	Less than once a week	*p*-value	At least once a week	Less than once a week	*p*-value	At least once a week	Less than once a week	*p*-value	At least once a week	Less than once a week	*p*-value	At least once a week	Less than once a week	*p*-value
Age $\bar{x}$ (SD)	40.9 (10.0)	43.6 (10.1)	0.002	43.0 (10.1)	43.3 (10.1)	0.741	42.4 (9.1)	43.3 (10.2)	0.281	41.8 (10.0)	43.5 (10.1)	0.101	42.6 (10.3)	43.5 (10.1)	0.222	40.3 (11.0)	43.3 (10.1)	0.577	40.1 (5.4)	43.2 (10.1)	0.343
	%	%	*p*-value	%	%	*p*-value	%	%	*p*-value	%	%	*p*-value	%	%	*p*-value	%	%	*p*-value	%	%	*p*-value
Nationality																					
Spanish	60.0	53.0		59.6	52.9		56.6	53.6		56.0	53.9		56.6	53.0		66.7	53.9		62.5	53.9	
Double nationality	14.5	17.9	0.282	15.2	17.9	0.267	16.1	17.6	0.828	15.2	17.4	0.816	14.1	18.7	0.213	11.1	17.5	0.783	12.5	17.6	0.879
Foreign	25.5	29.1		25.3	29.2		27.4	28.8		28.8	28.6		29.3	28.3		22.2	28.6		0.7	28.5	
Hotel category																					
1*	1.5	0.9		1.2	0.9		0.9	1.0		0.9	1.0		0.0	1.3		0.0	1.0		0.0	1.0	
2*	2.2	4.3		1.8	4.4		2.6	4.2		2.6	4.2		2.3	4.6		0.0	4.0		0.0	4.0	
3*	15.6	23.7	0.081	16.9	23.8	0.135	11.3	24.1	0.027	13.2	23.7	0.097	21.4	22.9	0.114	0.0	22.8	0.281	0.0	22.7	0.613
4*	65.2	60.9		67.5	60.2		71.3	60.1		71.9	60.2		65.4	60.0		1.4	61.1		85.7	61.3	
5*	15.6	10.3		12.7	10.7		13.9	10.6		11.4	10.9		10.9	11.1		0.0	11.2		14.3	11.1	
Type of contract																					
Permanent	7.1	6.1		6.9	6.1		5.0	6.4		3.4	6.6		4.2	7.0		0.0	6.3		0.0	6.3	
Recurring-seasonal	51.1	54.7	0.695	56.3	53.9	0.699	49.6	54.9	0.364	47.1	55.1	0.040	51.6	55.3	0.081	57.1	54.3	0.791	50.0	54.3	0.686
Temporary	41.8	39.2		36.8	40.1		45.4	38.7		49.6	38.3		44.2	37.8		42.9	39.4		50.0	39.4	

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TABLE 8 Results of the association between workplace bullying and sexual harassment at work and self-rated health, stress at work, satisfaction with job and salary, and social support.

	Professional or personal scorn			Feeling ignored or invisible			Verbal intimidation			Malicious and humiliating comments			Excessive supervision			Physical threats			Indecent sexual advances or propositions		
	At least once a week	Less than once a week	*p*-value	At least once a week	Less than once a week	*p*-value	At least once a week	Less than once a week	*p*-value	At least once a week	Less than once a week	*p*-value	At least once a week	Less than once a week	*p*-value	At least once a week	Less than once a week	*p*-value	At least once a week	Less than once a week	*p*-value
Self-rated health $\bar{x}$ (SD)	66.6 (21.2)	73.3 (18.4)	≤0.001	67.3 (21.5)	73.4 (18.2)	≤0.001	65.4 (19.7)	73.3 (18.7)	≤0.001	66.6 (20.0)	73.2 (18.7)	0.001	69.1 (19.9)	73.6 (18.5)	0.001	60.0 (21.2)	72.5 (18.2)	0.115	70.6 (19.7)	72.4 (19.0)	0.809
Level of stress at work $\bar{x}$ (SD)	6.0 (1.4)	4.8 (1.8)	≤0.001	5.9 (1.4)	4.7 (1.8)	≤0.001	6.0 (1.4)	4.8 (1.8)	≤0.001	6.0 (1.4)	4.8 (1.8)	≤0.001	5.8 (1.6)	4.6 (1.8)	≤0.001	5.8 (1.6)	4.9 (1.8)	0.145	6.6 (0.7)	4.9 (1.8)	0.009
Satisfaction with the job $\bar{x}$ (SD)	4.2 (2.1)	5.0 (1.8)	≤0.001	4.2 (2.1)	5.1 (1.8)	≤0.001	4.2 (2.2)	5.0 (1.8)	≤0.001	4.4 (2.1)	5.0 (1.8)	≤0.001	4.3 (2.0)	5.2 (1.7)	≤0.001	4.1 (2.2)	4.9 (1.8)	0.294	4.0 (2.0)	4.9 (1.8)	0.228
Satisfaction with the salary $\bar{x}$ (SD)	3.3 (1.9)	4.2 (2.0)	≤0.001	3.3 (2.0)	4.3 (2.0)	≤0.001	3.3 (2.0)	4.2 (2.0)	≤0.001	3.5 (2.0)	4.2 (2.0)	0.001	3.5 (2.0)	4.3 (2.0)	≤0.001	2.4 (1.9)	4.1 (2.0)	0.029	2.6 (2.2)	4.1 (2.0)	0.100
	%	%	*p*-value	%	%	*p*-value	%	%	*p*-value	%	%	*p*-value	%	%	*p*-value	%	%	*p*-value	%	%	*p*-value
Social support																					
Normal	88.7	94.5	0.009	91.4	94.1	0.185	86.8	94.6	0.001	88.5	94.4	0.012	89.6	95.3	0.001	88.9	93.8	0.546	57.1	93.9	≤0.001
Low	11.3	5.5		8.6	5.9		13.2	5.4		11.5	5.6		10.4	4.7		11.1	6.2		42.9	6.1	

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perceptions do not completely agree with the results of Nimri et al. (2020), whereby human resource managers and executive housekeepers reported SHaW events as rare.

The results of the quantitative study highlighted that HHs who were sexually harassed mentioned higher levels of stress at work and lower social support. Despite this, narratives of HHs indicated a positive assessment of the response of hotel management in sexual harassment cases, situation that might be understood as social support at work. This apparent contradiction between the quantitative and qualitative results might be explained, among others, because the DUKE-UNC-11 questionnaire is not specific for measuring social support at work. Furthermore, we have to take into account that narratives of HHs might be influenced by other HHs participating.

A positive relationship between being sexually harassed and psychological distress has also been identified in other studies (Hutagalung and Ishak, 2012; Holland and Cortina, 2016). Sigursteinsdottir and Karlsdottir (2022) also found that those who had been sexually harassed in their workplace reported lower levels of social support at work; furthermore, Anwar (2022) found that social support mediated the effects of SHaW on the victim.

The relationship between SHaW, social support, and job satisfaction has been studied in other occupational groups. Holland and Cortina (2016) reported a relationship between SHaW and lower job satisfaction among workers of several industries, as well as Hutagalung and Ishak (2012) in their study among female university employees. Furthermore, the study by Alrawadieh et al. (2021)reported a negative relationship between SHaW, organizational social support, and job satisfaction among Turkish female tourist guides.

Regarding WB, although the first answer was a negative one—the same as when being asked about sexual harassment—some HHs in the FG mentioned that executive housekeepers did not usually treat them well and they did not recognize their well-done work. Similarly, latina HHs identified different mistreatment behaviors at work, such as verbal abuse, feeling unfairly treated, and unfair work assignments by their supervisors (Hsieh et al., 2017). In the study by Hsieh et al. (2017), origin and ethnicity were deemed by some HHs as triggers of mistreatment; however, origin and ethnicity do not seem an additional risk for WB in our sample.

The qualitative results are in line with the quantitative ones, which revealed that excessive supervision (at least once a week) was the situation most suffered by participants, followed by feeling ignored or invisible. Moreover, HHs participating in FGs perceived that guests looked down on them. In general terms, HHs positively assessed the response given by hotel managers in the presence of severe situations of WB, contrary to the experiences reported in Kensbock et al. (2015). Nevertheless, it is noteworthy that HHs did not report milder situations to hotel management; this might be explained because this kind of behaviors is understood as inherent to the job, similar to the findings of Mathisen et al. (2008) in the restaurant sector, or because milder harassment behaviors might lead to confusion and, thus, are less likely to be reported (Samnani, 2013).

The results of the quantitative study showed that HHs suffering from personal or professional scorn were younger, and there were higher percentages of participants who suffered from malicious and humiliating comments among those with a temporary contract. HHs who suffered from personal or professional scorn, verbal intimidation, malicious and humiliating comments, or excessive supervision reported poorer self-rated health, higher levels of stress at work, lower satisfaction with the job and the salary, and lower social support. Participants who felt ignored or invisible indicated poorer self-rated health, higher stress at work, and lower satisfaction with the job and the salary. The EWCS (Eurofound, 2015) used similar categories regarding WB. This allows for comparing the results for HHs to those for women surveyed in the EWCS sample. Thus, 11.9% of HHs reported verbal intimidation compared to 6.9% of women who reported verbal abuse at work in the EWCS 2015. Almost 1% HHs reported physical threats, while 3.0% women responding to the EWCS 2015 reported threats. More than 10% of HHs indicated receiving malicious and humiliating comments, whereas only 4.4% in the EWCS 2015 reported humiliating behaviors. A study among Spanish nurses (89% female) found an 8% prevalence of weekly or daily WB; most bullying behaviors reported were related to the tasks given and opinions being ignored (Iglesias and Vallejo, 2012). Hence, compared to other working women, some behaviors related to WB are more prevalent among HHs, such as excessive supervision, while others, such as feeling ignored, are more common among working women.

Our results show a positive relationship between WB and stress. Some studies have identified WB as a predictor of stress, affecting both the individual and personal level (Yaman, 2015) and stress at work (Feijó et al., 2019). However, other studies state that stress at work is the predictor of WB (Reknes et al., 2014; Van den Brande et al., 2016), underscoring the idea that stressful working conditions might be an antecedent and an outcome of harassment. The directionality of this relationship has not been well-established (Nielsen and Einarsen, 2018).

Our results revealed a relationship between being harassed and reporting poorer health. These results are in line with the study by Hewett et al. (2018), in which people who had experienced bullying at work reported lower levels of wellbeing. Additionally, the literature review by Nielsen and Einarsen (2018) identified long-term negative consequences on the health of those who had been bullied. Furthermore, Xu et al. (2018) found that bullied people had a higher risk of developing type 2 diabetes, and this association was similar among women and men.

Moreover, we found a positive association between different behaviors involving WB and lower levels of satisfaction with the job and salary. Similar associations were found in other studies in the tourism sector (Mathisen et al., 2008; Ram, 2018).

Furthermore, the results demonstrated that being exposed to WB was negatively related to social support, an association backed up by the findings of other studies (Feijó et al., 2019; Sigursteinsdottir and Karlsdottir, 2022), some of which placed more importance on organizational support than family support (Rossiter and Sochos, 2018). Despite these results, the narratives in the qualitative study indicated that most of the HHs who suffered from a situation of WB assessed the response of hotel management positively. This discrepancy between quantitative and qualitative results might be explained in part because the direction of causality between harassment and social support cannot be established by cross-sectional studies; thus, people with low social support might easily appear isolated, less popular, with less social support, and thus, they may also become victims easier.

4.1 Limitations and strengths

The use of FGs might entail some limitations, such as the difficulty in sharing more severe or personal situations of SHaW and WB. This might be fostered by the fact that some participants knew each other. However, this technique did enable us to identify relevant patterns in HHs experiences.

The large size of the sample guarantees the representativeness of the results. Nonetheless, the cross-sectional methodology does not allow the direction of causality to be established between being a victim of SHaW or WB and perceived poorer health status, higher stress at work, lower levels of satisfaction with the job and salary, and lower social support.

Furthermore, SHaW involves more situations than "indecent sexual advances or propositions" (the only item regarding sexual harassment included in the questionnaire). Hence, it is likely that several sexual harassment situations and behaviors were not captured by the questionnaire, such as environmental sexual harassment (i.e., gender jokes creating a hostile or offensive working environment). For this reason, SHaW prevalence might well be under-recorded, and a recommendation for future research would be to use validated and more detailed measures of these phenomena. Another limitation of this study is the impossibility to gather data on organizational factors as antecedents of SHaW given that the HHs studied worked for different hotels and companies, which were not identified.

This study was carried out in Spanish hotels, where the vast majority of the guests are from central Europe. Considering that these cultures are less sexist than others in the world, transcultural studies are needed to delve into the phenomenon of sexual harassment in the hotel industry as a whole. Furthermore, studies in other regions in Spain would be interesting to widen the knowledge about these phenomena in Spain and determine to what extent the situation is similar.

4.2 Practical implications

This study underscores the fact that all workers in the hotel industry are aware of the problem of sexual harassment and bullying in their workplaces, but hotels must improve the actions taken to address these workplace health and safety problems. Actions should include broadening the existence of protocols related to SHaW and WB in all hotels. Risk prevention training programs in the hotel industry should include both topics—SHaW and WB—as a key priority. It is also important for hotel managers to receive this kind of training, as well as HHs and other hotel workers.

5 Conclusion

In the Balearic Islands, HHs are close to being a 100% feminized occupational group. Their working conditions are precarious, and the job combines several features that put HHs at a higher risk of being victims of SHaW and WB.

The results of our study indicate that the proportion of HHs who indicated having been sexually harassed was quite low; however, in the qualitative study, HHs acknowledged having often experienced the less severe situations of sexual harassment once they had been given some examples. Hence, these results show the high tolerance to less severe expressions of SHaW (i.e., finding a client inside the room naked) and WB (i.e., excessive supervision), as well as difficulties or reluctance in labeling this kind of experiences as such.

The prevalence of different WB behaviors was quite high among HHs working in the Balearic Islands, and some were associated with poorer self-rated health, less satisfaction with the job and the salary, lower social support, and higher levels of stress. Despite this, qualitative methods inform that less severe behaviors were normalized and perceived by HHs as inherent to their job.

Our results show the importance of refining instruments that are able to identify and quantify the prevalence of, above all, sexual harassment. Additionally, a deeper societal change is needed to empower women to label all kinds of sexual harassment behaviors as such, as well as workplace bullying behaviors. This also includes organizations that should be in charge of implementing measures—not only training, but also supporting the victim and breaking down the climate of impunity surrounding sexual harassment—to tackle this kind of gender violence and protect female workers.

Data availability statement

The datasets presented in this study can be found in online repositories. The name of the repository and accession number can be found at: Zenodo, https://zenodo.org/, DOI: 10.5281/zenodo.8023440.

Author contributions

XC-A, OB, and JL: conceptualization. XC-A and JL: methodology. XC-A, OB, and MG-B: validation and formal analysis. XC-A and OB: investigation. XC-A and VF-P: writing—original draft preparation. OB, MG-B, VF-P, JL, and XC-A: writing—reviewing and editing. JL and XC-A: project administration. All authors contributed to the article and approved the submitted version.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Publisher's note

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Gender and geographic representation in editorial boards of education journals

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Background: Previous studies have examined the gender and geographic diversity within editorial boards across various academic disciplines, excluding the field of education. Thus, the purpose of this study was to address this gap by investigating the extent of gender and geographic disparity within the editorial boards of education journals.

Methods: The selection of top five education journals from each quartile (Q1–Q4) was performed based on Clarivate Analytics' Journal Citation Reports (JCR) 2021 within the category of "Education & Educational Research." The information of editors was collected through online sources.

Results: Overall, female editors accounted for 17 out of the 29 editors-in-chief (58.62%), 36 out of the 64 deputy/associate editors (56.25%), 378 out of the 728 editorial/advisory board members (51.92%) and 15 out of the 28 other types of editors (53.57%). There was no significant association between the impact factor (IF) and the proportion of female editors (Pearson's $r = -0.095$, $p = 0.689$). The United States had the highest number of editors ($n = 459$, 54.06%), followed by the United Kingdom ($n = 98$, 11.54%), Australia ($n = 63$, 7.42%), China ($n = 29$, 3.42%), Germany ($n = 25$, 2.94%), and Canada ($n = 22$, 2.59%). Notably, the majority of the included editors were from developed countries ($n = 794$, 93.52%), while editors from developing countries constituted a significantly smaller proportion ($n = 55$, 6.48%).

Conclusion: Editorial boards of education journals exhibit reasonable gender diversity than other disciplines, though still fall short when considering the proportion of women in the discipline. Besides, obvious geographical disparity was observed among editorial boards of education journals. There was a notable lack of representation of researchers associated with institutions from developing countries on the editorial boards of education journals. While maintaining sufficient gender diversity, it is imperative to enhance the geographical diversity in these journals, ensuring a more equitable number of positions to individuals from these underrepresented groups.

KEYWORDS

gender diversity, geographical diversity, editorial board, education, leadership

Introduction

In recent decades, there has been a notable increase in the proportion of women opting for faculty positions (Ingersoll et al., 2021). Previous investigation performed by the Association of American Medical Colleges (AAMC) has showed a consistent upward

trend in the representation of full-time female faculty in academic medicine since 2009, with women now constituting approximately half of all faculty (AAMC, 2022). Despite this encouraging growth in female participation within the educational community, gender inequities persist among faculty (Casad et al., 2022). It is critical to recognize that gender diversity plays a pivotal role in enhancing academic excellence (Jagsi et al., 2020). According to a comprehensive nationwide survey conducted on 95 sociology departments, it has been observed that women face a 29% lower likelihood of attaining tenure compared to their male counterparts, and additionally experience a prolonged duration in achieving this academic milestone (Weisshaar, 2017). Women comprised only 28% of full professors and 22% of department chairs and permanent medical school deans (Starchl et al., 2023). This underrepresentation of women in the STEM tenure-track pipeline can be attributed to a disparity in the likelihood of women Ph.D. holders applying for tenure-track positions compared to their male counterparts, rather than women facing higher rates of rejection (Ceci et al., 2014). The academic development of women is influenced by various factors, including the absence of role recognition, familial obligations, and cultural bias (Zhuge et al., 2011). The "Glass ceiling," a term associated with the phenomenon where women face lower odds of advancing to higher positions in organizational hierarchies compared to men, has garnered increased attention in recent years (Horrocks, 2019). Efforts have been made to analyze gender-based trends and determine if women can overcome the invisible barriers hindering their career growth (Rodríguez et al., 2022). The global and hierarchical disparities in the female representation in scientific fields contribute to the observation that men tend to publish, collaborate, and receive more citations than their female counterparts. The gender disparity in academic publishing is evident, as men tend to have a significantly higher publication rate compared to women (Larivière et al., 2013). This discrepancy has been observed to decrease over a span of less than 10 years, with men publishing an average of 13.2 articles, while their female counterparts publish 9.6 articles throughout their careers (Huang et al., 2020). Additionally, men are found to be 30% more likely to receive citations compared to women (Huang et al., 2020). Moreover, previous research has highlighted the underrepresentation of women in senior author positions, which undoubtedly hinders progress toward achieving gender balance in higher academic positions (Pinho-Gomes et al., 2020). These findings raise concerns regarding potential biases that females may face in the scholarly publication, emphasizing the need for addressing these issues (Silver, 2019). Editorial board membership is widely regarded as an indicator of authority and distinction within the realm of academic research (Doja et al., 2014). Journal editors assume a crucial role as guardians of scientific knowledge, shaping policies, steering scientific developments, and ultimately impacting the professional progress of individuals who subsequently shape academic and pedagogical initiatives (Lin and Li, 2023). Recently, there has been a growing emphasis on promoting diversity in editorial leadership, particularly with regards to gender and geographic representation. The lack of gender diversity of editor boards may signify a dearth of equitable opportunities, potentially impeding peer acknowledgement (Gallivan et al., 2021).

The disparity in gender diversity within editorial boards has a consequential impact on the proportion of senior authors, thereby exacerbating concerns regarding female representation (Last et al., 2022). Numerous studies have been conducted to examine the gender composition of editors across various disciplines, revealing a disconcerting prevalence of women's underrepresentation on editorial boards (Kennedy et al., 2001; Jagsi et al., 2020; Pinho-Gomes et al., 2021). Nevertheless, it is heartening to note that acknowledging this dearth of gender diversity can effectively enhance female representation (Jagsi et al., 2020). Education is a significant interdisciplinary domain that has had a profound impact on various fields, including medicine, psychology, sociology, and economics (Osborne and Mollette, 2010; Lovakov and Yudkevich, 2023). According to research conducted by the United Nations Educational, Scientific and Cultural Organization (UNESCO), the proportion of female teachers in different levels of education varied in 2000, with 92% in pre-primary, 60% in primary, 54% in lower secondary, 48% in upper secondary, and 39% in tertiary education. Investigation in 2021 indicated that these proportions had increased to 94, 67, 58, 51, and 43%, respectively, (UNESCO, 2022). The increasing presence of female teachers has led to a heightened focus on their professional advancement. Addressing and overcoming obstacles that hinder female involvement in educational research and subsequent publication is a crucial matter requiring attention. However, the issue of gender diversity within the editorial boards of education journals is often overlooked. To assess the extent of gender disparity in educational research and publication, this study aims to examine the representation of gender and geographical region within the editorial boards of education journals, which is expected to provide strategies to improve equity and opportunity for women editors.

Methods

This cross-sectional study examined the gender representation and geographical among the editorial members of education journals deemed representative. As the study relied on publicly accessible data, the institutional review board of Central China Normal University waived the need for ethical approval and informed consent.

The selection of education journals was based on "Clarivate Analytics" Journal Citation Reports (JCR) 2021, within the category of "Education and Educational Research." For this study, the top five journals from each quartile (Q1–Q4) of the category of 'Education & Educational Research' were chosen based on their impact factor (González-Alvarez and Cervera-Crespo, 2019; González-Alvarez and Sos-Peña, 2020). The study acquired the editorial team memberships from the websites of the respective journals, and we extracted the names, geographical location based on place of work, editorial board roles and affiliations of editors. As shown in Table 1, the included editors are divided into four categories according to their positions. Honorary Editor-in-Chief, ethic editors, corresponding editors, biostatistics editors, manuscript editors, language editors, editorial assistants, etc., were not included in this analysis. Gender of editors was determined by examining their profiles or pronouns showed on the home page of journals or on their affiliated websites, Google search engine and so on (Pinho-Gomes et al., 2021; McMullen et al., 2022).

TABLE 1 Gender ratio of editors among 20 journals in the education category.

Journal	Impact factor	Quartile	Editor-in-chief		Deputy/ Associate editors		Editorial/ Advisory board members		Other editors		The total proportion of women
			Male	Female	Male	Female	Male	Female	Male	Female	
Review of Educational Research	13.551	Q1	–	100.00% ($n = 4$)	50.00% ($n = 4$)	50.00% ($n = 4$)	38.89% ($n = 28$)	61.11% ($n = 44$)	–	–	61.90% ($n = 52$)
Computers & Education	11.182	Q1	100.00% ($n = 1$)	–	–	100.00% ($n = 1$)	65.62% ($n = 21$)	34.38% ($n = 11$)	50.00% ($n = 2$)	50.00% ($n = 2$)	36.84% ($n = 14$)
Educational Research Review	10.207	Q1	100% ($n = 1$)	–	66.67% ($n = 2$)	33.33% ($n = 1$)	57.14% ($n = 28$)	42.86% ($n = 21$)	–	–	41.51% ($n = 22$)
Internet and Higher Education	8.591	Q1	50.00% ($n = 1$)	50.00% ($n = 1$)	100.00% ($n = 1$)	–	44.44% ($n = 12$)	55.56% ($n = 15$)	–	100.00% ($n = 1$)	54.84% ($n = 17$)
Educational Psychologist	8.209	Q1	50.00% ($n = 1$)	50.00% ($n = 1$)	–	–	53.85% ($n = 28$)	46.15% ($n = 24$)	–	–	46.30% ($n = 25$)
Race Ethnicity and Education	3.514	Q2	100.00% ($n = 1$)	–	50.00% ($n = 3$)	50.00% ($n = 3$)	43.24% ($n = 32$)	56.76% ($n = 42$)	–	–	55.56% ($n = 45$)
Educational Assessment Evaluation and Accountability	3.479	Q2	50.00% ($n = 1$)	50.00% ($n = 1$)	–	–	55.17% ($n = 16$)	44.83% ($n = 13$)	–	–	45.16% ($n = 14$)
AERA Open	3.427	Q2	–	100.00% ($n = 1$)	33.33% ($n = 5$)	66.67% ($n = 10$)	31.25% ($n = 15$)	68.75% ($n = 33$)	–	100.00% ($n = 5$)	71.01% ($n = 49$)
Journal of Science Education and Technology	3.419	Q2	100.00% ($n = 1$)	–	–	–	52.27% ($n = 23$)	47.73% ($n = 21$)	–	–	46.67% ($n = 21$)
TESOL Quarterly	3.410	Q2	50.00% ($n = 1$)	50.00% ($n = 1$)	–	–	61.11% ($n = 22$)	38.89% ($n = 14$)	50.00% ($n = 4$)	50.00% ($n = 4$)	41.30% ($n = 19$)
Journal of Educational Change	2.418	Q3	–	100.00% ($n = 1$)	–	–	47.83% ($n = 11$)	52.17% ($n = 12$)	–	–	54.17% ($n = 13$)
Australian Journal of Education	2.415	Q3	–	100.00% ($n = 1$)	–	100.00% ($n = 3$)	71.43% ($n = 10$)	28.57% ($n = 4$)	–	–	44.44% ($n = 8$)
Journal of American College Health	2.394	Q3	–	100.00% ($n = 1$)	75.00% ($n = 3$)	25.00% ($n = 1$)	47.83% ($n = 11$)	52.17% ($n = 12$)	–	–	50.00% ($n = 14$)
Academic Psychiatry	2.385	Q3	100.00% ($n = 1$)	–	75.00% ($n = 6$)	25.00% ($n = 2$)	50.00% ($n = 9$)	50.00% ($n = 9$)	–	–	40.74% ($n = 11$)
Australian Educational Researcher	2.383	Q3	100.00% ($n = 1$)	–	28.57% ($n = 2$)	71.43% ($n = 5$)	28.57% ($n = 6$)	71.43% ($n = 15$)	–	–	68.97% ($n = 20$)
Journal of Beliefs & Values-Studies in Religion & Education	1.724	Q4	100.00% ($n = 1$)	–	50.00% ($n = 1$)	50.00% ($n = 1$)	70.27% ($n = 26$)	29.73% ($n = 11$)	50.00% ($n = 1$)	50.00% ($n = 1$)	30.95% ($n = 13$)

(Continued)

TABLE 1 (Continued)

Journal	Impact factor	Quartile	Editor-in-chief		Deputy/ Associate editors		Editorial/ Advisory board members		Other editors		The total proportion of women
			Male	Female	Male	Female	Male	Female	Male	Female	
European Educational Research Journal	1.701	Q4	50.00% ($n = 1$)	50.00% ($n = 1$)	–	–	65.52% ($n = 19$)	34.48% ($n = 10$)	75.00% ($n = 3$)	25.00% ($n = 1$)	34.29% ($n = 12$)
Research in Science & Technological Education	1.697	Q4	–	100.00% ($n = 2$)	100.00% ($n = 1$)	–	54.29% ($n = 19$)	45.71% ($n = 16$)	–	–	47.37% ($n = 18$)
Journal of Educational Research	1.670	Q4	–	100.00% ($n = 1$)	–	–	26.09% ($n = 6$)	73.91% ($n = 17$)	75.00% ($n = 3$)	25.00% ($n = 1$)	67.86% ($n = 19$)
Early Childhood Education Journal	1.656	Q4	–	100.00% ($n = 1$)	–	100.00% ($n = 5$)	19.05% ($n = 8$)	80.95% ($n = 34$)	–	–	83.33% ($n = 40$)
Total proportion			41.38% ($n = 12$)	58.62% ($n = 17$)	43.75% ($n = 28$)	56.25% ($n = 36$)	48.08% ($n = 350$)	51.92% ($n = 378$)	46.43% ($n = 13$)	53.57% ($n = 15$)	52.53% ($n = 446$)

Top five education journals from each quartile (Q1–Q4) are listed in order of impact factor. –, Not available.

Results

Data was collected on a total of 853 editors from 20 educational journals, with 4 editors excluded due to indeterminate gender information. In aggregate, female editors comprised 446 out of the 849 editors (52.53%). When examining specific positions, female editors accounted for 17 out of the 29 editors-in-chief (58.62%), 36 out of the 64 deputy/associate editors (56.25%), 378 out of the 728 editorial/advisory board members (51.92%) and 15 out of the 28 other types of editors (53.57%).

Furthermore, according to the correlation analysis, the impact factor was not significantly correlated with the proportion of female editors (Pearson's $r = -0.095$, $p = 0.689$). The graphical representation in Figure 1 demonstrated the geographical distribution of the editors which based on their work place, with a total of 42 countries represented. Among these, the United States had the highest number of editors ($n = 459$, 54.06%), followed by the United Kingdom ($n = 98$, 11.54%), Australia ($n = 63$, 7.42%), China ($n = 29$, 3.42%), Germany ($n = 25$, 2.94%), and Canada ($n = 22$, 2.59%). Notably, the majority of the included editors were from developed countries ($n = 794$, 93.52%), while editors from developing countries constituted a significantly smaller proportion ($n = 55$, 6.48%).

Additionally, as illustrated in Figure 2, the female editors included in the study were sourced from a total of 30 countries, with the United States representing the largest proportion ($n = 280$, 62.78%), followed by the United Kingdom ($n = 47$, 10.54%), Australia ($n = 34$, 7.62%), Canada ($n = 10$, 2.24%), China ($n = 7$, 1.57%), Israel ($n = 7$, 1.57%), and Sweden ($n = 7$, 1.57%). Furthermore, it is noteworthy that the majority of these female editors (96.64%, $n = 431$) hailed from developed nations, while a mere 3.36% ($n = 15$) were from developing countries.

Discussion

To our knowledge, this study represents the initial endeavor to comprehensively examine the gender and geographic diversity within the editorial boards of education journals. Our investigation successfully discerned the extent of women's involvement in the editorial boards of the 20 selected educational journals, thereby offering an initial basis for enhancing diversity within such journals.

It is irrefutable that women remain inadequately represented across diverse scientific domains, a disparity that further exacerbates with the rise in impact factor (Bendels et al., 2018; Liévano-Latorre et al., 2020). Several investigations demonstrated this disparity: 28.7% in Biology Conservation (Liévano-Latorre et al., 2020), 19% of women in Business and Management (Metz et al., 2016), 33% in Psychology (Huang et al., 2020), 30.4% in Psychiatry (Hafeez et al., 2019), 24% in Oncology (Dai et al., 2022), 20% in Geology (Henriques and Garcia, 2022), 27.3% in infectious disease and microbiology (Ayada et al., 2022), and 23% in environmental sciences (Lobo-Moreira et al., 2023). Encouraging equity is beneficial to build a culture of equivalence for professionals and their careers (Alkhawtani et al., 2021). Our findings showed that nearly half of editors in education journals are women, which is a higher proportion than in other disciplines. However, when considering the gender diversity within disciplines, it is imperative to examine the representation of women within those disciplines. It is noteworthy that the investigation from Organization for Economic Co-operation and Development showed that approximately 70% of teachers globally are women, indicating a significant proportion (OECD iLibrary, 2019). Compared to this, the gender diversity within the editorial boards of education journals requires additional attention.

The inclusion of diverse perspectives within the composition of editorial boards is vital for the advancement of the journal. Firstly, membership on the editorial board of academic journals is commonly

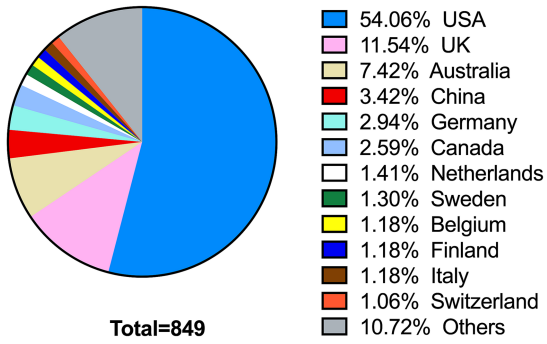

FIGURE 1
Country distribution of editors of education journals. For ease of presentation, only the countries with percentage above 1% were listed.

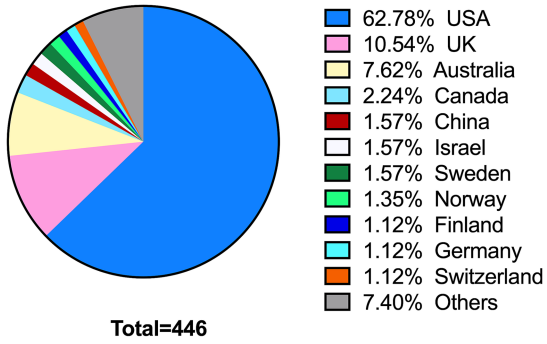

FIGURE 2
Country distribution of female editors of education journals. For ease of presentation, only the countries with percentage above 1% were listed.

regarded as a symbol of influence, leadership, and prestige within the academic research community, thereby contributing to one's scholarly standing and academic growth (Jagsi et al., 2020; Rivera et al., 2023). Editorial board members play a crucial role as significant gatekeepers, as they are responsible for making critical determinations regarding publication and shaping research trends within their respective fields. Additionally, scholarly evidence indicates that promoting equity in the scientific community not only fosters increased productivity and innovation, but also suggests that gender equity within editorial boards can enhance the review process (Wing et al., 2010). Moreover, the presence of diverse representation on these boards may have a profound influence on the development of future scientists. By promoting gender equity within journal editorial boards, academia can cultivate a more supportive and inclusive environment, ultimately leading to a more balanced and diversified scholarly community. When undergraduate students were randomly allocated to watch conference footage portraying either a predominantly male attendance or an equal representation of both genders, female students who observed the skewed attendance reported a diminished sense of belonging compared to their counterparts who witnessed balanced attendance. Conversely, male students' sense of belonging remained unaffected by either scenario (Murphy et al., 2007). The absence of geographical diversity within an editorial committee presents considerable hazards to the caliber of academic publications. Geographical diversity encompasses a multitude of viewpoints stemming from distinct geographic regions, cultural contexts, and socio-economic environments. The absence of diverse geographical representation within an editorial committee can inadvertently sustain bias and ethnocentrism in the selection and evaluation of scholarly work (McKenzie et al., 2022). To address this issue, internationalizing editorial boards can help mitigate potential implicit biases. Furthermore, it is imperative to acknowledge that various regions frequently encounter unique challenges and prioritize different issues. In the absence of diverse representation, certain academic viewpoints may be disregarded or marginalized (Menges and Exum, 1983). This constraint can lead to an imbalanced portrayal of global matters, impeding the publication's capacity to encompass the intricate facets of research and diminishing its pertinence to a wider readership. However, the presence of ample geographical diversity within the journal can enhance its appeal, as scientists who feel that their study will be subject to unfair judgment based on their nationality or location are more inclined to submit their manuscripts to journals with editors from their respective regions. Moreover, the lack of geographical diversity may hinder the committee's ability to recognize and value the subtle cultural nuances embedded within academic works (Mammides et al., 2016). The comprehension of the cultural context is imperative for precise interpretation and assessment of research, particularly when addressing context-dependent subjects. Insufficient diversity can result in misinterpretations or oversights, thereby compromising the scholarly integrity of publications. Additionally, an editorial committee lacking geographical diversity may unintentionally perpetuate prevailing power imbalances within the academic domain. The underrepresentation or marginalization of specific regions or countries can perpetuate an inequitable allocation of influence and recognition, thereby hindering endeavors aimed at cultivating a genuinely global and inclusive academic dialogue.

Furthermore, it is evident that favorable advancements in education will inevitably yield beneficial outcomes in various other academic fields. The presence and influence of editorial board members play a crucial role in the dissemination of knowledge and the advancement of the discipline as a whole. Given that membership on editorial boards is typically determined by academic rank, achievements, and responsibilities (McMullen et al., 2022), the observed disparities in educational journals may account for variations in their influence. Consequently, the under-representation of certain groups, such as women and academics from developing countries, on editorial boards can have detrimental effects. Therefore, it is important to examine geographical and gender representation in order to assess their impact and contribution to editorial boards. The transformation of gender imparity into bias within research processes and outputs can be observed (Holdcroft, 2007). In fact, the introduction of diversity within a particular field enhances its overall efficiency. The amalgamation of individuals with varying life experiences not only fosters heightened intelligence and communication skills but also promotes a greater likelihood of undertaking proactive measures. This aspect holds particular significance within education domains, where the handling of intricate subjects is prevalent.

The under-representation of women on editorial boards can be attributed to a multitude of factors. Editors and members of editorial boards are typically researchers who possess excellent competence and an established reputation within their respective research specialties. They often exhibit a strong track record of published research, particularly as senior authors. Additionally, they typically possess significant experience in manuscript review. The lack of representation

of females is likely attributable to various cultural and societal barriers that hinder equity and inclusion (Edmunds et al., 2016). It is imperative to exert diligent efforts in order to eradicate these barriers and enhance female representation in leader position and authorship. Academic platforms and organizations should collaborate in their efforts to cultivate the environment of inclusivity and equity within the academic publication. Additionally, they should actively endorse and support the equitable representation of women in editorial leadership roles.

Moreover, it is important to acknowledge that obvious geographical disparity was observed among editorial boards of education journals. The disproportionately low representation of editors from developing countries in education journals, and most editors came from English speaking countries, irrespective of gender considerations. A previous study has demonstrated that researchers hailing from high income countries are more highly valued compared to their counterparts from low/middle income countries (Sheikh et al., 2017). Additionally, there exists a dearth of authors from low/middle income countries in research publications pertaining to these regions, while authors from high-income countries, particularly male authors, exhibit a higher frequency of publications in this domain and are frequently cited (Memon et al., 2021). In contrast to their counterparts in developed nations, researchers in developing countries encounter numerous challenges, including limited financial resources, inadequate equipment, absence of mentorship, and linguistic disparities (Sumathipala et al., 2004; Lewison et al., 2016). Consequently, these obstacles significantly impede the ability of scholars from developing countries to attain the necessary academic qualifications for securing positions on editorial boards. Thus, urgent action is required to enhance the geographical diversity of education journal editorial boards.

The lack of representation of non-Anglophone countries may limit the contributions of researchers who are not proficient in English, which will further affect their probability of obtaining senior academic positions. The language discordance poses a significant impediment to achieving research equity. Nevertheless, there exist potential approaches to surmount this obstacle. One such approach involves translating articles into alternative languages subsequent to their initial publication, be it in written or audio format. In fact, numerous journals have been published in multiple languages, thereby mitigating the hindrances arising from language discordance (Shlobin et al., 2022). An additional approach involves implementing mechanisms to aid non-Anglophone authors in their English language writing or editing endeavors. Although certain publishers do provide translation services, their high costs often surpass the financial means of researchers from low-resource settings. However, it is encouraging to observe an increasing number of journals offering complimentary language editing services to authors (Amano et al., 2021). Consequently, we advocate for the implementation of additional policies of this nature to ameliorate the academic challenges stemming from language barriers. Moreover, it is crucial to acknowledge the beneficial impact of translation technologies and artificial intelligence on researchers hailing from non-Anglophone nations. Various valuable online resources, including reasonably dependable machine translations and platforms offering pronunciation solutions for multiple languages, are instrumental in overcoming the academic challenges arising from language barriers. Over time, advancements in machine translation technologies and collaborative endeavors to reshape academic conventions hold the potential to convert a monolingual scientific hub into a multilingual scientific network. Finally, we advocate for increased inclusivity in scientific endeavors. When deliberating on the selection of plenary speakers for conferences, extending invitations to join journal editorial boards, or engaging in the recruitment of new personnel, it is imperative to consciously strive for the inclusion of individuals who are not native English speakers. We firmly believe that offering genuine support to non-native speakers will enhance their ability to contribute valuable perspectives and ultimately maximize the benefits for academic development they bring.

The study's limitation lied in its exclusive focus on the gender labels of men and women, neglecting the inclusion of gender-nonconforming, transgender, and gender nonbinary individuals. Additionally, contributions to the journal and academic influence of editorial board members were not assessed. At last, only the top five journals from each quartile were analyzed in our study, and focusing on high-level journals may lead to biased estimates of total diversity.

Conclusion

Editorial boards of education journals exhibit reasonable gender diversity than other disciplines. However, there was a notable lack of representation of researchers associated with institutions from developing countries on the editorial boards of education journals. While maintaining sufficient gender diversity, it is imperative to enhance the geographical diversity in these journals, ensuring a more equitable number of positions to individuals from these underrepresented groups.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Ethics statement

Ethical review and approval was not required for the study on human participants in accordance with the local legislation and institutional requirements. Written informed consent from the patients/participants or patients/participants' legal guardian/next of kin was not required to participate in this study in accordance with the national legislation and the institutional requirements.

Author contributions

YX: Writing – original draft. QX: Writing – review & editing.

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The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Community case studies: an interpretative phenomenological analysis on sexual abuse in urban Chennai

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This study attempts to explore the lived experiences of sexual abuse during COVID-19 in a big metropolitan city in India, with a special interest in understanding the contemporary problems faced by teenagers. Any Phenomenological enquiry begins with identifying and determining the suitability of the participants. In this case, the participants are teenage girls and boys, who have experienced one or other forms of sexual abuse during the COVID-19 pandemic. By restricting the act of sexual abuse that happened during a pandemic, this research brings attention to the medium (material), social conditions, and the role of the cultural world in the act of sexual abuse. It begins by distributing a questionnaire to 500 participants to identify the participants who had experienced one or other forms of sexual abuse during the aforementioned time. Secondly, brief interviews with the identified participants are conducted to record their lived experience of sexual abuse. Using this collected narrated experience as a reservoir for phenomenological reflection, this research aims to uncover moments of lived experience emphasizing spatial, corporeal, and temporal aspects as well as provide greater depth in understanding sexual abuse in the context of teenage lives. It helps to understand the different forms of sexual abuse experienced by teenagers as well as portrays how space plays a major role in the act. This article aims to highlight the role of the material world in the act as well as how the social, political, and cultural contexts are materialized in the act of sexual abuse. Also, this article analyses how the existing intervention mechanisms support the prevention of sexual abuse in different social settings as well as emphasizes the gaps in the intervention mechanisms apropos the chosen narrative data. To sum up, this study aims to create awareness, provides prevention mechanisms considering the role of the material world, and advocates for SDG 16 (Promote justice, peaceful and inclusive societies) and SDG 5 (Achieve gender equality and empower all women and girls).

KEYWORDS

sexual abuse, phenomenology, IPA, lived experiences, pandemic, COVID-19, pain, teenage

Introduction

Sexual abuse refers to any sexual activity perpetrated without consent. It includes unwanted touching, forced sexual activity, oral sex, and rape among other sexual acts. WHO[1] defines sexual abuse as *Actual or threatened physical intrusion of a sexual nature, whether by force or under unequal or coercive conditions.* Sexual abuse becomes harassment once the position/power comes into the picture. UN's Sustainable Development Goal of promoting justice, peaceful and inclusive societies, and gender equality emphasizes any form of discrimination and violence against people.[2] Henkhaus's (2022) study on childhood sexual abuse and its impact on human capital and economic wellbeing brings attention to the problem of poor educational attainments and a decrease in the labor market outcomes. This foregrounds sexual abuse as a public health crisis and alerts us to the importance of robust prevention mechanisms. A study on Child Sexual Abuse in India: A Systematic Review (Choudhry et al., 2018) conducted a systematic review of the existing quantitative and qualitative studies on Child Sexual Abuse (CSA) and demonstrated that sexual violence is distributed among both boys and girls as well as this study demonstrates that the act of sexual abuse is an interplay between individual, familial and societal factors. Even though SDGs 5.1 and 5.2 talk explicitly about the violence perpetrated against women and SDG 16 talks about peaceful societies, the implication for the same for cis-men was not adequately mentioned.[3] García-Moreno and Amin (2016) talk about the WHO's detailed agenda for 2030 apropos any forms of violence (sexual or non-sexual) against women and girls which includes Mental health services for sexual violence survivors more importantly on providing appropriate care based on survey based research.

A study conducted by Walker (2020) on Harvard Medical Review mentions sexual abuse and violence against women as silent pandemic. The Safe City Programme in New Delhi was a program conducted by UN Women which is an organization dedicated to gender equality and empowerment of women as well as serves as the global champion for women and girls' rights. As a part of this program, they conducted a survey on the high-and low-income areas of New Delhi, about 73 percent of the respondents reported that the city is unsafe as well as reported that women and men face sexual violence in their own neighborhoods. It foregrounds the lack of women's spatial confidence in their own places. Rai and Rai's (2020) study on Children and Youth Services Review explores how women's confidence and fearlessness are undermined in their own city due to acts of sexual abuse and violence. It will be far worse for women and men when the act of sexual abuse is perpetrated by their own family clan and friends. All the participants in this study reported that they were sexually abused by people known to their families, friends, and relatives. Although much research has been done on sexual abuse crimes, and survivor's narratives, there is a lack of research on the lived experiences of the survivors particularly on the southern part of India and ignorance on the part of the educators concerning this issue. So, this study proposes to work on the narrative of sexual abuse survivors who belongs to the community of the researchers.

Method

Participants

At the time of the study, the participants are in their first year of study at an engineering university and they are all female. Participants are addressed as Nithya, Geetha, Preetha, and Sheela to maintain anonymity (Original names changed). All the participants are from urban Chennai, and they were sexually abused during COVID-19 at the time of their late teen years.

Data collection and procedure

This study begins by distributing a questionnaire to 500 participants to identify the participants who had experienced one or other forms of sexual abuse during COVID-19. The following questions were asked:

S.No	Questions
1	Age?
2	Gender?
3	Type of Family?
4	Have you been asked to adjust to something you are not comfortable with to avoid family conflict?
5	Did you face any kind of sexual abuse during the pandemic? If yes, was it a one-time thing?
6	Did you find help to protect yourself?
7	Do you think COVID-19 paved the way for more sexual abuse cases?
8	Do you think, mobile phones are the main reason for sexual abuse during the COVID-19 pandemic?
9	Have you experienced any kind of sexual abuse through social media platforms like WhatsApp, Instagram, etc.?
10	Did you find protection after seeking help? If Yes, Whom did you first approach for help?
11	How well would you say you are educated about sex?
12	Do you think it is important to give sex education to children during their school days?
13	Do you think there is enough awareness about sexual abuse amongst older generations?
14	Are you willing to share? (In case we would like to know more about your trauma, will you be ready to share your experience to enhance the research outcomes and support policy making?) And, If you feel you were sexually abused/ are being abused, narrate the incident in a few words.

1 World Health Organization (WHO). Accessed February 1, 2024. https://www.who.int/home/search-results?indexCatalogue=genericsearchindex1&searchQuery=sexual%20abuse&wordsMode=AnyWord.

2 "THE 17 GOALS." Sustainable Development. Accessed February 1, 2024. https://sdgs.un.org/goals.

3 Gender Equality and Women's Empowerment." United Nations Sustainable Development. Last modified September 7, 2023. https://www.un.org/sustainabledevelopment/gender-equality/.

Only 258 participants responded to the questionnaire out of which 8 participants (including all genders) reported experiencing one or other forms of sexual abuse during COVID-19. Among the 8, four female participants are willing to share their experiences with the researchers. Secondly, brief interviews with the identified participants are conducted to record their lived experience of sexual abuse. Prior to the initiation of interviews, participants were reminded of the research's objectives and furnished with detailed information via an information sheet. The voluntary nature of responding to interview questions was underscored, and participants were given the flexibility to withdraw at any point until one-month post-interview, leading to the removal of their interview record. Additionally, participants received a briefing on protocols safeguarding anonymity and confidentiality, including explicit clarification of scenarios where confidentiality might not be upheld (such as reporting information indicating a threat or risk to the participant or others or disclosing previously unknown offenses with identifiable victims). Informed consent was obtained through participants formally signing a consent form.

Semi-structured interviews were conducted, and their narratives were recorded using an Apple iPhone voice recorder. The interview schedule was decided based on the availability of the participants and the following unstructured questions were asked to obtain more information from the participants.

S.No	Questions
1	Do you feel a change in the perception of your body after the incident?
2	Were you able to confront or continue your relationship with the perpetrator if the person is related to you?
3	What would have been done/ any prevention mechanisms or measures that you feel should be implemented to avoid these types of incidents?
4	Did you feel powerless because of the space?

Following the interview, the participants were given a chance to ask questions, and opportunities were given to them to add more. The recordings were transcribed using a transcription tool with potentially important information such as the name of the place, person, and other significant information removed.

Phenomenology

Phenomenology is concerned with lived experience as a resource to foreground the underlying reality of the phenomenon that is being investigated. Merleau-Ponty et al.'s (2013) phenomenology emphasizes the notion of the body as a vehicle of our being in the world as a background or recessive presence. The shift in consciousness from a healthy state to a state of alienation from and objectification of the body in any physical act can be better understood through the first-hand account of lived experience. Its sole purpose is to clarify the meaning of the world. The main aim of Phenomenology is to explore how people make sense of what happens to them. It takes the participants' articulation of their lived experience without any judgment and uses it as a source of knowledge for the future. It aims to bring about the biases, contradictions, and prejudices into light rather than experiences imposed with natural attitudes, errors, and biases. Any Phenomenological enquiry treats lived experience as data. More importantly, Interpretative (Interpretive) Phenomenological Analysis works on two layers: understanding the participant's experience and how they make sense of their experience. There are three major Phenomenological traditions: Transcendental, Hermeneutic, and Existential.

Husserl (2001) said that the phenomenologist is "concerned with the essential structures of cognition and their essential correlation to things known" (p.27). Merleau-Ponty et al.'s (2013) states that phenomenologist attempts a "direct description of our experience as it is, without taking account of its psychological origin and the causal explanations, which the scientist, the historian or the sociologist may be able to provide" (p.6). Creswell et al.'s (2007) defines Phenomenology as a study that "describes the meaning for several individuals of their lived experiences of a concept or a phenomenon" (p. 62). The sole purpose of Phenomenology is to reorient the natural sciences perspective of treating the body as an exterior without an interior to a holistic understanding of subjectivity in meaning-making and understanding of the world Merleau-Ponty (1962). And Heidegger (2010) brings attention to the relationship between beings and their contexts.

Van Manen (2017) states all the phenomenological traditions intended for the bracketing of lived moment experience free from generalizations and preconceptions and he asserted that people could "reflect phenomenologically on the living meaning of the lived experience" (p. 813). Contemporary neuropsychology reiterates the postulates of memory studies in a different way. It states that memories are the phenomenology of retrospection but not an exact representation of the past. As far as temporality is concerned, any phenomenologist enquiry should consider the privileged position of the subject in terms of societal, cultural, political, and material presence. When it comes to applying phenomenological philosophy to empirical research, there were no clearly defined principles in the works of Husserl, Heidegger, and Marleau-Ponty but the confounding statement is that the elucidation of the meaning of an experience apropos to the subjectivity the researcher is exploring and the challenge lies in building a phenomenologically credible research.

Interpretative phenomenological analysis

Interpretative phenomenological analysis (IPA) gained its popularity as a qualitative approach in the late twentieth century. It is more concerned with the interpretation of the lived experience both by the participant and the researcher. Husserl emphasized intentionality, which is how humans impose meaning on their experience. The earlier usage of IPA was focused on health psychology based on the interest of the pioneers, but later it was found to be a useful methodology for developing insights from individual experiences. Since this is idiographic, this methodology is useful for focusing on less data and in-depth analysis. Any successful IPA study would be useful for the detailed exploration of any phenomena highlighting new knowledge and understanding of the phenomena under study. Apart from its focus on individual experiences, IPA analysis can foreground the influence of the dominant social, cultural, and political factors on the interpretation (Lopez and Willis, 2004). And more importantly, this methodological approach focuses on the

integrated self and demonstrates new understandings (Dickson et al., 2007).

Even though IPA offers a holistic understanding of the phenomenon under study, the researcher's conception can affect and complicate the 'process of interpretative activity' (Smith, 1996). This 'double hermeneutic' (Smith et al., 1999) emphasizes the double interpretation of the experience: by the research participants and the researcher. An IPA study on male sexual offenders (Kloess et al., 2019) provided new insights into the diverse situational and vulnerability factors of the perpetrators in committing the act. A study on the survivor's decision for legal initiation using Interpretative Phenomenological Analysis (Plastock et al., 2021) brings attention to the diverse factors that influence the survivor's decision as to whether to initiate legal proceedings or not.

Similarly, this study employs a qualitative methodology using Interpretative Phenomenological Analysis, an idiographic approach whereby each experience is analyzed in detail apropos the given context (Smith, 2011). The first author herself interviewed the participants in both English and in the local language of Chennai (Tamil) and transcribed the recordings. Three participants did not express consent for recording, but they allowed the first author to record it in text. After each interview, the first author diligently noted her initial thoughts and notions in order to separate the preconceptions of the author from the intended focus/aim of the study (Tindall et al., 2009). Subsequently, the author analyzed the transcripts line by line to identify the factors affecting the act, experiential claims for the committed act, and the standpoint/positionality of the participants.

Analysis

Four participants out of the 8 who experienced sexual abuse expressed willingness to narrate their experience with the researcher. Almost all the 8 participants believed that COVID-19 paved the way for more sexual abuse cases, and they stated that they were well aware of the helpline number for reporting child sexual abuse. This study aims to understand the experiences of the participants and how they perceive the experience (Make meaning of the experience). Three main themes emerged in this study: (a) *Material Circumstances as a cause of the incident (b) Patriarchal Indian family structure (c) Association of Shame*. 'Material Circumstances as a Cause of the incident' refers to how the material world including the material things, and the enclosed space influences the perpetrators to commit the act. 'Patriarchal Indian family structure' refers to how the Indian familial structure prevents them from disclosing it to their parents immediately. 'Association of Shame' refers to how associating shame with the incidents prevents the survivors from reporting the incident.

Material circumstances as a cause of the incident

Among the selected participants, Sheela gave both a written narrative and recorded interview (personal) and this supplements her audio recording.

> *'It was one of my dad's very very very close friend. We were almost like a family and I always imagined him as my father but during pandemic we spent most of the time together. Firstly, I stared to feel uncomfortable with his behavior, the way he talk and the intimate looks he gave me, then slowly he started to call me and talk rubbish about me in his life and then I told about this to friends and they always had my back and I recorded all the calls that he spoke to me. I was so afraid to say it to my parents because he was so close to my family. Later he started to abuse me physically whenever he comes to my home, once I got stuck with him in our home and he tried to miss behave with me. Later after few days we informed my parents, first when they knew they were bit angry on me since I did not tell them the first day itself but then they understood it, Then we almost thought of giving a police case on him but keeping my future in thoughts we just had some massive fights. But with god's grace my family and friends had my back (Sheela).*

The experience of Sheela brings attention to the effect of the material world in the act of Sexual Abuse (SA). The perpetrator was a known friend to the family for more than 20 years and this relationship enabled easy access to the participant's house. COVID-19 has imposed more restrictions on the mobility of people, therefore people often tend to visit relatives who are living nearby for recreational purposes. In the case of this participant, the perpetrator takes advantage of the fact of being a family friend staying next door as well as the COVID imposed restrictions in committing the act. As per the participant's interpretation of the experience, the visit was more frequent during COVID-19 pandemic and the family had nowhere to go other than visiting nearby friends and relatives.

Initially, the survivor was experiencing inappropriate touch, but later during this time, the perpetrator took advantage of time and space and forcefully molested the survivor. This brings attention to the materiality/ material dimension of the experience. All 8 participants reported noticing a change in their close one's behavior during the COVID-19 pandemic and it alerted us to the lack of mental health support and help during the crisis time. Similarly, in the case of Geetha, the perpetrator was the uncle who frequently visits the family, but the survivor reported the act before it got out of hand. At Sheela's home, On the day of the incident.

> *'My mom and dad were not at home when he enters the house, and my sister was playing outside. He manipulated the timings and approached me. He forced me for a hug and asked me to kiss him and forcefully touching me inappropriately. I did not know how to react whether to shout or cry. I was confused, scared, and shocked' (Sheela).*

She reported past incidents of inappropriate touching to her male friends. After she reported this incident, Whenever she was with her friends, they never let him near her. Apart from this incident, the perpetrator used to send obscene messages, videos, and photos to the survivor's phone before the incident.

Nithya was not ready to disclose much due to her close affinity with the perpetrator. In her case, the perpetrator was the adopted brother, and it brings attention to the effect of spatiality and temporality in committing the act. Nithya's parents adopted a male child before her birth, and they grew up in the same house as siblings. The survivor was always in close proximity, but the act was committed during the COVID-19 pandemic. Due to the imposed restrictions, people were forced to stay in their houses owing to the advantageous

circumstances for the perpetrator to commit the crime. This act poses serious questions in relationship building, mental health, and stability in bringing up an adopted child along with the biological child.

Geetha was sexually abused by her uncle who often visits her home during the pandemic. This uncle often asks Geetha to sit on his lap and inappropriately touched her, so Geetha started to hide in her bathroom whenever the uncle visits their home. This brings attention to the lack of safe space for a girl in her own home. Prema have experienced sexual abuse during her commute to their tuition centers. The usually crowded autos were lacking people because of COVID-19, so the perpetrator used the situation to their own advantage and committed the act. The perpetrator inappropriately touched the girl, and he forced her to kiss his own private parts.

> *'He stopped the vehicle in an empty road and kissed me. He forced my face in to his penis and I was shocked, felt disgust and cried' (Prema).*

Prema immediately reported the incident to her family and the auto men were not seen from the next day. One noticeable aspect mentioned by Geetha and Prema is they reported the incidents to the family without hesitation. Prema mentioned that she was able to report the incident because the perpetrator were unknown/not related to the family.

Patriarchal Indian family structure

When the interviewer asked about reporting the incident to their parents, all the survivors reported that they were confused and not sure about their father's reactions and felt scared to report the incidents.

> *Interviewer: Did you feel like reporting this incident immediately to your parents?*
>
> *Sheela: No. I was confused about my parents' reaction towards this because this man is very close to my father, But I decided not to tell this to my father first because I felt my mom will understand it better than my father.*

After the participant's family came to know about the incident, they decided to report it to the police, but they did not go for it considering its implications in the girl's life as well as the perpetrator's wife and children and Sheela has mentioned that she fought with her parents for not going to the police. This brings attention to the typical Indian familial setting and the patriarchal mindset that prevails in the families. In Indian families, any shame on girl children will be looked upon as a disgrace to the head of the family and household. Moreover, Indian parents associates womanhood with purity and they believe that exposing the incidents will reduce the chance of their daughters getting married.

'A study on Childhood Attachments, sexual abuse, and their relationship to Adult Coping in Child Molesters' (Marshall et al., 2000) demonstrated that the subjects of their study reported greater attachments to their mothers than fathers as well as explicated the correlation between the insecure patterns of childhood attachment and ineffective adult coping. All the participants feel that their mothers can understand and protect them than their fathers. A 2022 study on *Gender Norms, Domestic Violence, and the Southern Indian puzzle* (Chattopadhyay and Sidharth, 2022) *conducted* by FLAME University, Pune suggested that even though the macroeconomic changes were suggesting improvements, they did not lead to changes in gender norms. The reluctance of the daughters to report these abusive incidents to the father as well as their doubts in terms of acceptance sadly upholds the unchanged gender norms in Indian society.

> *Interviewer: Why did you decide not to report this incident to the police?*
>
> *Sheela: Because my parents were not ready to put me in trouble and we knew their family very well. One thing that concerns our parents are his kids and wife. So we did not go for it.*

Again, the same mindset prevents the parents from reporting the incident to the police or seeking legal help. Likewise, Geetha and Prema did not report this incident to the police, nor did they seek legal assistance. Again, in Geetha's case, she felt safe talking about it to her mother rather than her father.

> *Interviewer: Why did you decide to report this incident to your mother?*
>
> *Geetha: Because I feel my mother understands me well and I doubt that my father might scold me so did not even think about that.*

Nithya's experience was the result of Siblings Sexual Abuse (SSA). The social myth justifying the experimental sexual acts between brother and sister has persisted for a long time. Hardy (2001) argues that the victims of SSA exhibit the same psychological and emotional impact on girls as girls sexually abused by fathers. Carretier et al. (2022) in their study on the impact of sibling sexual abuse in adolescent girls highlights the importance of the need to treat SSA with special care. They highlighted that the survivor should be separated from the perpetrator in case of significant distress and threat to safety caused by the presence perpetrator. Even though Nithya experienced significant distress, signs of trauma, depression, and nervousness, she was not separated from her brother. They continue to live under the same roof. This brings attention to the patriarchal Indian family structure, lack of awareness, and ignorance on the aspect of creating safe spaces for the survivors.

Association of shame

All the participants in this study reported that they immediately felt a sense of shame and shock after the incidents, and this prevented them from reporting it immediately to their parents and seeking help. According to a longitudinal study on the persistence of shame following sexual abuse (Feiring and Taska, 2005), the survivors reported feeling shame for a period of 6 years. Likewise, in this study the survivors reported shame after the act and felt guilty about disclosing it to their parents however Sheela reported the continuous inappropriate behavior of her family friend to his friends, and it foregrounds the safe space in relationships outside the family unit.

Even though Geetha and Prema reported the incidents to their family, they said that they felt shame, disgust, and fear immediately after the incidents.

Discussion

How things shape the Mind? (Malafouris, 2013) demonstrates the constitutive role played by the material world in a cognitive process. New Materialism suggests the 'turn to matter' focusing on the role of the material world drawing from philosophy, anthropology, and posthuman sociology (Braidotti, 2013). It assert that the world and historical developments arise from a diverse array of material forces spanning the physical, biological, psychological, social, and cultural realms (Barad, 1996). Posthuman thinkers like Braidotti (2013) emphasized the relational role played by the material world in the constitution of the self. Similarly, IPA focuses on the integrated self and the situated subjectivity through in-depth analysis of individual experiences. Sheela and Nithya's narratives offer an enriched understanding of the associated materiality in the acts starting from mobile phones, sofas, and houses (enclosed spaces) as well as how the pandemic situation and its associated restrictions (social) were made advantageous by the perpetrators in committing the act. Sheela received obscene messages, verbal sexual abuse over the phone, and obscene pictures before the perpetrator actually committed the crime. Fear, confusion and shame have prevented the survivor from reporting the incidents of technological abuse. This incident suggests the able use of technology by the perpetrator but ineffective usage on the survivor's part. It alerts us to the relationality of material things as well as their interactions with human beings in understanding any social problem.

Nithya was sexually abused by her adopted brother when they were sleeping on the bed next to each other as any siblings in a family. Her hesitation, self-doubt, and disgust after the incident explicate the lack of awareness, the society instilled fear and shame on females apropos body and sexuality. She cried during the interview and refused to talk further. Her difficulty in recollecting the abusive experience suggests an unspeakable and unresolved trauma in her life. She was referred to counseling by the interviewer (researcher) after the interview. After the incident, Nithya stayed in the same house with the perpetrator. She might have experienced severe trauma daily other than the time she was away from home. Now she is living in the college hostel far away from her home and the perpetrator got married as per the information given by her friend. Her refusal to talk about the actions on her parents' part and the aftermath of the incident suggests a non-supportive response from her family. Geetha and Prema's experiences are similar to the other girls in terms of known perpetrators, but the girls were more willing to talk like Sheela. Indian society's family structure, parent's fear about the future of girls (getting married), and the shame they felt on their part prevented them from reporting the incident or seeking legal help, but this societal and cultural influence left a traumatic scar on the girls' lives. Sheela and Nithya reported feeling powerless during the incident and felt uncomfortable talking to or meeting (in a common gathering) the perpetrators. Above all, they emphasized on the educating and empowering the young girls to prevent sexual abuse and they stated this as a reason for talking about the incidents.

Implications

According to a 1-year 2021 survey,[4] the number of reported Sexual Abuse cases against women amounts to 12,500. The crimes committed by relatives, friends, or known people were higher compared to other reported crimes but still it is significantly underreported. According to the responses collected for this study, it is evident that almost all the participants who were sexually abused in one way or another do not want to talk about it. A 2023 study on *Ecological factors associated with sexual abuse among adolescent children in Mainland China* (Fu et al., 2023) suggested the involvement of parents, educational institutions, and government in comprehensive sex education among young children. We can adopt it for Indian schools and colleges. The first step against sexual abuse should be demonstrating the importance of disclosure like the *MeToo*[5] movement in India. Secondly, creating awareness among young adults about acceptable and unacceptable sexual acts. Thirdly, the government bodies should ensure safety and enable easy access to report sexual abuse crimes. Then, the survivors should be encouraged to seek professional help in case of distress, and psychological trauma.

Few participants other than the selected participants for the study reported sexual abuse during their childhood and provided written narratives. It was observed that these participants were unaware of the difference between good touch and bad touch and this lack of awareness created an advantage for the perpetrator to sexually abuse them. All the participants who answered the questionnaire responded 'YES' to the importance of creating awareness about sex education among school children as well and 90 percent of the participants feel that there is not enough awareness of sexual abuse among older generations. As a part of this study, the researchers conducted an awareness campaign for the first-year students who participated in the study to create awareness of identifying potential perpetrators around them and discussed different avenues for reporting the incidents to seek help. This study was part of the lecture on contemporary issues for the corresponding semester. The second author (who is also a student) gave a talk on identifying potential perpetrators as well as discussed strategies to handle any potential risk situation followed by an interactive discussion. Students were actively participated in the study and gained confidence in talking about abusive incidents.

Limitations

This study employed a qualitative approach to a small set of participants owing to the fact that this is a sensitive issue and people are finding it traumatic to talk about the same. The reluctance to disclose may be partly due to the stigmatization associated with it or the perpetrators are related to them either as family or friends, or they find it difficult to process the traumatic experience. Although the number of participants is perfectly justifiable for the methodology

4 "India: Reported Crimes Against Women by Type 2021." Statista. Last modified August 25, 2022. https://www.statista.com/statistics/633038/reported-crimes-against-women-by-type-india/.

5 Metoo movement in India was started in 2018 by Tanushree Datta disclosing the sexual harassment of Padekar against her.

used, the reported themes and findings cannot be generalized across populations. The results are therefore not representative samples of sexual abuse survivors across the globe. Furthermore, the participants' willingness to disclose the intricate details of their experiences varies, which affects the research outcomes.

Conclusion

According to a 2021 study on the prevention of child sexual abuse (McCartan et al., 2021), professionals or practitioners all over the world agreed to the prevention of child sexual abuse as well as recognized that it is a public health issue. This study concluded that the professionals agreed that education is one of the best ways to work on the prevention of sexual abuse and the treatment of sexual abuse offenders but implied that it may not be applicable in all other countries due to the difference in social, cultural, and political background. Although this is starting to change with more studies/research taking place in different regions, there is still a lot more to be done. Studies focusing on cultivating resilience (Hinduja and Patchin, 2017) among the youth to resist and immediately report abusive behavior is one of the ways in which more offenses can be reported and survivors can seek help at an early stage. Three main themes emerged in this study which are the role played by the material things such as mobile phones, and houses, the material conditions that prevailed due to the COVID-19 outbreak, and the patriarchal family south Indian family structure. This study demonstrated how the material conditions that resulted as part of the COVID-19 pandemic became advantageous to the perpetrators as well as how the social, and cultural conditions were materialized in the act of sexual abuse.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Ethics statement

The studies involving humans were approved by School of Social Sciences and Languages, VIT Chennai. The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study. Written informed consent was obtained from the individual(s) for the publication of any potentially identifiable images or data included in this article.

Author contributions

NG: Formal analysis, Methodology, Resources, Writing – original draft. BG: Resources, Writing – review & editing.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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The effectiveness of a brief video-based intervention in reducing gender bias in Korea

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Introduction: Gender bias deepens gender disparities by fueling gender conflicts. Thus, effective interventions for gender bias are necessary. Understanding gender discrimination experienced by another gender, both emotionally and logically, may contribute to reducing gender bias in Korean society. Hence, we conducted an online experiment using Video Interventions for Diversity in Science, Technology, Engineering, and Mathematics (VIDS) to examine the effectiveness of shortened VIDS intervention through perspective taking in reducing gender bias.

Methods: A sample of Korean adults aged 19–39 ($n = 160$, 61.8% women, 38.2% men) were recruited. In the treatment group, male participants watched VIDS videos that portrayed a woman getting gender prejudiced and female participants watched VIDS videos showing a man receiving gender biased treatment in the society. The videos presented to treatment group consisted of one narrative and one expert video from VIDS, which stimulate emotional and logical understanding of the another gender, respectively. Participants in the control group watched a control video that was irrelevant to gender bias. All participants then answered gender bias questionnaire, as well as cultural orientation questionnaire.

Results: Cultural orientation as a covariance, ANCOVA (Analysis of Covariance) revealed participants in the treatment group showed significantly lower gender bias than the control group. Within the treatment group, a moderation analysis showed that logical thinking moderated the relationship between emotional immersion and decreased gender bias, meaning stimulated logical thinking from watching the videos affected how engaging emotionally to the another gender's situation lowers gender bias.

Discussion: Our findings suggest that VIDS, a video-based gender bias intervention tool, can still be effective when edited briefly. Furthermore, one's perspective-taking strategy can be considered when trying to decrease gender bias through videos that promote perspective-taking. The findings highlight the possibility of utilizing short video intervention that enhances perspective taking on decreasing gender bias.

KEYWORDS

Video Interventions for Diversity in STEM, VIDS, perspective taking, gender groups, gender equity in Korea

Introduction

The issue of gender equity has emerged significant worldwide and within Korea, necessitating immediate action. Compared to Korea's rapid economic growth over the past several decades the progress towards gender equity has been slow, fueled by gender conflicts stemming from gender biases within the society. More than 50% of men and women aged 19–34, claim that their own gender is more discriminated against within the Korean society (The Ministry of Gender Equality and Family, 2021). This perception gap is significant in the early 20s, specifically in the ages 19–24 attributed to their experience from adolescence to adulthood (The Ministry of Gender Equality and Family, 2021). Although, having received relatively unprejudiced treatment in schools, families, etc., young adults currently encounter pre-existing gender biases in society. Therefore, to combat gender bias and pursue gender equity in Korea, understanding each gender's perspective and reducing gender biases towards the younger generations, is significant.

The current study designed an online experiment utilizing verified video-based gender bias intervention, VIDS (Video Interventions for Diversity in Science, Technology, Engineering, and Mathematics STEM). Developed to decrease gender bias and raise awareness of gender stereotypes that exist in STEM (Science, Technology, Engineering and Math), VIDS has emerged as an effective video intervention in previous studies (Pietri et al., 2017; Hennes et al., 2018; Moss-Racusin et al., 2018; Pietri et al., 2019). However, the length of the VIDS videos utilized in previous studies is rarely brief. Additionally, these studies have been majorly conducted in Western cultures, especially in the United States. Thus, this study addresses the possibility of using a shortened version of the VIDS to effectively reduce gender bias in non-western Korean society.

To promote perspective-taking between the genders, we presented VIDS videos depicting reversed scenarios of current gender biases that they hold against each other; Men tend to view women as less competent than themselves, and women perceive men to be more assertive (Hentschel et al., 2019). Following this, we examined the effect of the intervention through Analysis of Covariance (ANCOVA), with cultural orientation as the covariance. Additionally, we analyzed how different types of VIDS videos would promote different aspects of perspective-taking (emotional immersion and logical thinking) and explored how the effectiveness of each video interacts in reducing gender bias through moderation analysis. The findings of the experiment could provide a time-saving way to decrease gender bias by promoting the understanding of various gender life experiences, as well as offer possibilities to expand the use of VIDS to the general public in eastern countries.

To this end, the current study first presents the theoretical background on gender bias, its characteristics in Korea, and perspective-taking. The next part of the paper covers material and methods, including the procedure of the online experiment. Lastly, the results, discussion, limitations and future directions, and conclusion are presented.

Objectives

The current study aimed to a. investigate the effectiveness of shortened VIDS videos on reducing gender bias within Korean participants and b. Explore the interaction between two dimensions of perspective-taking (emotional immersion and logical thinking) on decreasing gender bias. We assessed and controlled cultural orientation to aim for an unbiased assessment of the effectiveness of the intervention. Further, moderation analysis was employed to investigate the impact of emotional immersion and logical thinking on bias reduction.

Hypotheses

The current research suggests two main hypotheses: Hypothesis 1; Under controlled cultural orientation, individuals in the treatment group would report reduced gender bias after watching the shortened VIDS intervention compared to the control group and Hypothesis 2; In the treatment group, the level of increased emotional engagement and logical thinking from watching the narrative and expert video would show different levels of effectiveness in reducing gender bias.

Literature review

Gender bias

Gender bias is the act of showing preferences towards one gender over another (Cook, 2016). Gender bias often enables developing a quick perception of a person based on gender, and various factors such as experience, traditions, principles, values, and culture can contribute to the formation of gender bias (International Labour Organization, 2017). Previous research has shown that negative and prevalent gender biases may exacerbate existing gender disparities (Casad et al., 2020). Korea is notable for its gender disparities, with the highest gender payment gap among Organization for Economic Co-operation and Development (OECD) countries (Organisation for Economic Co-operation and Development, 2017). Female workers in South Korea earn 63% of the wages of their male counterparts. Furthermore, women hold only 17% of seats in the Korean National Assembly, which is the fifth lowest among OECD countries. Existing gender disparities are worsened by gender stereotypes; Gender bias could aggravate discrimination in hiring and decrease opportunities at work, often frustrating women's goals to advance their careers (Casad et al., 2020). Therefore, efforts to reduce gender stereotypes in Korean society would help in reducing gender disparity and promoting gender equality.

Additionally, existing gender biases within society prevent both genders in their efforts to achieve gender parity. The Ministry of Gender Equality and Family and the Korean Women's Development Institute (The Ministry of Gender Equality and Family, 2021) stated that the younger generation in Korea, aged 19–34 years, experiences gender discrimination differently. Specifically, 74.6% of women answered that society discriminates against them, whereas according to 51.7% of men society was more discriminating against men, and the tendency to perceive one's own gender more discriminated is larger for participants in their early 20s. The Ministry of Gender Equality and Family (2021) asserted that the perception gap stems from having to conform to existing gender biases and gender roles as adults, even though their parents and teachers set equal expectations while growing up. Similarly, European countries experience little gender gap in education, but gender gap within society is still observed (Gaweł and Krstić, 2021). Persistent and repeated gender biases in

society have widened the gap in perceived discrimination between genders. This gap hinders both genders from openly discussing their experiences of discrimination and making efforts to promote gender equality (Kim, 2019). Moreover, people believe in an arguments' validity if they become familiar with it through repetition (DeMarzo et al., 2003). Thus, minimizing the repetition of gender biases could contribute to achieving gender parity.

Gender discrimination often occurs online, and more than 50% of men and women encounter sexist content in online communities (The Ministry of Gender Equality and Family, 2021). This can be attributed to the anonymous nature of the Internet, which allows its users to perform acts that they would normally not in identifiable settings (Fox et al., 2015). Thus, we presume that conducting an experiment to decrease gender bias in anonymous online communities would be beneficial. Thus, this study recruited participants from anonymous online communities and conducted an online experiment to understand the efficiency of VIDS in reducing gender bias through perspective taking.

Perspective-taking

Perspective-taking is the ability to understand how a situation is perceived by others and their cognitive and emotional ways of coping (Gehlbach, 2004). Perspective taking is commonly defined based on two dimensions: Affective and cognitive. Affective perspective-taking emphasizes emotion and can be described as the capacity to the emotions or feelings of another individual. In contrast, Cognitive perspective taking can be characterized as the capacity to understand the beliefs or thoughts of another individual (Healey and Grossman, 2018). Thus, both emotional and logical engagement with others is important in perspective taking. Therefore, gaining an understanding of another gender's experience emotionally and logically may promote perspective-taking, which could be effective as a gender-biased intervention. Perspective-taking promotes willingness to communicate with an outgroup (Wang et al., 2014. p. 5), reduces intergroup bias (Hutchings et al., 2021), and decreases stereotype actions towards the outgroup (Shih et al., 2009). Moreover, perspective-taking increases intergroup harmony without neglecting existing intergroup disparities and helps lower intergroup bias in society (Todd and Galinsky, 2014; Hutchings et al., 2021). Therefore, perspective-taking may help build a foundation for understanding different groups. Considering that young adults in Korea perceive their own gender as the most discriminated against (The Ministry of Gender Equality and Family, 2021), taking the perspective of another gender could be effective in decreasing gender bias.

For accurate perspective taking, it is important to obtain new and correct information from others (Eyal et al., 2018). Thus, both emotional and logical engagement with others is important in perspective taking. Therefore, gaining an understanding of another gender's experience emotionally and logically may promote perspective-taking, which could be effective as a gender-biased intervention.

Cultural orientation on taking perspective

Understanding other people's viewpoint relates to how one interacts with the world. Cultural orientation refers to how an individual perceives and acts against the world according to his or her cultural identification, defined by individualism–collectivism and vertical-horizontal dimensions (Singelis et al., 1995; Triandis, 1995). To examine the unbiased impact of perspective-taking on gender bias with video intervention, we first investigated the dimensions of cultural orientation as well as their effect on gender bias and perspective-taking ability.

There are four main dimensions of cultural orientation: horizontal, vertical, and vertical collectivism (Triandis and Gelfand, 1998). People with collectivist cultural traits are likely to identify themselves as part of groups, whereas those in individualist cultures consider themselves as independent (Triandis, 2002). Additionally, people in the vertical dimension recognize themselves within the hierarchy of the in-group, whereas people in the horizontal dimension consider themselves as equal to their in-group members (Soh and Leong, 2002).

Previous research shows that an individual's cultural orientation influences gender bias (Hang-yue et al., 2006; Harris and Minor, 2020). Specifically, people in collectivist and non-hierarchical cultures have an explicit bias towards women in executive leadership (Harris and Minor, 2020). Cultural orientation can also affect perspective-taking abilities. According to Wu and Keysar (2007), people with collectivist cultural traits (e.g., Chinese) are more inclined to adopt perspectives than people with individualistic cultural traits (e.g., Americans). Thus, people who share a collectivist culture, such as Koreans, may find perspective taking easier than those with different cultural orientations (Lee et al., 2007). Further, of the four cultural orientations, only horizontal collectivism was associated with a greater favor toward altruism which is explained by their motivation to ensure sociability with others and maintain close relationships (Shavitt et al., 2011; Booysen et al., 2021). Considering that altruism and empathy are interrelated, a horizontal collectivist cultural orientation could affect assessments of the effectiveness of an empathy-promoting video intervention (MacNeill and Wozniak, 2018).

In short, having a horizontal collectivist cultural orientation may affect one's discrimination between genders and result in a greater understanding of others' perspectives. Thus, in the current study, we aimed to examine the effect of horizontal collectivism along with the other three dimensions of cultural orientation. Our goal was to explore and control the correlation between horizontal collectivism on gender bias to separate the impact of the video intervention, used to promote perspective-taking on gender bias.

Using media to promote perspective taking

Interventions for reducing bias are most effective when presented in various forms. Few of the widely used bias interventions include reading a novel, watching a video, or participating in a simulator where the participants encounter discriminatory scenarios (Robinson et al., 2020). Recently, various types of audiovisual media such as video games, videos, and virtual reality devices (Vieira, 2014; Aitamurto et al., 2018; Eyal et al., 2018; Hamilton-Giachritsis et al., 2018; Herrera et al., 2018) have been used to promote perspective-taking.

Videos can be an effective perspective-taking tool because they enhance viewers' ability to observe a situation, avoid the depersonalization of characters, and provide nonverbal information (Chan et al., 2010). Previous research indicates that video-based education, which includes narratives, promotes empathy, and students think more logically when watching videos in class (Harwood and Mcmahon, 1997; Sweeney and Baker, 2017). Furthermore, people perceive emotion more effectively and accurately when both voice and

facial expression are perceived simultaneously (Freeman and Ambady, 2011). Listening to an actual voice results in understanding others better in comparison to reading the same-content text (Schroeder and Epley, 2015). Thus, the current study utilized video as a perspective-taking tool for two main reasons: it is an effective medium for promoting emotional immersion, and an efficient educational tool for increasing logical thinking.

To successfully sustain participants' attention, the current study utilized videos shorter than six minutes (Guo et al., 2014). Additionally, the total viewing time was limited to less than 11 min because video completion percentages of shorter (less than 11 min) videos were higher among viewers compared to 11 min or longer videos (Geri et al., 2017). Furthermore, adding interactive questions about the video content significantly increased the completion percentage of short (less than 11 min) videos compared to similar videos with no questions presented (Geri et al., 2017). Thus, the current study encouraged participants by providing them attention-check questions to complete the video stimuli and excluded those who displayed less attention.

Materials and methods

Utilizing an online experiment, this study aimed to explore the efficacy of brief video interventions that promote perspective-taking in decreasing gender bias. For video intervention, we employed the VIDS, developed by Pietri et al. (2017) and utilized by Moss-Racusin et al. (2018) for approximately 10 min to reduce gender bias. VIDS is a series of videos produced to reduce gender bias in STEM. VIDS includes 12 different 5-min-long videos, which can be used under various time constraints; The VIDS consists of six narrative-condition videos that promote empathy and six expert-condition videos that increase logical understanding (Pietri et al., 2017). We used one video from each condition (narrative and expert) to promote two main dimensions of perspective-taking: emotional immersion and logical thinking. Specifically, for male participants, we presented one narrative video and one expert video that portrayed the subtle gender biases that women faced, and one narrative video and one expert video that depicted the subtle gender biases that men faced for female participants. To encourage the participants to watch the videos to the end, all video interventions provided were under 11 min (Geri et al., 2017). Cultural orientation was assessed and controlled for to ensure an unbiased assessment of the efficacy of the shortened VIDS intervention.

Regardless of the fields being STEM or non-STEM (social science and humanities), the more raw talent it requires from individuals (e.g., brilliant and genie), the more men are represented within the field (Leslie et al., 2015). The authors further suggested expanding the study beyond STEM fields to gain more comprehensive solutions for gender disparities. Thus, we explored the possibility of an expanded VIDS intervention for gender bias by recruiting participants from both STEM and non-STEM fields. Furthermore, by recruiting Korean participants from the Korean society, the current research expands the range of audiences to non-Westerners in whom VIDS can be utilized.

The current study proposes two primary hypotheses. First, based on the previous research that shows watching VIDS significantly reduces gender bias (Moss-Racusin et al., 2018), we propose participants in the treatment group will report decreased gender bias after watching the shortened VIDS intervention, in contrast to the control group, with controlled cultural orientation (Hypothesis 1). Second, considering cognitive and affective perspective-taking engages different parts of the brain (Healey and Grossman, 2018), the treatment group will exhibit varied effectiveness in terms of increased emotional immersion and reinforced logical thinking from watching the narrative and expert video in reducing gender bias, respectively (Hypothesis 2). Hypotheses 1 and 2 were tested in a similar manner.

Participants and recruitment

Participants were recruited from two Korean online communities: Blind and Kopas. Blind is an anonymous online community for verified employees to discuss issues online, mainly used by people in their 30s, whereas Kopas is an anonymous online community for Korea University students and faculty members, which has users majorly in their 20s (Kim et al., 2021).

Although we originally recruited 208 participants, 48 (23.1%) were excluded. Twenty-two (10.5%) participants incorrectly answered one or more (of six) simple attention check questions about the videos' content, and 26 (12.5%) did not complete watching the videos. Thus, our final sample consisted of 160 Korean individuals in the age range of 19–39 years ($M = 27.48$, $SD = 3.91$), with 99 women (61.8%) and 61 men (38.2%). The current study originally aimed to evenly assign participants to the treatment and control groups; however, the final distribution of participants was 78 (48.8%) in the treatment group and 82 (51.2%) in the control group because of the exclusion of participants. Among the female participants, 47 (47.5%) and 52 (52.5%) were randomly assigned to the treatment group and the control group, respectively. Among the male participants, 31 (50.8%) and 30 (49.2%) were randomly assigned to the treatment and the control group, respectively. The participants had the following characteristics:40 (25%) high school diploma holders, 107 (66.9%) undergraduate degree holders, and 13 (8.1%) graduate degree holders; among the current and previous undergraduate and graduate school students, 51 (31.9%) and 109 (68.1%) majored in STEM and non-STEM fields, respectively. A 5,000 KRW (approximately 4.49 USD) beverage voucher was given as a reward to the participants for completing the experiment.

Experiment design

The current study presented the video intervention to the participants then provided the questionnaires, meaning the participants only answered the questionnaires after watching the videos. Thus, the current experiment employed a post-test-only control group design, implying that gender bias questions were not presented as a pre-test but only as a post-test. Conducting a pre-test is desirable when the independent variable is expected to have a small effect, the number of participants is small, or the participants have diverse characteristics; otherwise, the experiment may result in a Type II error (Pasnak, 2018, p. 4473). The current experiment utilized an independent variable, VIDS, which was significant in decreasing gender bias in a previous study (Moss-Racusin et al., 2018), recruited a sufficient number of participants to hold power of 0.80 (Faul et al., 2009) and assessed gender bias through continuous and

non-heterogeneous responses. Thus, the current study conducted an experiment without a pre-test to avoid Type II errors.

Power analyses

The current study used G*Power 3.1 to perform power analysis to determine the minimum sample size required to test the study hypothesis (Faul et al., 2009). The analysis indicated that 128 participants were required to determine the effect of $d = 0.50$ (independent sample t-test, $\alpha = 0.05$, power = 0.80). However, we recruited 208 participants owing to the possible exclusion of those who failed attention checks and who did not finish the videos. The final sample size of the current study ($n = 160$) surpassed the target of 128. Thus, the obtained sample size of $n = 160$ was adequate to test the study hypothesis.

Video intervention for diversity in STEM

The VIDS is a series of intervention videos based on published research on gender bias in STEM fields (Pietri et al., 2017). It is the result of a collaboration of psychologists, biologists, professional playwrights, actors, and film producers and is accessible for academic use (Pietri et al., 2017). It consists of 12 videos under two conditions: narrative and expert. Six videos in the narrative condition are in TV show format with one main male or female character who experienced a gender bias in the STEM field. The six videos in the expert condition portray an interview between a psychology professor and an interviewer, who are professional actors, discussing academic findings and empirical evidence regarding gender bias. VIDS has been proven effective in decreasing gender bias in STEM fields through multiple experiments (Hennes et al., 2018; Moss-Racusin et al., 2018; Pietri et al., 2019).

A major advantage of employing VIDS is its provision of both narrative and expert videos with different working mechanisms. Previous research using VIDS found that narrative videos were more entertaining than expert videos, and that expert videos provided more information than narrative videos (Pietri et al., 2017). Plausible narratives can provide the necessary elements for perspective-taking, and the expertise shown in expert interviews helps to process information accurately and think critically (Boland and Tenkasi, 1995; Petty and Cacioppo, 1996). Thus, VIDS can be an effective perspective-taking tool for gender bias intervention, as narrative videos enable participants to emotionally engage with the main characters, and expert videos provide accurate information that promotes a logical understanding of the situation.

The present study employed VIDS based on the previous research of Moss-Racusin et al. (2018) to promote perspective-taking between male and female participants, and adapted the intervention time to sustain the participants' attention. Based on research by The Ministry of Gender Equality and Family (2021), we selected the most suitable VIDS videos for promoting emotional immersion and logical thinking in both genders. To maximize the participants' attention and completion of the videos, each video's duration were less than 6 min and the entire intervention was less than 11 min (Guo et al., 2014; Geri et al., 2017). Regarding the content of the videos, the selection of the narrative and expert videos for male and female participants in the treatment group was based on research from The Ministry of Gender Equality and Family (2021). For the male participants the videos were selected based on that the younger generations of Korean men have less recognition of the socially expected gender roles that women are expected to play. For the woman participants in the treatment group, the videos were selected based on that in comparison to Korean men of the same generation, a lower percentage of Korean women acknowledged how society expects men to fulfill masculine gender roles. Each video was subtitled Korean.

Video materials

Treatment group – male participants

VIDS narrative video A

The men in the treatment group were first asked to watch a narrative video. The video portrayed the subtle gender discrimination experienced by women in STEM fields. The script was based on published research on subtle gender biases in science faculty members and male student favoritism (Moss-Racusin et al., 2012). The male faculty member in the video, Kevin, assumes that Sarah, a female graduate student, does not know how to handle a microscope. Kevin seeks help from Peter, a male graduate student, rather than from Sarah, a laboratory technician, who believed that males in general possess more technical skills than females.

VIDS expert video A

The men in the treatment group watched an expert video. This video provides academic evidence of the subtle gender biases that women face in the STEM field. The video based on published research was in an interview format between an interviewer and a psychology professor, who were professional actors discussing gender bias. The professor and interviewer in the video introduced an experiment on subtle male favoritism in STEM fields and presented their results.

Treatment group – female participants

VIDS narrative video B

Women in the treatment group watched a narrative video based on published research on the gender roles society expects of men (Moss-Racusin et al., 2010). The video portrayed a subtle gender bias in two main characters in a TV show format. A male faculty member, Kevin, was unhappy with male graduate student Peter, who acted modestly. Kevin believed Peter should be more ambitious, competitive, and self-promoting. Towards the end, Kevin plans to cancel Peter's travel grant because of his humble behavior.

VIDS expert video B

Women in the treatment group watched an expert video. This video presents the gender stereotypes within society that men experience in an academic context. The video script was based on previously published research (Moss-Racusin et al., 2010) in which an actor portrays a psychology professor who is a gender issue expert, and explains the backlash experienced by men for not conforming to the expected masculine roles in society.

Control group – male and female participants

Control video

A non-intervention video of a similar duration as the intervention videos was provided to the control group, regardless of gender. Participants in the control group were instructed to watch a Korean-subtitled control video about radium (Twig Education, 2019). This video explains how radium is used to treat cancer. Unlike VIDS videos, this video stimulus did not present any information on gender bias, even though it was presented to both male and female scientists, similar to the intervention videos.

Attention checks

After watching the videos, all participants answered three questions based on the information provided in each video that they watched (e.g., "According to the video, what kind of feedback are humble men most likely to receive?"). This was to ensure participants' adequate attention to the experiment and to exclude those who answered any of the questions incorrectly. We followed Moss-Racusin et al. (2018) attention check method. Four possible answers were presented to the participants with one correct answer (e.g., "a. Kind-hearted, b. Have low self-esteem, c. Menacing, d. Confident"). The participants in the treatment group answered six attention check questions.

Emotional immersion and logical thinking

In addition to the attention check questions, the participants in the treatment group completed questionnaires assessing emotional immersion and logical thinking after watching each video. To measure emotional immersion and logical thinking, we utilized manipulation check questions from Moss-Racusin et al. (2018) that measured the two dimensions, respectively. Emotional immersion from the narrative video was measured using five items for assessing participants' emotional involvement (e.g., "The narrative of the video affected me emotionally"; Green and Brock, 2000). However, one item ("While I was watching the video, the activity in the room was on my mind. [R]") was excluded because it disturbed the internal consistency of the questionnaire. Thus, the final scale used in the analysis included four items. The answers ranged from 1 (strongly disagree) to 5 (strongly agree), with higher numbers indicating deeper emotional immersion ($\alpha = 0.77$). Logical thinking was measured using two items assessing participants' engagement in logical understanding of the situation ("The professor explained the point clearly with evidence and logic" and "The main argument of the video was supported by evidence and facts in a clear and logical manner") ranging from 1 (strongly disagree) to 5 (strongly agree); responses with higher numbers reflected increased logical thinking ($\alpha = 0.95$).

Gender bias

Once the attention and manipulation check questions were completed by the treatment group, a gender stereotype scale was used to assess gender bias among the participants (Kim, 1993). The scale assesses gender stereotypes in Korean society with five subscales: domestic, traditional social role performance, vocational and physical, psychological, and intellectual gender bias (Kim, 1991). Seven items were used to examine domestic gender bias (e.g., "A man should be financially responsible for a household"), five items examined traditional social role performance gender bias (e.g., "Both men and women should hold similar authority within a family [R]"), 14 items examined vocational and physical gender bias (e.g., "Truck driver is not a good occupation for women," "Physical appearance and youthfulness are more important for women than men"), seven items assessed psychological gender bias (e.g., "Men are more aggressive than women"), five items assessed intellectual gender bias (e.g., "In general, men perceive things more objectively than women"). Participants' responses were rated on a scale of 1 (strongly disagree) to 5 (strongly agree) using 33 items on gender stereotypes in everyday life. The scores ranged from 33 to 165, with a higher score indicating a greater gender bias. We averaged the items to form a gender stereotypes scale. Cronbach's α of the gender bias scale from a previous study by Kim and Kim (2019) was 0.89. The Cronbach's α value in this study was obtained as 0.93.

Cultural orientation

Cultural orientation was used as a control variable. We employed the individualism and collectivism scale (Triandis and Gelfand, 1998) to assess cultural orientation. The scale consists of 16 items assessing four dimensions of individualism and collectivism: Horizontal individualism (HI), horizontal collectivism (HC), vertical individualism (VI), and vertical collectivism (VC). Four items assessed horizontal individualism (e.g., "I'd rather depend on myself than others") and four items examined horizontal collectivism (e.g., "If a coworker gets a prize, I will feel proud"). Four items assessed vertical individualism (e.g., "It is important that I do my job better than others") and four items examined vertical collectivism (e.g., "It is my duty to take care of my family, even when I have to sacrifice what I want"). The Participants gave their responses on a scale of 1–9 (1 = definitely no, 9 = definitely yes). Each dimension includes four items on a scale with scores ranging from 4 to 36. A previous study that utilized the same scale (Coon and Kemmelmeier, 2001) reported the following Cronbach's α for the various dimensions: HI ($\alpha = 0.68$), HC ($\alpha = 0.63$), VI ($\alpha = 0.82$), and VC ($\alpha = 0.56$). The following Cronbach's α was reported in this study: HI ($\alpha = 0.81$), HC ($\alpha = 0.76$), VI ($\alpha = 0.65$) and VC ($\alpha = 0.73$).

Demographic question

After completing all measures, the participants were asked to answer demographic questions on education and majors. The question on education had the following five choices: elementary, middle, high, undergraduate, and graduate school. The major question had eight possible answers: engineering, education, social sciences, art, medical studies, humanities, natural sciences, and none of these. The participants had the option to select multiple choices if they had multiple majors. Participants who majored in one or more courses in engineering, medical studies, and natural sciences were considered to have a STEM orientation. Participants who majored in education,

social sciences, art, humanities, or none of the above were perceived as having a non-STEM orientation.

Procedure

The research protocol of the current study was reviewed and approved by the Korea University Institutional Review Board in compliance with the standards for the ethical treatment of human participants before the data collection. The experiment was advertised in two anonymous online communities, Blind and Kopas, to explore the effect of watching videos on an individual's gender bias. The participants had direct access to the experiment with a link provided through the advertisement. The online behavioral psychology experiment platform Gorilla was used to conduct the experiment, and participants were randomly assigned to treatment or control groups. Upon clicking on the experimental link, participants were first enquired about their age and provided with a brief explanation of the procedures and purpose of the experiment. Consistent with the purpose of the experiment, only participants aged 19–39 years were allowed to participate. Once the informed consent was provided by the participants, they were allocated to the treatment or control group through randomization.

Participants assigned to the treatment group answered a gender question first for their assignment to appropriate videos. Subsequently, the participants watched the intervention videos, followed by questions related to the video content. First, the participants watched a narrative video, followed by attention and manipulation check questions for the narrative video. Subsequently, they watched an expert video followed by attention and manipulation check questions for the expert video. It is significant that the perspective-taker should be consciously aware of the person they are trying to understand (Gehlbach and Mu, 2022), thus, the narrative video was shown prior to the expert video to present a specific target (e.g., the main actor of the narrative) to the participants. The participants in the treatment group later completed the gender bias and cultural orientation questionnaires. Finally, the demographic questions were answered and the participant's submitted their email addresses to receive compensation.

Participants in the control group watched the irrelevant video on gender bias. They completed a gender bias questionnaire, cultural orientation questions, demographic questions, attention check questions, and manipulation check questions. Finally, they submitted an email address for compensation.

Results

Preliminary analysis

We have conducted descriptive statistics and bivariate correlation to assess if one's cultural orientation is significantly correlated to gender bias. The results are presented in Table 1. As we anticipated, a significant negative correlation was found between gender bias and horizontal collectivism ($r = -0.28$, $p < 0.001$). No significant correlations with gender bias was observed for the remaining variables (horizontal individualism, vertical collectivism, and vertical individualism). This difference could be attributed to the fact that only horizontal collectivism is related to one's favor toward altruism (Booysen et al., 2021), which motivates one to remain close and social with others (Shavitt et al., 2011). We have controlled the horizontal collectivism variable to examine hypothesis 1, to control the effect of cultural orientation on examining the effectiveness of the video intervention.

TABLE 1 Descriptive statistics and bivariate correlations between gender bias and cultural orientation variables.

Variables	1	2	3	4	5
1. Gender bias	–				
2. HI	−0.093	–			
3. HC	−0.279***	0.060	–		
4. VI	0.147	0.289***	0.091	–	
5. VC	0.102	0.017	0.359***	0.181*	–
M (SD)	1.97	7.23	6.48	6.37	6.20
M (SD)	(0.61)	(1.36)	(1.50)	(1.40)	(1.55)

HI, horizontal individualism; HC, horizontal collectivism; VI, vertical individualism; VC, vertical collectivism.
*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.

TABLE 2 Analysis of covariance (ANCOVA) summary table for gender bias by group conditions.

Source	SS	*df*	MS	*F*	*p*-value
HC	1.68	1	1.68	4.60	0.034*
Group	2.29	1	2.29	6.27	0.013*
Error	57.42	157	0.37		
Total	680.25	160			

SS, sum of squares; MS, mean square; HC, horizontal collectivism.
*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.

Emotional immersion and logical thinking

Participants reported higher emotional immersion after watching the narrative video ($M = 3.67$, $SD = 0.59$) in comparison to the expert video ($M = 3.36$, $SD = 0.61$). Further, they reported higher logical thinking after watching the expert video ($M = 4.09$, $SD = 0.97$) compared to the narrative video ($M = 3.17$, $SD = 1.04$).

Hypothesis testing

Hypothesis 1

We investigated the effectiveness of the shortened VIDS intervention in treatment and control groups. Using a one-way ANCOVAto control for horizontal collectivism, which had significant correlations with gender bias ($p < 0.001$), the efficacy of the VIDS intervention between the treatment and control groups was examined. Prior to conducting the one-way ANCOVA, we tested whether the horizontal collectivism variable met the equality of the within-group regression slopes. Table 2 presents the results of the analysis and the assumptions of the Levene's test and normality checks ($p = 0.078$). The shortened VIDS intervention had a significant negative effect on gender bias after controlling for horizontal collectivism (F (1,157)

=6.27, $p < 0.05$). The estimated marginal means were compared with those of the control group ($M = 2.37$) and gender bias decreased in the treatment group ($M = 1.55$).

Hypothesis 2

Assumption check

In our exploration of elements of perspective-taking on decreasing gender bias, we employed a multiple linear regression model to assess the contributions of predictor emotional immersion and logical thinking. Before examining the predictive power of our model, an assessment of its basic assumptions was analyzed to affirm the validity of our analysis. Homoscedasticity was confirmed via Breusch-Pagan test ($p = 0.086$). Furthermore, the Durbin-Watson statistics stood at 2.26, ruling out autocorrelation among residuals and attesting to the independence of errors. The Variance Inflation Factor (VIF) for each predictor was 1.104, below the threshold of 5, dispelling multicollinearity concerns. Collectively, these diagnostic tests validated the key assumptions of our multiple linear regression model.

Subsequently, multiple regression was run to test if the two dimensions of perspective-taking, emotional immersion and logical thinking, significantly predicted decreasing the level of gender bias. The results of the regression indicated the two predictors significantly explained 10% of the variance F (2, 75) = 5.287, $p < 0.01$, $R^2 = 0.124$, R^2adjusted = 0.100. Emotional immersion added statistically significantly to the prediction, ($t = -3.235$, $p < 0.01$) while logical thinking did not ($t = 0.682$, $p = 0.497$). Table 3 shows the results of linear regression analysis.

Affection and cognition are inseparably intertwined and cognitive and emotional functioning are interconnected and cannot be performed in isolation (O'Rorke and Ortony, 1998; Pessoa, 2008). Consequently, a moderation analysis was conducted (Figure 1) to further investigate the mechanism between the two key elements of perspective taking (emotional immersion and logical thinking) and the reduction in gender bias. Through Hayes (2013) PROCESS macro Model 1, a statistical method used for moderation analysis in the context of regression analysis, we examined the moderating effect of logical thinking on emotional immersion and gender bias. Table 4 presents the results of moderation analyses. The results indicated that logical thinking moderated the relationship between emotional immersion and decreased gender bias ($p < 0.05$).

We employed a simple slope analysis, referred to as a pick-a-point approach (Montoya, 2019) to further examine how logical thinking moderates the relationship between emotional immersion and gender bias (Table 5). The results indicate that both −1 standard deviation ($B = -0.099$, $t = -4.098$, $p < 0.001$) and mean ($B = -0.066$, $t = -3.327$, $p < 0.01$) level of logical thinking had significant negative effects on the relationship between emotional immersion and gender bias, while +1 standard deviation ($B = -0.035$, $t = -1.476$, $p = 0.144$) level of logical thinking had an insignificant effect. Figure 2 illustrates the moderating effect of employing a pick-a-point approach. The results indicate that high logical thinking weakened the significant negative effects of emotional immersion on gender bias (Figure 2). Thus, participants who reported low to medium engagement in logical thinking after watching the expert video showed a significant decrease in gender bias from emotional immersion in the narrative video in comparison to participants who reported high engagement in logical thinking.

Since the interaction term was found to be significant, thus, the Johnson-Neyman technique was further employed to identify regions in the range of logical thinking where the effect of emotional immersion on decreasing gender bias is statistically significant and not significant. The result demonstrated that the effect of emotional immersion on gender bias had a significant negative effect within the range of-3.09 to 0.51 of logical thinking and an insignificant effect at 0.66 and above (Table 6; Figure 3).

Discussion

The alleviation of the ongoing conflict over gender inequality in Korean society needs urgent addressal. The characteristics of gender conflict stem from differences in perceived discrimination among genders. Thus, it is crucial to understand the pre-existing gender stereotypes and biases which persist across generations. Therefore, effective interventions for reducing gender bias are significant. Hence, current study proposed to (a) examine whether watching brief videos of VIDS, which promote perspective taking, decrease gender bias, and (b) investigate the interaction of emotional and logical immersion on the reported reduction of gender bias.

Prior research revealing VIDS as an influential medium for decreasing gender bias (Moss-Racusin et al., 2018) was replicated and extended. Of the 12 VIDS videos, the current study provided one narrative and one expert video to the participants. The total intervention time approximated 10 min, which is almost 20 min lesser to that of previous research (Moss-Racusin et al., 2018). To minimize the impact of other factors for examining the efficacy of the shortened VIDS intervention, cultural orientation was controlled for due to its inclination for altruism which affects perspective-taking ability (Wu and Keysar, 2007; Booysen et al., 2021).

The results reported a significantly decreased gender bias in the treatment group compared with the control group (Hypothesis 1). These results indicate that briefly edited VIDS interventions may be effective in reducing gender bias which is similar to those of previous research. This could be attributed to the relationship between the intervention time and the participants' sustained attention. Perspective-taking occurs when the cognitive and emotive information of others can be obtained, and adequate attention aids in efficient processing of information (Gehlbach, 2004; Pesimena et al.,

TABLE 3 Linear regression analysis.

Variable	*B*	*SE*	95% CI		β	*t*	*p*-value
			LLCI	ULCI			
EI	−0.26	0.08	−0.427	−0.101	−0.37	−3.235**	0.002
LT	0.05	0.07	−0.091	0.186	0.08	0.682	0.497

EI, Emotional Immersion; LT, Logical Thinking.
*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.

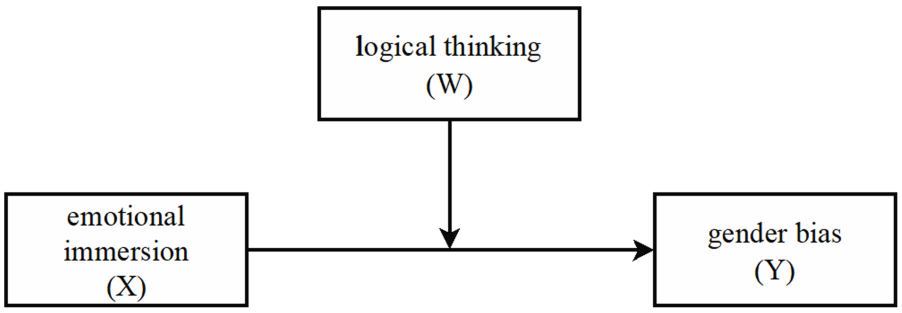

FIGURE 1
Moderation model of logical thinking in relationship between emotional immersion and gender bias.

TABLE 4 Moderation analysis.

	B	*SE*	*t*	*p*-value	LLCI	ULCI
EI	−0.066	0.020	−3.327**	0.001	−0.105	−0.026
LT	0.099	0.071	1.395	0.167	−0.042	0.240
EI x LT	0.034	0.014	2.383*	0.020	0.006	0.062

EI, Emotional Immersion; LT, Logical Thinking.
*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.

TABLE 5 Pick-a-point approach: moderation of logical thinking on the relationship between emotional immersion and gender bias.

Logical thinking	*B*	*SE*	*t*	*p*-value	LLCI	ULCI
−1SD	−0.099	0.024	−4.098***	0.000	−0.147	−0.051
M	−0.066	0.020	−3.327**	0.001	−0.105	−0.026
+1SD	−0.035	0.024	−1.476	0.144	−0.002	0.012

*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.

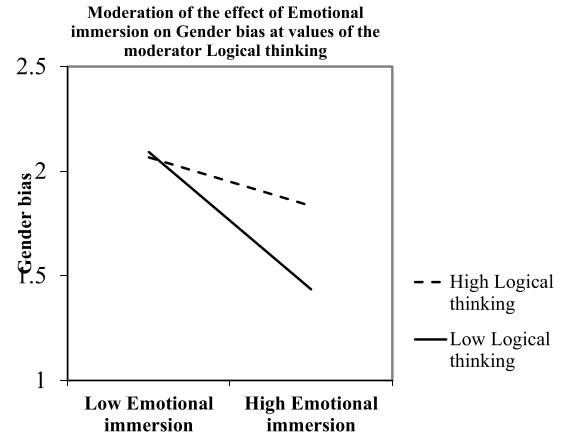

FIGURE 2
Moderation of the effect of emotional immersion on gender bias at values of the moderator logical thinking.

TABLE 6 Conditional effect of logical thinking.

Logical thinking	Effect	*SE*	*t*	*p*-value	LLCI	ULCI
−3.09	−0.171	0.048	−3.543	0.001	−0.267	−0.075
−2.89	−0.164	0.046	−3.594	0.001	−0.255	−0.073
−2.69	−0.157	0.043	−3.649	0.000	−0.243	−0.071
−2.49	−0.150	0.041	−3.708	0.000	−0.231	−0.070
−2.29	−0.144	0.038	−3.769	0.000	−0.219	−0.068
−2.09	−0.137	0.036	−3.833	0.000	−0.208	−0.066
−1.89	−0.130	0.033	−3.897	0.000	−0.196	−0.064
−1.69	−0.123	0.031	−3.96	0.000	−0.185	−0.061
−1.49	−0.116	0.029	−4.019	0.000	−0.174	−0.059
−1.29	−0.110	0.027	−4.066	0.000	−0.163	−0.056
−1.09	−0.103	0.025	−4.095	0.000	−0.153	−0.053
−0.89	−0.096	0.023	−4.093	0.000	−0.143	−0.049
−0.69	−0.089	0.022	−4.045	0.000	−0.133	−0.045
−0.49	−0.082	0.021	−3.934	0.000	−0.124	−0.041
−0.29	−0.076	0.020	−3.746	0.000	−0.116	−0.035
−0.09	−0.069	0.020	−3.474	0.001	−0.108	−0.029
0.11	−0.062	0.020	−3.128	0.003	−0.102	−0.023
0.31	−0.055	0.020	−2.726	0.008	−0.096	−0.015
0.51	−0.049	0.021	−2.300	0.024	−0.091	−0.006
0.66	−0.044	0.022	−1.993	0.050	−0.087	0.000
0.71	−0.042	0.022	−1.876	0.065	−0.086	0.003
0.91	−0.035	0.024	−1.476	0.144	−0.082	0.012

2019). The current study promoted perspective-taking by providing logical and emotional information to the participants through the video intervention and optimized its efficiency as the videos' duration was lesser than 6 minutes and further questionnaire on the story of the videos was provided, which sustained the participants' attention to the maximum (Guo et al., 2014; Geri et al., 2017). Therefore, the shortened VIDS intervention may have contributed to maximizing the participants' attention by providing them sufficient audiovisual cues to engage in effective perspective-taking. The findings indicate that briefly edited VIDS interventions can also be effective in decreasing gender bias, and suggest that VIDS interventions could be utilized in a time-saving manner.

This study first explored whether there is a difference between watching a narrative and an expert video in reducing gender bias, which increase emotional immersion and promote logical thinking, respectively (Hypothesis 2). The results showed that emotional immersion in the

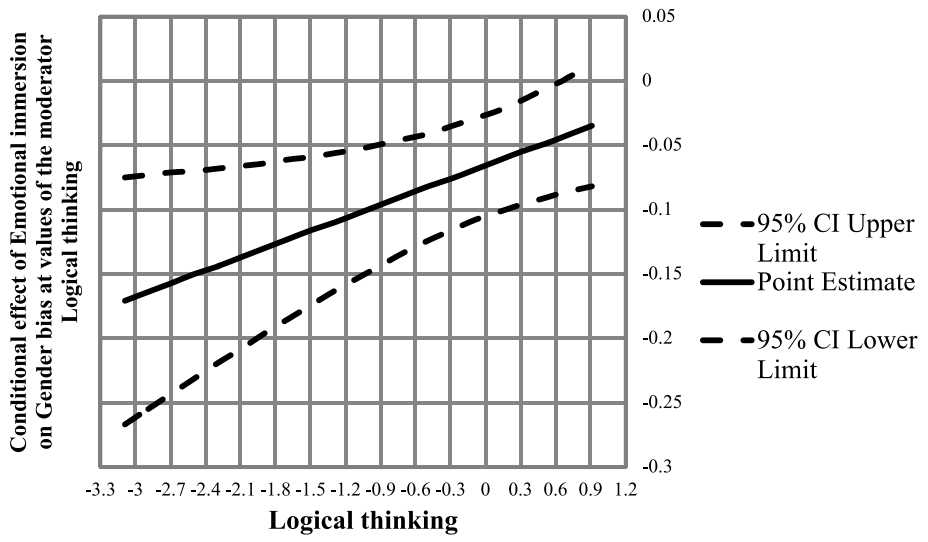

FIGURE 3
Conditional effect of emotional immersion on gender bias at values of the moderator logical thinking.

narrative video significantly reduced the gender bias. However, increased logical thinking had an insignificant impact in decreasing gender bias after watching the expert video. This finding contradicts the findings of Moss-Racusin et al. (2018) in which participants who watched six expert videos reported significantly lower gender bias, whereas participants who watched six narrative videos did not.

This difference in outcomes can be attributed to inter-individual variances in the participants. Both emotive and cognitive inter-individual functioning can be promoted or decreased differently depending on one's state and traits (Stietz et al., 2019). Taken together, the findings of the current study suggest that people who mainly use emotional functioning to take others' perspectives are better stimulated by presenting VIDS videos briefly, whereas those who use logical functioning when taking perspectives are better stimulated by longer VIDS stimulations. Thus, when utilizing VIDS interventions of different time durations, it is important to consider an individual's affective and cognitive functioning. Perspective-taking largely depends on one's situation, personality traits, mental health, and motivation to take perspective (Stietz et al., 2019). Therefore, none of the approach can be considered superior to the other, but both interventions are useful depending on the context or environment. This makes VIDS a more powerful perspective-taking tool, because various video conditions can be flexibly used under different circumstances.

In the current study, the differences in the participants' sex distribution could also explain this contradiction. More women (62%) than men (38%) were included in the analysis due to the number of excluded participants. A previous study showed that men and women had different neural traits regarding gender biases and needed separate neural stimulators to restrain their implicit gender stereotypes (Wang et al., 2019, p. 9) Hence, in the current study, whose participants were shown fewer VIDS videos than Moss-Racusin et al. (2018) with more women in the sample, could have contributed to the differentiated result.

Additionally, the present study conducted a moderation analysis to investigate the interaction between increased emotional immersion and logical understanding in decreasing gender bias. The results reveal that logical thinking moderated the relationship between emotional immersion and gender biases. Specifically, the pick-a-point approach analysis showed that high logical thinking after emotional immersion eliminated the significant effect of emotional immersion on decreasing gender bias. When visual stimuli have low perceived relevance, rational appeals may fail to sustain viewers 'attention and process the stimuli, whereas emotional appeal aids in maintaining attention to less relevant messages (Gong and Cummins, 2019). Since the participants in the current study watched videos that showed another gender's experience of discrimination, not their own, the videos may have been perceived as less relevant to the participants. This may have resulted in the narrative video successfully sustaining the participants' attention despite its low relevance, and engaging in high levels of logical thinking by watching the expert video immediately afterwards may have affected the sustained attention of the participants.

The findings of the current study have varied applications. Our results indicate that shortened VIDS exhibit varying levels of effectiveness in reducing gender bias depending on one's emotional and cognitive understanding of another gender. We propose two main suggestions for utilizing shortened VIDS interventions based on the two key dimensions of perspective-taking, emotional immersion and logical thinking, considering that one's inclination to take perspective is dependent on the situation and personal traits (Stietz et al., 2019).

Providing short videos in repetition that stimulate emotional engagement to individuals who mainly incorporate emotional immersion as a perspective-taking strategy could be effective since repetition is required due to people's limited memory span (DeMarzo et al., 2003). Recently, content creators from short video-sharing platforms such as TikTok, YouTube, and Instagram have created numerous videos for entertainment and learning purposes (Zhang, 2020). With the platforms' rapid content transmission, motivating content creators to produce short, emotionally engaging videos that can be used as gender-biased interventions by the general public may be effective (Zhang, 2020). Furthermore, inclusion of scenes that engage viewers emotionally with characters without gender bias or

showing the characters taking perspective could also be influential, considering that viewers learn detailed interactions between characters from watching TV shows (Żerebecki et al., 2021, p. 8). Further, for emotive perspective takers promoting logical thinking immediately after increasing emotional immersion should be considered more carefully.

For people who use cognitive and logical functioning to take others' perspectives, employing additional activities to develop a logical understanding of others' situations can be helpful. Eyal et al. (2018) suggest that direct conversation is the most efficient way to increase the accuracy of social cognition. For instance, an interpersonal group which meets to directly obtain different genders' cognitions of the world after watching shortened VIDS videos could be beneficial in reducing gender bias and encourage effective empathizing in logical perspective-takers.

This study not only confirms the effectiveness of shortened VIDS videos in reducing gender bias, but also has several implications for the expanded use of VIDS videos as interventions. First, it shows the possibility of utilizing the VIDS as a tool for perspective-taking. Previous research using VIDS as a gender bias intervention majorly examined the efficacy of videos consisting of narrative and expert conditions and did not promote perspective-taking between the participants. The increased level of emotive and logical engagement after watching the shortened VIDS suggests that VIDS can be utilized to promote understanding between genders. Since, genders perspective-taking using VIDS was effective in reducing gender bias among young adults in Korea, it can also be applied to other cultures that face similar issues. Second, this study expands the field in which the VIDS can be utilized. Although the intervention was originally designed to target STEM gender biases, the results of the current study showed its effectiveness for participants recruited from both STEM and non-STEM fields. Finally, previous studies employing VIDS have been majorly conducted in western countries (Pietri et al., 2017; Hennes et al., 2018; Moss-Racusin et al., 2018; Pietri et al., 2019). Employing the VIDS in Korean adults aged 19–39 years was effective in decreasing gender bias similar to the results of previous studies. This is the first study to use the VIDS in Korea, expanding the applicability of the VIDS in non-western cultures.

Limitations and future directions

Future studies can further explore effective gender-biased interventions through numerous ways. First, the current study presented intervention videos in a fixed order to successfully initiate perspective taking (Gehlbach and Mu, 2022). Thus, all the participants in the treatment group watched the narrative video first, followed by the expert video. Prior research indicates that the order of information provided affects participants' responses, and people form an impression based on the information provided first (Lasorsa, 2003; Sullivan, 2019). Thus, the order of the videos presented might have contributed to the narrative video showing more effectiveness in decreasing gender bias than expert videos. Future studies can explore the impact of presenting the expert video first or randomizing the order of the videos on perspective-taking and investigate its effect in decreasing gender bias.

Furthermore, perspective taking can be performed more accurately if there is a direct interaction between groups (Eyal et al., 2018). Thus, to promote more accurate perspective-taking, in addition to presenting VIDS, future studies should include direct interactions between genders.

The current study attempted to recruit non-binary participants as suggested by Farrell et al. (2020) in their study on perspective taking affecting gender biases. This can assist in generalization of VIDS results to more diverse populations. None of the participants reported their gender orientation as non-binary. Therefore, our study only investigated the effects of short VIDS interventions in a binary population. Future studies could attempt to recruit individuals who identify as non-binary to examine the applicability of these findings to more diverse participants. Likewise, future studies should explore how the promotion of perspective taking in VIDS videos can be effective for non-binary participants.

Another possible consideration is the cultural difference between the stimuli (VIDS) and participants (South Koreans) in this study. The VIDS was invented in predominantly individualistic western cultures, whereas the participants in the current study were from East Asia, where the culture is mainly collectivistic (Wu and Keysar, 2007). The current study assessed and controlled for the effect of horizontal cultural orientation, which is associated with collectivistic Korean culture and the inclination to empathize (Lee et al., 2007; Shavitt et al., 2011; MacNeill and Wozniak, 2018; Booysen et al., 2021). Future studies can explore whether VIDS can show effectiveness without controlling for the effect of cultural orientation or if there is a way of utilizing a more culturally sensitive VIDS.

Finally, the current study focused on the population in the age range of 19–39 years, which is experiencing maximum gender disparities. Since our results revealed that a short intervention using the VIDS could be effective for people aged 19–39 years, future research can explore the adaptation of the same intervention in older or even younger generations.

Conclusion

The finding of the study that perspective-taking through a shortened VIDS intervention can help combat personal gender bias is noteworthy. Our results show the efficient use of VIDS even under time constraints. Additionally, our findings indicate that the increased emotional immersion and encouraged logical thinking after watching short VIDS videos have varying impact in decreasing gender bias. Furthermore, moderation analysis showed that the depth of logical thinking significantly affected emotional immersion in reducing gender bias. This highlights the importance of considering individuals' perspective-taking strategies for effective implementation of VIDS interventions. This is the first study to employ the VIDS in Korea, depicting the possibility of its adoption in Korean society. As reducing gender bias is critical for combating gender discrimination that is persistent across generations, this study presents implications for gender equity.

Areas of application

To narrow gender gaps, especially in male-dominated areas, it is crucial to offer easily accessible education for women as well as prevent early leavers, which are an important dimension in educating youth (Gaweł and Krstić, 2021). The findings of our study suggest utilizing briefly edited VIDS could be an approachable intervention to

the viewers and be an educational tool for gender equity. In class, students can watch the shortened intervention videos and engage in activities to take the perspectives of other genders through various forms such as writing, presentations, etc. Having a discussion session between various genders to share their thoughts after watching the videos can also be beneficial on decreasing bias, since obtaining new and correct information from others is important in accurate perspective-taking (Eyal et al., 2018). It is also possible for students to create their own short-form intervention videos as a project, based on their life experiences of biased treatment, considering having high perceived relevance makes rational and emotional appeal more effective, especially in sustaining viewers' attention (Gong and Cummins, 2019). Furthermore, watching the videos together can serve as an informative tool, such as raising the viewers' awareness of existing gender bias or inspiring them to seek ways to minimize repeating such bias. As creating videos is a popular medium for the younger generation to communicate, utilizing short video interventions, can be an effective strategy to decrease gender bias.

Data availability statement

The original contributions presented in the study are included in the article/Supplementary material, further inquiries can be directed to the corresponding author.

Ethics statement

The studies involving humans were approved by Korea University Institutional Review Board (IRB-2021-0266). The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study.

Author contributions

YB: Writing – original draft. JJ: Writing – review & editing.

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The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Supplementary material

The Supplementary material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fpsyg.2024.1331460/full#supplementary-material

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Trans narratives on school experiences—This is how we feel

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Introduction: The school environment remains unsafe for many trans people, where they are victims of discrimination, aggression, and bullying, resulting in socioemotional and physical harm to trans individuals. Intersectionality and minority stress are contributing factors in this already challenging education environment. In many cases, the voices of trans people are not heard or listened to at school; therefore, this study aims to listen to their school experiences in order to identify key areas for improvement.

Method: This study implemented a narrative research approach where six in-depth interviews were completed with trans participants from the Basque Country, Europe, and the United States of America that focused on five dimensions: being a trans, the role of school, lack of teacher education and training, segregation by gender, and socioemotional wellbeing. The transcriptions of these interviews were coded using Nvivo software in categorical systems in a deductive and inductive way.

Results: The results clearly showed that the binary society has a negative impact on trans people. In addition, the educational environment is still hostile for most of them, in which the lack of teacher training and gender identity content in the curriculum has a negative impact on trans people and their experiences at school.

Discussion: The findings support the idea that socially ingrained binarism is detrimental to all those who step outside the norm. It can also be said that the earlier the transition is made, the better the effect (clinical as well as socioemotional) on their personal lives. For this early transition to occur, it is necessary to have access to information from an early age.

KEYWORDS

trans people, school setting, segregation by gender, socioemotional wellbeing, inclusion

1 Introduction

Discrimination based on sexual and/or gender identity is punishable by law in many countries, but the reality is that it is prevalent in our daily lives. The reason for this frequent and socially acceptable behavior might be that the majority of society is still cloistered in the gender binary (Di Marco et al., 2021). This cultural cisgenderism, as referred by Kennedy (2018), leads to the marginalization of trans and gender non-conforming individuals by making them invisible due to such tacit ideology. Moreover, they have

been ignored in academic literature and the public consciousness (Horton, 2020). Kennedy (2018) also highlighted that cisgenderism, something that should be questioned (Martino and Omercajic, 2021), not only affects trans people, as it represents the male hegemony and misogyny that stems from it, but also affects everyone.

On the other hand, the difference between sex and gender is not very clear, otherwise it would not be possible to explain how sex can determine gender. This conflation is normative and exclusive, implying a binary system (Lindqvist et al., 2021), and this reality excludes the term gender diverse, which is understood to encompass those who identify with the feminine and masculine gender in combination, in variation, or neither of them (Tobin et al., 2022). It is important to note that, when gender is assigned culturally, the active agent is the other person which can lead to confusion and potential psychological or emotional harm to trans people (Kennedy, 2018).

Social identity, besides helping us to define ourselves, influences the social interactions we may have, and heteronormative socialization is believed to start from early developmental stages (Di Marco et al., 2021). Gender is a social construct, which, according to multiracial feminist theory, together with race, as well as providing identity, aims to provide principles of organization in the social system and maintain social hierarchy. According to social stereotypes, femininity has a bias of passivity and debility that is the norm for white women. The dominant heteropatriarchal cultures have created the image of the black woman with a clear contrasting effect. This image also reaffirms gender inequality among white people, making it seem that the weak white woman needs to be protected by the white man (Browne and Misra, 2003). Previous research suggests that transgender people have similar gender identifications before and after social transition for the reassurance of families who may think that the transition may take them away from an authentic identity (Call et al., 2021).

The condition of a trans person is a clear factor for having a poor social-emotional situation as stated in research (Etxebarria-Perez-de-Nanclares et al., 2023). They are exposed to victimization, bullying, absenteeism, low academic performance, family rejection, and harassment. Transgender and Gender Nonconforming (TGNC) students feel unsafe in the school environmentdue to verbal and physical assault. This situation can be understood as a result of institutionalized regimes of cisnormativity and cisgenderism (Martino and Cumming-Potvin, 2018), which causes harm and delegitimization due to trans-exclusionary curricula (Horton, 2022). Trans individuals' access to sex-segregated spaces and the ability to use the name of their choice are among their concerns (Bastian and Rohlik, 2022). Furthermore, trans men have the highest incidence of attempted suicide, which accounts for 51% (Tobin et al., 2022).

The socioecological model shows the importance of the impact of interactions between people and the environment on personal growth and development (Chan et al., 2022). Hence, the role that schools can play in people's wellbeing is relevant. The integration of families and teachers is important in this regard (Abreu et al., 2022) as a feeling of belonging is crucial. However, numerous studies have shown that one of the key barriers is the negative attitude and misinformation of educational professionals (Horton, 2020). On the other hand, educational protocols can help with the anxiety experienced by these students (Baum, 2022). In this regard, a need for engagement with trans studies is required (Martino and Cumming-Potvin, 2018). In addition, there are other elements, such as race, ethnicity, religion, and gender (even within the trans community), that can be the causes for multiple discrimination, meaning that socioemotional wellbeing can also be affected detrimentally by multiple aspects. Therefore, it is necessary to remember the factors of intersectionality as minority stress when assessing the wellbeing of this group.

Intersectionality is understood as the idea that multiple identity facets affect minority stress experiences (Call et al., 2021), mostly gender and race, it is possible to define minority stress as the social factors that create a negative social environment that can lead to high rates of psychological distress and poor mental health for those who belong to the oppressed minority groups (Johnson and Szilagyi, 2023). It is worth noting that black people have suffered decades of institutional racism with respect to housing, employment, healthcare, education, criminal justice, and financing (Tobin et al., 2022). In addressing intersectionality, it should be emphasized that those who belong to racially oppressed groups, cultural minorities, non-Christian, and lower-class groups experience higher levels of discrimination in educational institutions (Chan et al., 2022), which has a great effect on their socioemotional wellbeing.

Based on the factors identified in a systematic review of research articles with educational and social perspectives (Etxebarria-Perez-de-Nanclares et al., 2023), this study aims to listen to the different voices within the trans community in relation to their experience. Given the scarcity of studies that give a voice to the protagonists of this reality, there is a need for activist studies and student-centered interventions to improve the situation of specific students (Kirk and Oliver, 2014). Few studies even investigated from a perspective that is not clinical about trans people. Jerome Bruner highlighted how culture shapes the mind as it provides tools and context, understanding education as a process of negotiation between individuals and culture and highlighting the role of education in providing an alternative view of the world, making the strange familiar. He believed that engaging in narratives with others in socio-cultural interactions was vital in shaping the mind (Takaya, 2013). By giving trans people a voice, we learn from their experiences, identify difficulties, understand their perspectives, and can offer proposals in the educational environment to promote their freedom of development.

2 Method

2.1 Design

In this study, in-depth interviews were proposed to conduct ethnographic narrative research with testimonies as the fundamental pillar. To this end, the interviews were structured from the five dimensions suggested by Etxebarria-Perez-de-Nanclares et al. (2023) and were conducted in English and Basque.

2.2 Participants

In-depth interviews were conducted with six trans individuals, including four trans men (T3US, T4US, T5BC, and T6BC), a trans woman (T1BC), and a non-binary person (T2US), all aged between 20 and 29 years. Half of the participants ($n = 3$) were from the Basque Country (BC) (Europe) and the other half ($n = 3$) were from the United States of America (US), mostly from the state of Massachusetts. All interviewees were coded as T (trans), and each participant was assigned a number for identification purposes. The number one was assigned to the only trans woman and the number two to the only non-binary person as a sign of solidarity and criticism of this still sexist and clearly binary society. The rest of the numbers were assigned according to the date of each interview. The Basque participants transitioned during the middle or high school stages, while the US participants transitioned during the university stage. It is worth mentioning that T2US and T4US are currently teachers and that T1BC, T5BC, and T6BC are members of an association and deliver speeches in schools about their gender status.

2.3 Instruments

In-depth online interviews were the strategy used to collect data using the Zoom application. The interviews were conducted following previously set categories, which were renamed/modified with the aim of distancing them from a medical-clinical perspective and with the intention of giving a broader vision of trans reality, especially in the educational environment. The categories were determined as follows: being trans, the role of the school, the lack of teacher education and training, gender segregation, and socioemotional wellbeing. Field notes were also used to highlight the most significant findings and to collect additional information that appeared over the course of the interview.

2.4 Procedure

Due to the sensitivity of the subject and considering that these people were talking about their private lives, which in most cases have involved a lot of pain, the interviewer's personal and work circle was used to contact the interviewees through the snowball technique (Taylor and Bogdan, 1992). For this purpose, email, text messages, the WhatsApp application, and Instagram were used. The Basque Association of Families of Trans Children (NAIZEN) was also involved in contacting some of the participants. The interviews were recorded and were completed in Basque and English, and the captions tool (cc) was used for the interviews in English. The interview was conducted for a duration between 35 and 60 min. The objective of all the interviews was to build a strong rapport through trust and empathy, as interviews always aimed at understanding the other person, leading to a more detailed investigation (Denzin and Lincoln, 2015).

All interviews were transcribed using a word processor and uploaded to the Nvivo software program. Here, the categories described in Etxebarria-Perez-de-Nanclares et al. (2023) were created using deductive coding. Meanwhile, new subcategories were also generated from the information received during the interviews through an inductive procedure based on grounded theory. Table 1 shows the categorical system used, the subcategories, and the contributions of the interviews in each category and/or subcategory.

2.5 Analysis

Once the categorical system was created and all files were uploaded to Nvivo14, all paragraphs were read and classified according to this categorical system. The program counts the number of paragraphs (references) and from which interview they were extracted (resource). For the sake of accuracy, the analysis was supervised by three researchers.

3 Results

To analyze the results, five categories were defined, as presented in Table 1. For the purpose of the presentation of these results, excerpts in Basque were translated into English by the authors.

3.1 Being a trans

Trans identity is still not understood and/or respected in many social strata. The terminology has changed a lot in recent years, but there is no unanimity even within the collective. Although they were not asked about what it is to be trans, during the interviews, it was mentioned that binarism is very established in society, making it very difficult to be trans, and furthermore, in other cultures, such as in India or the United States with Native American, more than two genders are identified.

> I think society is very binarized so ideas about trans people are generated about men or women and that's it. I think that makes it difficult to understand what it is to be trans. I think that binarism limits and that when we get out of it, everything will change (T1BC).

It is important to highlight the criticism made toward society, making it clear that trans women, for example, are not another type of woman, and emphasizing the necessity to move away from a clinical approach.

> …trans women are not different type of woman (T2US).
>
> Being transgender is identifying as a different gender, but you can go through those surgeries in those medical transit. It goes under the idea that to be trans you don't need those, you are who you are and what you decide to do with your body is your own business (T3US).

This finding makes it clear that gender is a social construct, not only because in different cultures the classification of gender is different but also because the meaning of being a woman, or a man, is not the same in all cultures. Moreover, it is striking that,

TABLE 1 A categorical system, the number of files, and the number of references.

Dimension	Indicators	Files	References	%
1. Being a trans		6	40	18.26
	What is it?	3	3	
	When did you realize it?	6	10	
	How did you realize it?	2	3	
	The concealment of the beginning	1	3	
	Transition and when	6	19	
	Doubts about certain decisions	1	1	
	Challenges	1	1	
2. The role of the school		6	72	32.88
	School climate	6	34	
	Gender identity in the curriculum	6	10	
	Decision making about the transition or in a school setting	6	21	
	Bullying	3	7	
3. The lack of teacher education and training		6	39	17.81
	When or where is this deficiency evident?	6	20	
	How can this problem be solved?	6	19	
4. Segregation by gender		6	33	15.07
	Segregated spaces	6	25	
	Safety issues	4	5	
	Sports	2	2	
	Uniforms	1	1	
5. Socioemotional wellbeing		5	35	15.98
	Discrimination	1	3	
	Negative experiences	5	28	
	Positive experiences	2	4	
Total			219	100

although a part of society is reluctant to move away from binarism, it is the same society that classifies trans women or trans men into other types of women or men.

All the interviewees discovered their trans status in middle or high school, and only one mentioned that he knew he was a boy since he was 6 years old. We can observe a lack of information about gender identity that hindered this "egg cracking" moment in this journey toward discovering their own identity and how the lack of safe spaces or adequate modeling delayed taking the step.

> Oh, man, that was a journey of itself. I started exploring my identity when I was around 14 just getting into high school. It was a bit of me trying some things out at first, it was kind of a pipeline, of one identity to the other, until I eventually fell into the identity of well, more masculine presenting [. . .]and the day that I kind of what they call it is like an egg cracking moment, where it's like dawning realization like, it's like step by step, and then, there's is like a "Oh, that's when that realization came". But for me, when I finally realized that it was the more masculine leaning that I was more comfortable with, I just gotten out of the shower and I was looking at myself in the mirror, and it was just a moment where I said he, and I was like, "Oh, there it is" (T3US).

It is evident that a lack of knowledge makes trans people discover their own identity later. Even discovering it at an early age, the lack of information, safe spaces, and adequate referents can make these individuals think that what they are feeling is not right.

In this sense, it is also mentioned that the thing that led them to realize what was happening was the discomfort they felt.

> You know that something is wrong (T6BC).

This type of situation can lead to a denial of what is happening and have a huge negative impact on their self-esteem and consequently on their own development as a person.

> In the end, I spent 9 years, well, probably more because I realized I was a boy when I was 6 but before I noticed that something was not right, that there was something that differentiated me from others. And that had a big impact on my self-esteem and self-concept, because if you spend years thinking that you are crazy, that no one will love you as you are... Also, it's a secret, you can't talk to anybody about it, because you think nobody will understand you, and that had a big impact on my head (T5BC).

Being different is something that society punishes. Therefore, is it necessary to transition? What emerged from the interviews is that it is a personal and non-transferable process as each individual is unique. Not everybody understands the same thing about transitioning and has the same needs and, often, the fact of having to transition puts extra pressure on trans people. It also invites a reflection on what transitioning really is and whether it is the trans person or society who in fact transitions.

> I believe that people still think that we are the ones who make the transition, but no, I have always been a boy, what has changed has been the way society perceives me, we have always been what we are [...] But my goal is to make the transition a natural process (T5BC).
>
> That is, hard to say because it is also personal to an individual, I mean what I think of when I hear that question is a little bit unfair, just like the way Society is set up. The question must be posted like that, but it's like, why does it have to be that I have to do this whole sort of like performative thing where I'm like revealing to you who I am, and that it's different than what you thought your whole life? That whole thing is a bit of a dramatic thing. I mean, the rate ideally and ideal world it would be that everyone understood you know, everyone has pronouns [...] Or it is like "oh, man!" I must be consistently worrying about coming out and I'm going to come out and if I should. And how people are going to react? Because it is this whole, like, big societal thing (T2US).
>
> It is necessary to transit if you think it is appropriate. Transition for each person is something different. For me, the transition is to understand the ideas in your head or to develop and understand the identity [...] it is like the skin, each one has its own, with which we go out into the world. I believe that transition is a tailor-made suit (T1BC).

Similar answers were obtained when asked when the transition should take place. There was fear of not only hormonal treatments at early ages but also the prevalence of a lot of misinformation. It was also mentioned that it seems that doing hormonal treatment at an early age has many advantages.

> In my mind, I do not think that I was ready as a teenager… But at the same time, I have heard of like very young children being given hormone blockers, so that they don't have to go through the first puberty to even begin with, which sounds like deal to me because once you go through your puberty, and you start transitioning, after that you have to go through puberty again. So if you can stop it for a second and be able to think about what kind of puberty do you want to go through, then maybe you only have to go through one [...] I did not start taking hormones until after I graduated, because I was afraid that the hormones would affect my ability to graduate, bullshit (T4US).
>
> … knowing yourself for the sooner, the better. Yes, absolutely, that is why talk about this, education. As like a core, standard, and all that, like I am talking like from pre-k (T2US).
>
> Any time is a good time. When you know who you are and want to show it to the world. It is true that in the school environment, when you are younger, it is much more amiable. The older you get, the people around you have more fixed ideas about the world around them, which makes it more difficult (T1BC).

Although it is unclear whether they are in favor of transitioning in public or not because it is mentioned that it can also be harmful, when they talk about their personal experience, they value it positively, although, in one of the cases, it is expressed that transitioning was the only alternative to suicide.

> I myself this is one of the best things that ever happened to me, transitioning. I was a very, very angry child. Now I have anger, but it is nothing compared to what it was. I am much happier than I have ever been. I have pride in my beard in my appearance. Yeah [...] I was a lot angrier before I transitioned, and then transitioning actually mellowed me out. It is going to sound so dramatic, I didn't know happiness before but now I am pretty happy, happy as I have ever been in my life (T4US).
>
> I made the transition because it was the only alternative to death since I wanted to die. At that moment something changed in my head and I thought the consequences of transitioning cannot be as bad as death. Therefore, my goal is that people do not reach that point of wanting to die (T5BC).

There is a reflection regarding society about transition in which it is not clear which part of the transition is performed to comply with one's own desires or to comply with what society demands of them. As well as how the transition can modify your social environment, for example, from being surrounded by women when he was perceived as a woman to them not feeling so comfortable with him since he started being perceived as a man.

3.2 The role of the school

The school is where we learn social rules, interact with peers, and feel belonging to a group, which is the key to the developmental stages. Due to this social aspect, the negative experiences suffered in the school environment have a great impact on the perception of their self-image, self-esteem, and, consequently, on their emotional wellbeing and full development.

Most of the interviewees reported negative experiences in the school environment.

> I did not feel a nice and safe environment in High School. It was a very big high school and I am sure there was plenty of people who accepted it, but there were some like I definitely got some harassment [. . .] I still hear kids say like you are gay as an insult. I have also heard kids say that and then seeing a teacher do nothing about it and that is a problem, too (T4US).
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> In general, I have never experienced school as a safe environment. I had a lot of problems going to school, I got sick because I didn't want to go, it was hell. When you feel that you are different or you are left out.... I also think that especially in high school, not enough importance is given to emotional wellbeing. The teachers focus on academics, but a student can't focus on studying when they want to die. That is why I think it is also the teacher's responsibility to accompany them, to ask how they are doing (T5BC).
>
> Even if you don't want it to, society influences you, what is expected of you. Sometimes I would like to be aware of which steps I took because I wanted to and which because of what was expected of me. There are people who think that it is a whim of ours, and many times it is the answer to what is demanded from outside because I believe that for society there is a when and how to transition (T1BC).

Not all experiences were negative, there have also been those who have experienced a friendly academic environment, in which safe spaces have been key.

> Before I began the transition, I changed high schools, and the environment was totally different [...] I didn't suffer any aggression, but if someone said something inappropriate, the teachers were very attentive and cut it right away [...] They also started giving talks on the subject at all grade levels. Then more trans people came out and today it is a reference school for trans people [...] The truth is that my opinion about the school has changed after my transition, I had a very nice transition (T5BC).
>
> The school that I went to was very accepting of different identities. It was at art school, it is a bit more diverse [. . .] Everybody around me was being very open about it. My school did have a LGBT club. It was kind of like another art club but it made a safe space for a lot of kids that I think it is very important, because they might not have that at home. The new art teacher made a club for us, just a nice little place to go and hang out [. . .] Those kinds of spaces are very important to have, I think (T3US).

It can be inferred from the interviews that teachers play a very important role in the perception of school climate and that they are the agents who have the power to balance the scales for better or worse. In addition, it is important not to lose track of one of the main objectives of the school, which is to protect all students.

> The best way to protect children is to educate the people around them (T5BC).

When asked about gender identity within the curriculum, most of them did not receive any information within the educational environment, and even those who did receive it believed it was insufficient. It was highlighted that, if they had that information, they would have discovered their own identity earlier.

> My school and High School, yes. We have always had training on this topic for both teachers and students. In tutoring hours, we could choose the topic we wanted to talk about, and this topic came up more than once (T6BC).
>
> What I have learned has either been through my own research or through my friends. I have never learned the lick of anything about LGBTQ identities, and what they mean, and how to approach them through any kind of school curriculum [. . .] I think it would be really important to have those curriculums on like gender identity, especially in like health classes. If I had a health class that talked about like different identities through gender, "Oh, my God!" I probably would have had that realization way sooner (T3US).

As to whether they consider school a suitable place to transition, there is no agreement. The need for knowledge and understanding on the part of the educational community is also mentioned.

> But I mean, no, school is hard for everybody. I think and anything that kind of makes you different makes it a little bit harder. And right now, you know, trans is the new gay (T4US).
>
> I think it would help a lot of kids or a lot of teenagers who are trying to figure themselves out that they know that there is a place to turn to learn more about it because that is what school is about (T2US).
>
> The school setting is not a requirement to have those kinds of realizations, but it is still a good place to start, because you, as a child, you learn more about yourself through your peers (T3US).

When the need for protocols is raised, although they are in favor of them, they highlight more important factors such as listening to and respecting trans people and training on the part of the educational community. In some cases, the school counselor is mentioned as being responsible for this process.

> Protocols, of course, help, but it is more important to listen to our wishes and needs [...] Our needs and opinions should be above the protocols [...] I think they should be broad, covering all areas, but being aware that it is something that should protect us and that it is a foundation (T6BC).
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> I think that that should be the school counselor, but their knowledge should not just be based of textbooks, either (T4US).

Bullying continues to be one of the worst scourges to affect the education system. Although there are protocols and laws that regulate the prevention and procedures for these cases, it still happens daily and in the case of trans people, there is a higher probability of it occurring.

> I definitely was bullied about my sexuality in school, and if you see pictures of me from like fourth or fifth grade, I looked like a little boy, and people used to think that was an insult

> that they called me man. "You look like a boy." Okay… So, thank you. […] I guess I have experienced both gender and sexuality (T4US).

3.3 Lack of teacher education and training

All the interviewees agreed that education professionals do not have sufficient gender identity training to respond to the needs of trans students, in particular, and all students, in general. When asked about when or where this lack is evident, they coincide in saying that they do not know how to proceed when a problem arises, giving a delayed response, and even, on occasions, no response at all.

It is also mentioned how the professionals, the counselors in this case, were not aware of the current legislation regarding gender identity.

> I did have problems with people using slurs about my sexuality and someone straight out told me right in front of a teacher I knew over he is also gay "No, I just I do not like gay people, I think they're disgusting," and I am looking at this teacher like "You're really not going to say anything about this? Nothing to said […] I am also a teacher who has had transgender students as well […] One of our counselors wanted to out a student to his mother, so I went to the principal and she pulled up the State of Massachusetts' policies and sent them to that counselor. Policy states that well, we have to call them their names, and the pronouns that they want, and we cannot tell their parents until they give the permission [...] I just finished a master's in the teaching field, and that was never addressed […] If teachers know something about it is because they have taken the initiative to go out and educate themselves (T4US).
>
> Adults are hearing a lot of stuff throughout the day, and they are not responding in the way that they should be (T2US).
>
> Later, it became clear that they had no idea how to manage, for example, the issue with changing rooms. They told me to use the spaces I wanted but they were not aware of the weight that society has on gender identity [...] My identity is built around others. (T1BC).

When asked about how this lack of training could be addressed, many voices claimed the need for real testimonies of trans people, justifying that their testimonies would make the training more relevant. There is also a need for training on diversity, where sexual orientation and gender identity should be included. In addition, it was expressed that the issue of training should not rely on teachers and governmental institutions, instead, it was implied that the responsibility lies with school districts to address this drawback.

> I think there should be a diversity class, and the teachers' training programs, and that diversity class should include gender identity, gender expression, sexuality, as well as race, and ethnicity. I think like often diversity in schools means race and ethnicity, and no so much sexual orientation and gender. Sort of like "It is not ok to talk it in school," which is ridiculous (T4US).

3.4 Gender segregation

As a reflection of a clearly binary society, there are spaces of daily use, even related to basic needs such as restrooms, that are segregated by sex.

Among the interviewees, there are those who have not experienced using the restrooms as a traumatic experience. As for the solution to gender segregation, there is a disparity of opinions. Some think that restrooms should not be segregated by sex, that they should be descriptive only and state what they contain, and others propose a third option that rather than being an exclusive restroom for trans people, it should be gender neutral or otherwise, it would segregate them. It is also mentioned that enabling the use of the school nurse's restroom may suggest there is something wrong with the person. At the same time, enabling the teacher's restroom for this purpose has been positively evaluated.

> I would always flip-flop between using the woman's and the men's restroom […] I do think a gender-neutral bathrooms are a really good idea […] It is just a bathroom, I just want to go pee that is it […] As like Gym Locke rooms goes, I think that is a bit of a trickier one. […] There should be those private stalls so people still are not having a crisis every time they need to go change (T3US).
>
> I didn't feel comfortable changing with boys. With girls it wasn't so much because of my identity, but because of dysphoria [...] Being trans, you go from being normal to being weird [...] I would go into the locker room earlier or later [...] I think we should normalize the mixed option, but there has to be an option where we all feel comfortable and safe [...] For me, a third option can also be a good thing, but not a third option just for trans people, to segregate, but to create a new safe space (T1BC).

The COVID baths case (restrooms designated for people who could be infected during COVID-19) shows that if there is a will and/or a need, it is possible to find other formulas.

While some argue that the lack of gender segregation in restrooms can generate safety problems in both directions (cis women and trans people), others defend that the restroom is only a place to relieve oneself without any other consideration.

> I think what people do not realize is how much violence like trans people are subjected to […] When we talk about bathrooms, about that safety thing because of how that violence, [sic] violent language that people like put around. It is their perceptions. Really it shows, it reveals society's perception of men that they are freaking bite [sic] and aggressive and that's the way that we're socializing them. So, that is a whole other problem that needs to be dealt with (T2US).
>
> As far as the bathrooms go, that was an idea struck up by people, we call them TERFs, acronym for Trans Exclusionary

> Radical Feminist, and it basically puts forth the idea that, well, it is feminism under the guise of blatant transphobia, where men are trying to get into women's spaces and under the guise to hurt them. Where trans women are just being discriminated because they are trying to invade those spaces when that is not the case (T3US).

The issue of school sports is also mentioned when talking about segregated spaces since most of them are separated by gender. One of the interviewees quit soccer because he played on a girls' team, opting instead for boxing. Not only have group sports been a problem, with activities such as swimming, where a greater proportion of the human body is visible, also generating discomfort.

> I was probably the first time I experienced people having maybe like a high confidence, or like low shame for their body. I do not know if they are feeling just like very sure of themselves, or whatever but I was definitely not one of those people who was getting naked at gym, and Locke room [...] Yeah, never did swimming, or anything like that (T2US).

School uniforms can also be controversial, not only because they clearly reflect the prevailing binarism in society but also because they are evidence of sexism by a certain section of the population.

> Even something like getting dressed, I mean in Springfield there is a Uniform Policy. So, the whole district is in uniforms. And I remember like challenging an administrator, who is telling me to go home because I have on a skirt, that he had been too short, and there was a traditionally male looking whatever student who had walked in directly before me who had shorts on who that were so short [sic]. It was just one of those gender things. Why isn't it appropriate for me, but it is for him. Like what are we saying about gender? (T2US).

3.5 Socioemotional wellbeing

Their wellbeing is negatively impacted by the mere fact of belonging to the trans community. However, it should be noted that certain groups related to race, ethnicity, religion, etc., are discriminated against furthermore, which has a greater impact on their emotional wellbeing. Therefore, intersectionality and minority stress are factors to be considered.

> I have not talked about it on this call, but like the intersections of race, with all these things, just exacerbate everything to the tenth degree. Like how many, for example, black trans people are killed every day. That is the violence we should be worried about. And I feel like it is not like an individual thing that has to do with the media [...] It is also incredibly depressing to have trans people and specifically black trans people, dying at such an exacerbating rate. This creates a storm, I do not know, like discomfort [...] Why when people talk about privilege, some people just have the privilege of not having to be hyper aware about what is happening around them because they are cis, or they are white people or they are Christian, or they are whatever? It is on that binary skill that means that they are safe from the violence of white men (T2US).

It can be extracted that not being aware of race, sexual orientation, or gender identity is a privilege of white cisheteronormative society. The negative experiences of this group are various and occur on a daily basis, where they experience insults, aggression, contempt, school absenteeism, and even suicidal thoughts.

> I was holding my girlfriend's hand walking down the sidewalk and high school, and someone behind us decided to call us fag [...] I have actually heard some of the students that we work with at the school use that word, and every time I hear it, I give a history lesson. What that word means is a bundle of sticks, and what you're saying when you say that to a gay person is that you believe because they're gay they should be let on fire and die [...] What doesn't kill you just makes you stronger. So that's kind of how I look at (T4US).
>
> My mental health has suffered because I was not given proper support at that time. I didn't grow up in a very accepting household [...] A lot of that affected my communication skills, I would have trouble communicating what I wanted [...] School was essentially my escape. A lot of the times I didn't want to go home because I was just getting very bad there [...] I was not respected in my household, and the only place that I was, was in school with my peers. But it is certainly as far as mental detriments not being able to be given a proper outlet to communicate those kinds of things, it very much detriments in a developmental way (T3US).
>
> For our mental health not to be affected, it is necessary that our identity is accepted, that our identity is visible in society, and the first step should be that we are respected as we are. Because otherwise you feel annulled as a person (T1BC).

However, it can also be said that there seems to be a small change for the better in society, as some have had positive experiences throughout this journey. The geopolitical factor is also important, as there are areas that are more accepting of gender diversity.

> I am from a very small town, and I don't know if that has played in my favor or if all the stars have aligned, but I have never had any problems [...] I think I had the problem when I didn't know what was wrong with me. When I knew I was a boy, all my problems disappeared. That's why I say that being trans is not the problem, but the solution [...] I think that, in the Basque Country, the reality is much kinder to trans people (T6BC).

4 Discussion

4.1 Being trans

According to the testimony of the six people interviewed, deep-rooted social binarism may be a reason why trans identities

are not accepted in society. Gender roles and norms are a social construct (McBride, 2021), and performing outside of what is socially established is punished, which may be a consequence of cultural cisgenderism (Phipps and Blackall, 2021). In fact, feeling different from what is socially established is often the beginning of the journey toward finding one's own identity as some of the participants mentioned. In the interviews, the importance of knowing adequate referents is mentioned to facilitate the search for identity, which is described as a continuum until disclosure. The association that each individual makes with the term transitioning is also different. For some, transitioning means taking the medical/clinical route, whereas for others, it is socializing their gender identity, and for others, it is society that transitions. Many prefer not to make their gender identity public because of the consequences and feel safer following the norms of cisheteronormative society. Thus, trans identity, like any other, is as unique and non-transferable as the skin that covers the body of each person (Di Marco et al., 2021).

Among those interviewed, there is unanimity that transition should be made when the person is ready, but everything points to the fact that the sooner it is done, the better the results at all levels, since children learn more easily, naturally, and with greater tolerance. Unlearning is a much more complicated process than learning itself, and there is evidence that children who socially transitioned in early stages (prepubertal) have similar levels of depression and moderately higher anxiety levels compared to their cis peers (Olson et al., 2016).

4.2 The role of the school

The majority of the trans people interviewed have experienced a bad school climate where they were teased and verbally attacked because being different is punished. Martino and Cumming-Potvin (2018) express that there is a need to address gender justice in education. Schools are not only responsible for instilling academic knowledge but also for working on all the transversal knowledge that helps us to live in society and to be respectful and tolerant. Research shows that hostile school environments worsen educational outcomes (Call et al., 2021; Feijo et al., 2022; Johnson and Szilagyi, 2023), and academic professionals play an important role. In addition, the creation of safe spaces, such as Gender Sexuality Associations or Gay-Straight Alliances (GSAs), may be key in the perception that trans people may have about the school climate, improving connectedness and decreasing the risk of suicide (Baum, 2022; Chan et al., 2022; Feijo et al., 2022; Marraccini et al., 2022; Tobin et al., 2022; Johnson and Szilagyi, 2023). Besides, the training of the professionals in charge and the educational community in general is of utmost importance, since, without specific knowledge, educators will be unable to protect their students or provide an adequate response to their needs. One of the main objectives should be to create more positive and inclusive learning environments for these minority groups, emphasizing that a school needs to be protective, stable, inclusive, and pleasant for all students (Chan et al., 2022). The same study points to the need for a critical pedagogy to teach young people about the negative impact of any kind of discrimination.

Gender identity is, as the participants stated, not present in the educational curriculum in most cases. The incorporation of gender identity content beyond the binary system could serve as a crucial factor not only in improving the school climate but also in preventing many unpleasant situations among peers and fostering interaction with the rest of the educational community. This knowledge would help many other people to identify what is happening to them and thus provide appropriate modeling, giving rise to a trans pedagogy of refusal (Martino and Omercajic, 2021). It is clear that visibility and representation are needed (Horton, 2020) In fact, 27 qualitative studies confirm that exposing children in elementary school to gender diversity makes them challenge gender norms and become more flexible (Johnson and Szilagyi, 2023). On the contrary, studies show that trans people discover vocabulary related to this world at the age of 15 years and 6 months, meaning that they are unable to express themselves until this time, with all the possible consequences this may have (Kennedy, 2018).

The need for protocols for an adequate transition is seen as necessary by the participants and the existing literature (Kurt, 2017; Meyer and Keenan, 2018). However, it is stressed that it is much more important to listen to people, since everyone has their own path, although gestures of humanity, such as understanding and respect, can help more than any protocol, in line with that extracted from the interviews. According to the interviewees, inclusive language can be another small gesture from the educational community, and this affirmative communication is being prioritized in most recent school guidance documents (Horton, 2020). This form of communication may have an impact on eliminating the bullying that is present in all educational environments, as this group is one of the most persecuted. It is important to look after the welfare of trans people during activities sponsored by the educational community even if they are outside school premises, as they also influence school climate (Baum, 2022). It is therefore necessary for schools to recognize their transphobic practices, retrain their staff, and reformulate a curriculum where gender diversity is addressed (Feijo et al., 2022; Marraccini et al., 2022; Johnson and Szilagyi, 2023).

4.3 Lack of teacher education training

The respondents believe that education professionals do not have enough training on gender identity to support these students and give an adequate response when uncomfortable and even unacceptable situations arise. This lack of training is especially noticeable when a problem appears. It is necessary to train these professionals and research suggests that this could be done when educators are attaining their degrees (Davy and Cordoba, 2020; Bastian and Rohlik, 2022). Teacher attitudes, knowledge, and confidence play an important role in inclusion (Horton, 2022), but some professionals are afraid to discuss certain issues in the classroom because of the reprisals they may suffer from superiors and/or families. This fear is also reported by Abreu et al. (2022).

Based on their experiences, some of the interviewees suggest that, in recent years, the situation has changed, but there is still

a long way to go. There is a need to reflect on what diversity is, alluding to the fact that, to date, it has focused on race and ethnicity. It is necessary to consider including under these umbrella elements, such as gender identity, sexual orientation, and physical and cognitive disabilities, as it is also mentioned that there are higher rates of gender diversity among children with neurodevelopmental conditions such as autism spectrum disorder (ASD) and attention-deficit and hyperactivity (ADHD) (Call et al., 2021).

4.4 Gender segregation

Gender-segregated spaces continue to be another challenge that must be addressed not only in the educational environment but also by society in general, as trans people tend to avoid these spaces due to fear of harassment (Feijo et al., 2022), something also enhanced by the TERF movement (Harris et al., 2022). The choice of these individuals regarding which spaces they want to use must be respected, as it has been shown that gender-affirming policies reduce these barriers to wellness and encourage Transgender and Gender Diverse (TGD) youths to participate more in sports activities when they are allowed to use the locker rooms of their choice (Call et al., 2021). In contrast, lack of access to gender-affirming restrooms and locker rooms leads to a greater probability of suffering sexual assault (Johnson and Szilagyi, 2023).

The segregation of restrooms and uniforms can be understood as another form of cisheteronormative violence (McBride and Neary, 2021). The binary formula is insufficient and not very inclusive, and creating a third option only and exclusively for trans people would further accentuate gender segregation. The subject of sports also generates controversy, since there are no clear guidelines on how to proceed. Research carried out in the sports medical field concludes that the physical superiority of men over women depends largely on being or having been exposed to the male hormone (testosterone), and it may represent a 15%—30% difference between men and women, suggesting that, at least until middle school, there should be no problem for these students to participate in any of the gender-segregated groups or all together. There must be a response from society to this group regarding this issue, especially considering that participation in sports activities is closely related to higher self-esteem, lower levels of depression, and a sense of belonging in school (Johnson and Szilagyi, 2023).

4.5 Socioemotional wellbeing

The impact that the gender identity condition has on the socioemotional wellbeing of trans people is evident in the interviews conducted in this study, as this collective is considered to be one of the most oppressed and marginalized (Davy and Cordoba, 2020). It should be considered that certain hormonal treatments may involve pathophysiological alterations of the depression spectrum and eating disorders (Manonelles et al., 2023), although these alterations would not justify many of the situations experienced by the interviewees.

The theoretical framework of intersectionality and some of the responses from the interviewees highlight the role structures such as racism, sexism, heterosexism, and classism play as power relations in experiences at the individual level, particularly for those who are marginalized at multiple intersections, and how research, healthcare, and education can shed light on ways to mitigate mental health disparities among TGD youth (Bowleg et al., 2023).

All of the above conclusions derived from interview narratives show that schools must respond to trans students by making the educational environment safe and friendly for all students. The creation of safe spaces can be of great help to trans students. There is an urgent need for training in gender identity for all education professionals, and gender diversity should be made part of the curriculum, as training and information will be key to diversity and the real inclusion of this group. Inclusive language and zero tolerance for verbal aggression will help in this direction. Sex-segregated spaces continue to be a problem for trans people, thus a reformulation of these spaces in the educational environment is necessary. A third option that is not exclusively for trans people could serve as an option. All these implications will help the socioemotional wellbeing of these people to improve considerably.

5 Limitations

This study consisted of six participants, five of which were white, and there was only one representation of a trans woman and one of a non-binary person. The limited research on non-binary people is evidence of a highly binary society, and more specific research on non-binary individuals is still needed. In addition, the study focuses on middle-class white people, with a lower representation of people from minority groups and/or people with disabilities.

The lack of trans authors or authors of color has also restricted our scope of inquiry, further reinforcing the existing dominant white origins of the academia in our study.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Ethics statement

The studies involving humans were approved by the Ethics Committee of the UPV/EHU and favorably assessed, obtaining the ethical treatment code TI0263. The studies were conducted in accordance with the local legislation and institutional requirements. Written informed consent for participation was not required from the participants or the participants' legal guardians/next of kin because there are interviews recorded where they express their consent.

Author contributions

OE-P-d-N: Writing – original draft, Writing – review & editing. MV: Writing – review & editing. AL-V: Writing – review & editing. RG: Writing – review & editing.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Geographic pattern of the prevalence of intimate partner violence against women in Zanjan (Iran)

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Introduction: Intimate partner violence (IPV) against women is a serious public health issue and refers to physically, sexually and psychologically harmful behaviors as well as emotionally controlling behaviors and financial abuse that occur in the form of marriage or cohabitation. Knowing the current situation of the IPV prevalence against women and high-risk areas in the Zanjan city, Iran, can help policymakers to establish better health programs for risk reduction.

Methods: This population-based cross-sectional study consisted of married women aged 18–55 years living in Zanjan city in 2021. 760 married women covered by 19 urban comprehensive health service centers (UCHSCs) were selected by the stratified systematic random sampling method. The prevalence of IPV against women was measured in four types: psychological, physical, sexual, and economic.

Results: Mean (SD) age of the women was 35.49 (8.76) years. 606 women (79.7%) experienced one type of IPV. The highest and lowest IPV prevalence against women were psychological (76.6%) and economic (12%), respectively. The highest and lowest prevalence of psychological violence were observed in CUHSCs 2 and 17, physical violence in CUHSCs 1 and 14, sexual violence in CUHSCs 2 and 17, and economic violence in CUHSCs 2 and 8, respectively. The severity of violence was higher among self-employment or workers husbands, with low monthly household income, and among younger women.

Discussion: The IPV rate in the target population is high, and the highest rate is related to psychological violence. These results highlight the need to intervention in the society and high-risk women for policymakers of the health system.

KEYWORDS

intimate partner violence, physical violence, psychological violence, sexual violence, economic violence, geographic pattern

Introduction

Intimate partner violence (IPV) against women is a serious public health issue and refers to physically, sexually and psychologically harmful behaviors as well as emotionally controlling behaviors and financial abuse occur in the form of marriage or cohabitation (Sardinha et al., 2022). Violence against women causes physical and psychological damage to women in the short and long term. It can cause physical injury, depression, anxiety, sexually transmitted infections, unwanted pregnancy and even death (Vos et al., 2015; Bacchus et al., 2018). The reported prevalence of this serious health problem varies between countries, likely due to the influence of cultural and social context. In reports from the United States, Canada, North American countries, Europe, and Southeast Asia, the physical violence prevalence is estimated to be between 16 and 46% (Davoudi et al., 2014). According to the 2018 CDC report, approximately 1 in 4 women and nearly 1 in 10 men have experienced domestic violence (DV), including sexual violence, physical violence, or stalking, in their lifetime (Smith et al., 2018). In Davoudi et al.'s study, DV in different cities of Iran was reported as 4.42–6.14% (Davoudi et al., 2014). In study conducted in Kerman, Iran, psychological violence had the highest rate of all types of violence (Gohari et al., 2023).

People of all races, cultures, genders, socio-economic classes and religions can experience IPV. Various underlying factors have been proposed to explain this public health and social problem. Economic instability, unsafe housing, neighborhood violence, lack of safe and stable child care, and lack of social support can make it worse. Economic independence is an important factor in preventing violence (Evans et al., 2020). Increasing age of the spouse, increasing the number of children, living in the village, poverty, divorce, having to rent a house and history of DV in the family of the spouses before marriage were also mentioned as relevant factors (Moazen et al., 2019; Sanz-Barbero et al., 2019; Chernet and Cherie, 2020).

Considering the magnitude of the problem and the importance of knowing the current situation regarding the IPV prevalence against women, this research aims to estimate the prevalence and identify high-risk areas of IPV in Zanjan city, Iran.

Materials and methods

Study design, participants and data collection

This is a cross-sectional population-based study, studding a population of married women aged 18–55 years living in Zanjan city in 2021. Zanjan city is the capital of Zanjan province, one of the northwestern provinces of Iran and located west of Tehran (Iran's capital). The study sample was selected from married women at 19 comprehensive urban health service centers (CUHSCs). According to the Iranian Statistics Center, the population of Zanjan city is 463,600 people in 2021. Map 1 shows the population density of each CUHSC (ratio of population to area of each CUHSC). In terms of population, CUHSC 18 has the largest population with 31,568 people and CUHSC 13 has the smallest population with 8,474 people. On average, each CUHSC covered 19,437 people (with a standard deviation of 7,581). In terms of size, CUHSC 4 has the largest size (675 hectares) and CUHSCs 5 and 10 has the smallest size (94 hectares). In addition, in terms of the population density per hectare, CUHSC 10 with a population density of 252 and CUHSC 4 and 12 with a population density of 22 have the lowest population density. To determine the population density and geometric characteristics of the investigated areas, Open Street Map was used in QGIS software. Also, in this software, WGS 84 / UTM zone 39 N image system was used, which is the most suitable imaging system for Zanjan city.

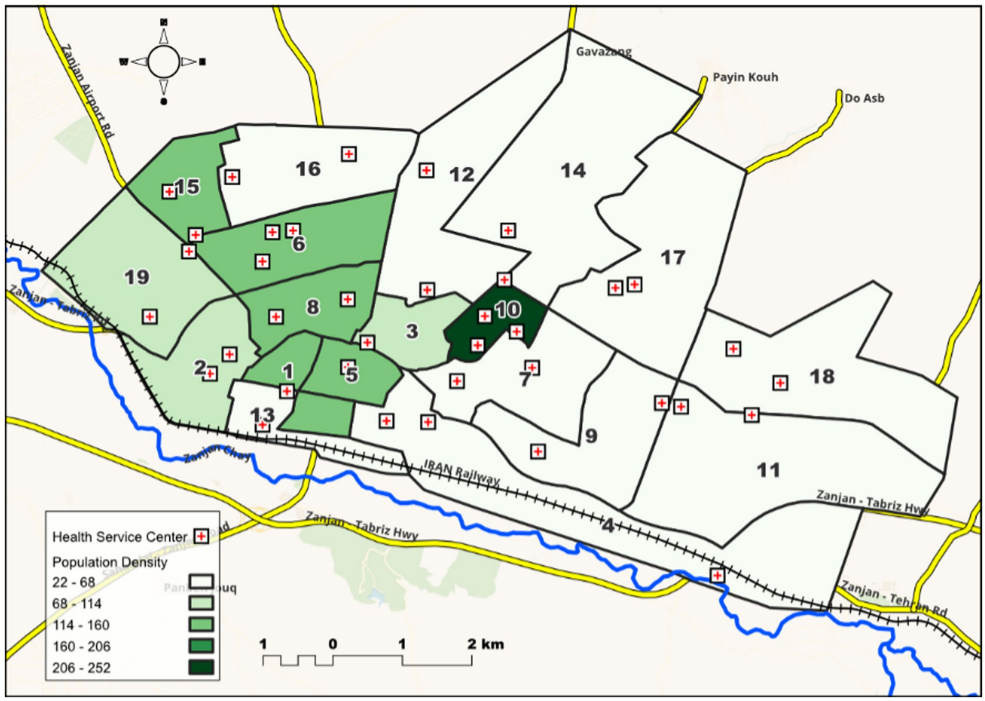
Based on the Cochran's formula and with $\alpha = 0.05$, $P = 0.35$—DV prevalence against women as reported by UN World Health Organization (2014)—, and $d = 0.1P$, the minimum sample size was estimated to be 715 women. A stratified systematic random sampling method was used, which CUHSCs were the strata. On average, in each CUHSC selected 40 married women, the sample size was 760 people (the number of samples for each CUHSC ranged from 37 to 43). After determining the number of people belonging to each CUHSC based on the formula $k_i = \frac{N_i}{n_i}$, $i = 1, \ldots, 19$, where k_i is the sampling interval, N_i is the number of people belonging to a CUHSC, n_i is the required sample size, the sampling interval is determined in each CUHSC. Based on this, the household number was extracted. If the married woman met the inclusion criteria, she was interviewed to complete the questionnaire.

Inclusion criteria were married women aged 18–55 years living in Zanjan city (at least in the last year) in 2021, living with their spouse for at least one year, and who agreed to participate study. The questionnaire was completed by an interviewer who has a master's degree in clinical psychology and is familiar with interview methods. Data collection was performed using structured interviews in a private location. It took about 15 min to complete each questionnaire.

Instrument

Data were collected using a demographic information form including women's age, spouse's and women's occupation, spouse's and women education level, spouse's and women's addiction, housing type (rented/owned) and monthly household income (million Toman) and violence against women questionnaire, that designed by Haj-Yahia (2000). The questionnaire was designed based on factors affecting the occurrence of violence and types of violence with 32 questions with 3 answer options: never, once, twice and more. It measures four types of violence in the past year, including psychological (items 1–16), physical (items 17–27), sexual (items 28–30), and economic (items 31–32).

IPV scores were analyzed quantitatively and qualitatively. To measure the prevalence of different types of IPV, scores for each item were dichotomous: 0 = never, 1 = at least once. Then, cumulative scores were calculated for each type of violence. Psychological violence was assessed according to four levels: not abused (wife had never experienced any of these acts), mild (wife had suffered from 1 to 5 acts); moderate (wife had to endure from 6 to 10 acts), and severe (wife had endure from 11 to 16 acts). Physical violence was assessed at three levels: not abused (wife has never been subjected to any of these acts), moderate (wife suffered from 1 to 6 acts), and severe (wife suffered from 7 to 11 acts). Sexual violence was assessed on three levels: not abused (wife has never been subjected to any of these acts), mild (the wife has been subjected to one act), and severe (wife has been subject to 2–3



MAP 1
The population density of 19 comprehensive urban health service centers (population to the area covered by each center) (in terms of people per hectare).

acts). Economic violence was assessed at two levels as: not abused (wife has never been abused economically) and abused (the woman is abused by at least 1 act). Additionally, to compare IPV in different CUHSCs based on the number of repetitions of each abuse item, scores for each item were considered as 0 = never, 1 = once and twice and more = 2 (the higher the score, the more violence). Score of each type of IPV were calculated by summing the scores of related items. On this basis, the total violence score ranges from 0 to 64, psychological from 0 to 32, physical from 0 to 22, sexual from 0 to 6, and economic from 0 to 4. This questionnaire was validated and relabeled in the Iranian population by Khosravi and KhaghaniFard (Khosravi and Khaghani Fard, 2004). Cronbach's alpha ranged from 0.71 to 0.93 for the four types of violence (Khojasteh Mehr et al., 2021). In this study, Cronbach's alphas were 0.84, 0.80, 0.81, 0.60, and 0.90 for psychological, physical, sexual, economic and total of violence, respectively.

Statistical analysis

The normality of IPV in each CUHSC was assessed by Shapiro–Wilk test that indicated they had not normal distribution. The Kruskal-Wallis test was used to compare IPV in 19 CUHSCs. The pairwise Mann–Whitney post-hoc tests with Bonferroni correction are then used to find out which pairs of 19 CUHSCs were different. The similar CUHSCs in terms of IPV were placed in one group (subgroup). In fact, CUHSCs that did not have significant differences in terms of IPV score were considered together. In the end, the homogenous subgroups of 19 CUHSCs were determined. After that, the demographic and income variables compared based on the homogenous subgroups resulted from the total score of IPV by Chi-square and Kruskal-Wallis tests.

TwoStep cluster analysis was used to determine the socio-economic status of participates based on spouse's education level and job status, husband's addiction status, home ownership status, and monthly income level. Bayesian Information Criteria (BIC) was used to specify socio-economic level. The number of levels was selected that achieved the lowest BIC. The goodness of fit of the TwoStep cluster analysis was assessed using Silhouette measure of cohesion and separation, which is fair if it is greater than 0.2. This cluster analysis calculates the contribution of each variable to the identification and grouping individuals, which is called the predictor importance, and it ranges from 0 to 1. The higher the importance value, the more important the variable. After determining participates' socio-economic status, we used the binary logistic regression to find UCHSCs that were homogenous with respect to socio-economic status. Here, the socio-economic status was the dependent variable and UCHSCs was the independent variable. The analysis was performed by SPSS 24. Also, the maps were prepared by the QGIS 3.16.5-Hannover software.

Results

The mean (Standard Deviation, SD) age of the 760 women was 35.49 (8.76) years. The monthly household income of more than half of the participants was 5–10 million Tomans. About 82% of them were housewives and 62% of their husband were self-employed. Only one woman (0.1%) had addict, while this was 1.6% in their husbands. More than half of women and their husband had Diploma or less (70.1 and 68.6%, respectively), and 39.1% had rented housing (Table 1).

Based on the TwoStep cluster analysis, there were two levels of participates socio-economic (BIC = 7791.71 and Silhouette measure of

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TABLE 1 Demographic and social variables of women and their husbands.

Variable	Category	Frequency (%)
Women		
Education level	Illiterate	56 (7.4)
	Under diploma	229 (30.1)
	Diploma	248 (32.6)
	Associate degree	178 (23.4)
	Bachelor	47 (6.2)
	Doctor	2 (0.3)
Job status	Housewife	621 (81.7)
	Employed	139 (18.3)
Addiction status	Yes	1 (0.1)
	No	759 (99.9)
Husband		
Education level	Illiterate	57 (7.5)
	Under diploma	230 (30.3)
	Diploma	234 (30.8)
	Associate degree	170 (22.4)
	Bachelor	53 (7.0)
	Doctor	16 (2.1)
Job status	Unemployed	12 (1.6)
	Government job	234 (30.8)
	Self-employed	473 (62.2)
	Daily worker	41 (5.4)
Addiction status	Yes	12 (1.6)
	No	748 (98.4)
Household		
Housing ownership status	Rental	297 (39.1)
	Owner	463 (60.9)
Monthly income (million Tomans)	< 5	180 (23.7)
	5–10	475 (62.5)
	10–15	50 (6.6)
	> 15	55 (7.2)

cohesion and separation = 0.25). The education level of women and husbands, monthly income, and job status of women were important variables to determine socio-economic of women (predictor importance: 1.00, 0.89, 0.55, and 0.47, respectively). By comparing two groups of women' socio-economic status over 19 UCHSCs using binary logistic regression, it identified that UCHSCs can be summarized into three homogenous subgroups (Table 2).

In total, 606 women (79.7%) experience one type of IPV such that 48.2% experienced one type of IPV, 18.8% experienced two types of IPV, 7.5% experienced three types of IPV and 5.3% experienced four types of IPV. The highest and lowest IPV prevalence against women were psychological with 76.6% and economic with 12%, respectively. The prevalence of different types of IPV across CUHSCs is reported in Table 3. The highest and lowest prevalence of psychological violence was observed in CUHSCs 2 and 17, physical violence in CUHSCs 1 and 14, sexual violence in CUHSCs 2 and 17, and economic violence in CUHSCs 2 and 8, respectively.

TABLE 2 Frequency (%) of women by homogenous subgroups of the CUHSCs socio-economic status of Zanjan city.

Homogeneous subgroups of socio-economic status of CUHSCs	UCHSC	Socio-economic status of participates	
		Low (n = 578)	High (n = 182)
1: Low	1	35 (87.5)	5 (12.5)
	2	37 (92.5)	3 (7.5)
	5	34 (82.9)	7 (17.1)
	6	37 (92.5)	3 (7.5)
	10	36 (92.3)	3 (7.7)
	13	36 (90.0)	4 (10.0)
	15	36 (90.0)	4 (10.0)
	16	33 (80.5)	8 (19.5)
	19	25 (61.0)	16 (39.0)
2: Medium	3	24 (64.9)	13 (35.1)
	4	33 (76.7)	10 (23.3)
	7	29 (70.7)	12 (29.3)
	8	31 (77.5)	9 (22.5)
	9	28 (68.3)	13 (31.7)
	11	30 (73.2)	11 (26.8)
	12	20 (54.1)	17 (45.9)
	17	25 (61.0)	16 (39.0)
	18	28 (70.0)	12 (30.0)
3: High	14	8 (20.5)	31 (79.5)

CUHSCs, comprehensive urban health service centers.

To compare IPV against women in different CUHSCs, mean (SD) of violence by CUHSCs is shown in Table 4. In total, the mean (SD) of violence was 6.43 (8.74), ranged from 0 to 63. CUHSCs 1 and 2 had the highest and CUHSC 14 had the minimum of violence. Among 19 CUHSCs, there were significant differences in the four types and total score of violence ($p < 0.001$). Additionally, 19 CUHSCs were compared pairwise using the Mann–Whitney test with Bonferroni correction to determine homogenous subgroups of CUHSCs. Based on the results of the post-hoc test, CUHSCs were classified and their homogenous subgroups were determined. Violence scores had significant differences between subgroups. The mean (SD) and number of participants in each homogenous subgroups were reported in Table 5. The number of subgroups variable from 3 to 5 by violence components. The first and the last subgroup had the minimum and maximum level of violence, respectively. The name of CUHSCs in each homogenous subgroups were depicted in Map 2.

In Table 6, the demographic and social variables are compared in three subgroups resulting from the total violence score. As can be seen, the three subgroups are significantly different in terms of the woman's age and education, husband's education and occupation, housing status and monthly household income. In subgroups 3 and 2, which has a higher level of violence, the education level of a smaller number of women and their spouses are university-level, and the percentage of uneducated women or spouses was higher. The level of violence was higher in men with self-employment or workers and with a monthly household income level of less than 5 million Tomans. Also, the age of women in the subgroup with violence was lower.

TABLE 3 Prevalence of IPV against women by 19 CUHSCs of Zanjan city.

CUHSC	Violence											
	Psychological				Physical			Sexual			Economic	
	Not abused	Mild	Moderate	Sever	Not abused	Moderate	Sever	Not abused	Mild	Sever	Not abused	Abused
1	3 (7.5)	22 (55.0)	13 (32.5)	2 (5.0)	17 (42.5)	21 (52.5)	2 (5.0)	24 (60.0)	4 (10.0)	12 (30.0)	28 (70.0)	12(30.0)
2	0 (0.0)	3 (90.0)	1 (2.5)	3 (7.5)	28 (70.0)	9 (22.5)	3 (7.5)	17 (42.5)	8 (20.0)	15 (37.5)	25 (62.5)	15(37.5)
3	7 (18.9)	26 (70.3)	3 (8.1)	1 (2.7)	27 (73.0)	7 (18.9)	3 (8.1)	32 (86.5)	2 (5.4)	3 (8.1)	33 (89.2)	4 (10.8)
4	12 (27.9)	25 (48.1)	3 (7.0)	3 (7.0)	38 (88.4)	2 (4.7)	3 (7.0)	37 (86.0)	2 (4.7)	4 (9.3)	39 (90.7)	4 (9.3)
5	10 (24.4)	24 (58.5)	5 (12.2)	2 (4.9)	30 (73.2)	9 (22.0)	2 (4.9)	37 (90.2)	0 (0.0)	4 (9.8)	37 (90.2)	4 (9.8)
6	9 (22.5)	26 (65.0)	4 (10.0)	1 (2.5)	32 (80.0)	7 (17.5)	1 (2.5)	28 (70.0)	1 (2.5)	11 (27.5)	37 (92.5)	3 (7.5)
7	15 (36.6)	18 (43.9)	2 (4.9)	6 (14.6)	32 (78.0)	4 (9.8)	5 (12.2)	34 (82.9)	0 (0.0)	7 (17.1)	34 (82.9)	7 (17.1)
8	7 (17.5)	31 (77.5)	1 (2.5)	1 (2.5)	36 (90.0)	4 (10.0)	0 (0.0)	35 (87.5)	3 (7.5)	2 (5.0)	40 (100.0)	0 (0.0)
9	10 (24.4)	29 (70.7)	1 (2.4)	1 (2.4)	40 (97.6)	1 (2.4)	0 (0.0)	35 (85.4)	4 (9.8)	2 (4.9)	40 (97.6)	1 (2.4)
10	13 (33.3)	23 (59.0)	0 (0.0)	3 (7.7)	35 (89.7)	1 (2.6)	3 (7.7)	34 (87.2)	3 (7.7)	2 (5.1)	35 (89.7)	4 (10.3)
11	7 (17.1)	28 (68.3)	4 (9.8)	2 (4.9)	34 (82.9)	4 (9.8)	3 (7.3)	33 (80.5)	2 (4.9)	6 (14.6)	36 (87.8)	5 (12.2)
12	14 (37.8)	20 (54.1)	0 (0.0)	3 (8.1)	34 (91.9)	2 (5.4)	1 (2.7)	34 (91.9)	1 (2.7)	2 (5.4)	35 (94.6)	2 (5.4)
13	9 (22.5)	25 (62.5)	5 (12.5)	1 (2.5)	35 (87.5)	5 (12.5)	0 (0.0)	34 (85.0)	4 (10.0)	2 (5.0)	36 (90.0)	4 (10.0)
14	10 (25.6)	27 (69.2)	1 (2.6)	1 (2.6)	36 (92.3)	1 (2.6)	2 (5.1)	35 (89.7)	1 (2.6)	3 (7.7)	37 (94.9)	2 (5.1)
15	6 (15.0)	28 (70.0)	3 (7.5)	3 (7.5)	34 (85.0)	6 (15.0)	0 (0.0)	24 (60.0)	5 (12.5)	11 (27.5)	34 (85.0)	6 (15.0)
16	8 (19.5)	27 (65.9)	5 (12.2)	1 (2.4)	32 (78.0)	7 (17.1)	2 (4.9)	24 (58.5)	4 (9.8)	13 (31.7)	38 (92.7)	3 (7.3)
17	17 (41.5)	20 (48.8)	4 (9.8)	0 (0.0)	36 (87.8)	4 (9.8)	1 (2.4)	41 (100.0)	0 (0.0)	0 (0.0)	40 (97.6)	1 (2.4)
18	10 (25.0)	23 (57.5)	7 (17.5)	0 (0.0)	30 (75.0)	10 (25.0)	0 (0.0)	35 (87.5)	2 (5.0)	3 (7.5)	39 (97.5)	1 (2.5)
19	11 (28.2)	22 (56.4)	5 (12.8)	1 (2.6)	32 (82.1)	6 (15.4)	1 (2.6)	19 (48.7)	12 (30.8)	8 (20.5)	26 (66.7)	13 (33.3)
Total	178 (23.4)	480(63.2)	67 (8.8)	35(4.6)	618 (81.3)	110 (14.5)	32(4.2)	592 (77.9)	58 (7.6)	110(14.5)	669 (88.0)	91 (12.0)

IPV, intimate partner violence; CUHSCs, comprehensive urban health service centers.

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TABLE 4 Mean (SD) of IPV against women by 19 CUHSCs of Zanjan city.

CUHSCs	Violence				
	Psychological	Physical	Sexual	Economic	Total
1	8.17 (6.26)	2.25 (3.49)	1.37 (1.94)	0.55 (0.99)	12.35 (9.75)
2	7.17 (5.65)	2.10 (5.02)	2.20 (2.3)	0.87 (1.32)	12.35 (11.89)
3	4.54 (4.27)	1.38 (3.61)	0.30 (1.17)	0.19 (0.74)	6.40 (8.68)
4	3.84 (5.59)	0.56 (3.35)	0.21 (0.77)	0.16 (0.75)	4.77 (9.56)
5	5.37 (6.54)	1.90 (5.06)	0.51 (1.63)	0.27 (0.92)	8.05 (12.31)
6	4.40 (3.58)	0.97 (2.35)	1.38 (2.32)	0.10 (0.44)	6.85 (6.01)
7	4.44 (7.61)	1.00 (3.73)	0.54 (1.67)	0.24 (0.89)	6.22 (11.93)
8	2.82 (2.92)	0.30 (1.16)	0.35 (1.00)	0.00 (0.00)	3.47 (3.93)
9	2.56 (2.73)	0.15 (0.94)	0.29 (0.87)	0.02 (0.16)	3.02 (3.47)
10	2.74 (4.15)	0.61 (3.53)	0.15 (0.54)	0.08 (0.35)	3.59 (6.60)
11	5.00 (5.34)	0.85 (3.09)	0.61 (1.66)	0.15 (0.53)	6.61 (8.04)
12	2.59 (4.16)	0.08 (0.36)	0.22 (1.03)	0.03 (0.16)	2.92 (5.38)
13	4.55 (5.14)	0.85 (2.75)	0.37 (1.00)	0.25 (0.81)	6.03 (7.66)
14	2.54 (2.85)	0.20 (1.28)	0.13 (0.57)	0.00 (0.00)	2.87 (3.89)
15	6.00 (6.40)	0.92 (2.71)	1.65 (2.30)	0.35 (0.89)	8.92 (10.50)
16	5.15 (5.77)	1.56 (3.89)	1.71 (2.26)	0.24 (0.92)	8.66 (9.66)
17	3.41 (4.24)	0.90 (2.95)	0.00 (0.00)	0.05 (0.31)	4.37 (6.55)
18	5.75 (5.50)	0.95 (2.11)	0.40 (1.37)	0.05 (0.32)	7.15 (7.23)
19	4.54 (4.68)	0.72 (2.13)	1.33 (1.59)	0.77 (1.24)	7.36 (7.63)
Test statistic	81.94	79.85	135.01	94.34	117.56
p-value[a]	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001

[a]Kruskal-Wallis test.
SD, standard deviation; IPV, intimate partner violence; CUHSC, comprehensive urban health service centers.

TABLE 5 Mean (SD) and number of women (*n*) of IPV against women by homogenous subgroups of the CUHSCs of Zanjan city.

Violence	Total	Homogeneous Subgroups									
		1		2		3		4		5	
	Mean (SD)	*n*	Mean (SD)	*n*	Mean (SD)	*n*	Mean (SD)	*n*	Mean (SD)	*n*	Mean (SD)
Psychological	4.52 (5.38)	360	3.28 (4.49)	320	5.12 (5.48)	80	7.67 (5.95)				
Physical	1.00 (3.41)	280	0.38 (2.15)	400	1.13 (3.31)	80	2.17 (4.29)				
Sexual	0.73 (1.65)	120	0.09 (0.45)	280	0.31 (1.03)	120	0.55 (1.64)	200	1.49 (2.09)	40	2.20 (2.30)
Economic	0.23 (0.77)	440	0.07 (0.42)	160	0.25 (0.88)	160	0.63 (1.13)				
Total	6.43 (8.74)	280	3.60 (6.00)	400	7.23 (9.15)	80	12.35 (10.80)				

SD, standard deviation; IPV, intimate partner violence; CUHSCs, comprehensive urban health service centers.

Discussion

This study was conducted with the aim of investigating the IPV prevalence in Zanjan city based on CUHSCs. We found that about 80% of the participants had experienced at least one type of IPV in the past year. Meanwhile, only 5% had experienced all four types of violence. Due to the importance of this issue and the impact that DV against women has on women's health, various studies have been conducted around the world to investigate the current situation and the factors that affecting it. Sardinha et al., in a systematic review, reported that 27% of women aged 15–49 have experienced physical or sexual violence or both in their lifetime. Also, 13% experienced both of these types of violence in the past year (Sardinha et al., 2022). The DV rate against women in the Middle East region, where Iran is located, is reported to be 31% in their lifetime and 16% in the past year. The prevalence of physical and/or sexual violence in the past year in Iran was 15–19% (Sardinha et al., 2022). Our study shows that last year's IPV rate was nearly 80% and six, five, four times higher than global data, in Middle East region, and in Iran, respectively. The reason for the difference between these data may be due to the time period of our survey that was conducted in 2021. The 2020 coronavirus disease (COVID-19) pandemic, during which limited and extended lockdowns at times, may justify high IPV rates in this study. For example, the 51st issue of Weekly Epidemiological Update on COVID-19 points out that the deaths of people infected with COVID-19 in Iran have

MAP 2
Homogeneous subgroups obtained from 19 comprehensive urban health service centers (CUHSC) in Zanjan city in terms of intimate partner violence against women (1: the lowest and 3 or 5: the highest value of violence).

increased by 34%, which led to the imposition of activity restrictions (World Health Organization, 2021). Various studies have shown that IPV increases during crises such as financial, environmental and socio-political crises. The COVID-19 pandemic has had a significant impact on living with DV, often exacerbating the violence experiences (Lyons and Brewer, 2022). Quarantine and isolation of the victim with her abuser exposes her to a special risk (Sutton and Beech, 2023). Another reason for the difference in prevalence is that we investigated four types of DV against women, while other studies mostly investigated physical or sexual violence or both. The prevalence of this health problem has been reported differently in different geographical areas. For example, in Tanzania, 26.5% experienced physical and sexual violence, and in Pakistan, 88.8% of the participants mentioned physical, psychological and sexual violence (Kapiga et al., 2017; Hussain et al., 2020). 15.6% of women aged 16 and older living in Spain experienced psychological, physical or sexual violence before the COVID-19 pandemic (Sanz-Barbero et al., 2019).

TABLE 6 Compare of demographic and social variables in three subgroups resulting from of the total IPV score.

Variable	Category	Subgroup 1 (n = 280)	Subgroup 2 (n = 400)	Subgroup 3 (n = 80)	Test statistic	p-value
Women						
Age	–	37.22 (8.52)	34.48 (8.80)	34.58 (8.39)	19.43	<0.001[a]
Education level	Illiterate	12 (4.3)	32 (8.0)	12 (15.0)	44.30	<0.001[b]
	Under diploma	75 (26.8)	137 (34.3)	18 (22.5)		
	Diploma	78 (27.9)	133 (33.3)	36 (45.0)		
	Bachelor	88 (31.4)	82 (20.5)	8 (10.0)		
	Master/PhD	27 (9.6)	16 (4.0)	6 (7.5)		
Job status	Housewife	225 (80.4)	343 (85.6)	72 (90.0)	5.86	0.053[b]
	Employed	55 (19.6)	57 (14.2)	8 (10.0)		
Addiction status	Yes	1 (0.4)	0	0	–	–
	No	279 (99.6)	400 (100)	80 (100)		
Husband						
Education level	Illiterate	11 (3.9)	29 (7.2)	17 (21.3)	45.79	<0.001[b]
	Under diploma	71 (25.4)	135 (33.8)	25 (31.3)		
	Diploma	85 (30.4)	126 (31.5)	23 (28.7)		
	Bachelor	79 (28.2)	83 (20.8)	7 (8.8)		
	Master/PhD	34 (12.1)	27 (6.8)	8 (10.0)		
Job status	Unemployed	1 (0.4)	9 (2.3)	2 (2.5)	14.57	0.026[c]
	Government job	97 (34.6)	119 (29.8)	15 (18.8)		
	Self-employed	171 (61.1)	245 (61.3)	60 (75.0)		
	Daily worker	11 (3.9)	27 (6.8)	3 (3.8)		
Addiction status	Yes	3 (1.1)	8 (2.0)	1 (1.3)	0.98	0.660[c]
	No	277 (98.9)	392 (98.0)	79 (98.8)		
Household						
Housing ownership status	Rental	82 (29.3)	167 (41.8)	42 (52.5)	18.47	<0.001[b]
	Owner	198 (70.7)	233 (58.3)	38 (47.5)		
Monthly income (million Tomans)	< 5	23 (8.2)	101 (25.3)	56 (70.0)	172.67	<0.001[b]
	5–10	183 (65.4)	272 (68.0)	20 (25.0)		
	10–15	35 (12.5)	13 (3.3)	2 (2.5)		
	> 15	39 (13.9)	14 (3.5)	2 (2.5)		

[a]Reported as mean (SD, standard deviation) with Kruskal-Wallis test.
[b]Reported as frequency (%) with Chi-square test.
[c]Reported as frequency (%) with Chi-square test based on Monte Carlo Simulation.

According to our research, the types of IPV against women in Zanjan city are: psychological (highest), sexual, physical and economic (lowest). Most of the psychological violence is mild violence, indicating that at least one answer is positive in 1–5 acts of the questionnaire. Similar to the results of the present study, psychological violence is the most common type of violence against women compared to physical and sexual violence in Europe, America and Western societies (Martín-Fernández et al., 2019; Dokkedahl et al., 2022). Psychological violence usually precedes physical violence and its prevalence is expressed differently in different societies, depending on how it is defined and measured in different societies and cultures. In Europe, this value is given 10–90% (Martín-Fernández et al., 2019).

In the current study, IPV was conducted based on 19 CUHSCs. It was observed that CUHSCs 1, 2, 15, 16 have the highest overall violence, and CUHSCs 14 had the lowest overall violence. CUHSCs 1 and 2 are more densely populated than CUHSC 14, are located in the southern part of the city, and CUHSCs 1, 2, 15, 16 have located in low socio-economic areas. Meanwhile, the 14th CUHSC is located in the high socio-economic area in the northern part of the city and distinct cultural and socio-economic differences compared to these centers. Based on the analysis of CUHSCs and its division into homogeneous subgroups, subgroup 3 has the highest violence level and the average age of women is lower than subgroup 1. These CUHSCs have lower university education of women and their spouses, women employment, monthly household income and lower-level education of women and their spouses, private house, and higher unemployment rates of women' spouses.

The differences of IPV in different geographical regions can be attributed to socio-economic and cultural differences in different regions. In a study conducted in Pakistan that prevalence of intimate partner violence, poverty has the most impact on violence against women. Then, factors such as influence of in-law, second marriage, stepchildren, forced intimate relationships, husband's irresponsibility, addiction and having a disabled child have been effective (Hussain et al., 2020). As mentioned earlier, in our results, the level of education of women and their spouses, monthly income and women's employment status were important variables for determining the socio-economic status of women. The household income level of women living in the sub-group who were subjected to violence was low, and no statistically significant effect was observed regarding the addiction due to its low prevalence in the individual and his wife.

Women who suffered sexual or physical abuse in childhood will also experience physical, sexual and psychological violence from their husbands in adulthood, and this factor increases the risk of IPV 3–4 times (Sanz-Barbero et al., 2019). Inequalities of people's resources and income both in the family and at the community level cause more abuse (Cools and Kotsadam, 2017). DV against women is more prevalent in areas with low to middle income than in areas with high income levels. In areas with low socio-economic status, due to the economic insecurity that women experience, as well as cultural reasons and social stigma and insufficient support services to support women who are subjected to violence, people in stay in a relationship that is accompanied by violence (Sardinha et al., 2022). There is evidence of a non-linear, U-shaped relationship between women's education level and the risk of violence. Higher levels of education are associated with lower rates of perpetrating violence and being a victim of IPV. Also, women with less educated have a lower risk of violence compared to women with more education at the secondary and pre-university levels. This is probably because those who study less are less likely to challenge their partners and ultimately will be less violent (Fulu and Heise, 2015).

Many factors have been mentioned as risk factors of DV against women in various studies. According to a systematic review study conducted in 2023, these factors have been mentioned in three groups. Individual factors such as age, level of education, consumption of alcohol and drugs, and history of violence in family in the victim and the violent person. Factors related to the relationship such as the level of gender inequality in the relationship with the spouse and suspicion of infidelity can also cause DV against women. In a relationship where there is gender equality, a person is less likely to be abused. Other influencing factors include household-level and community-level factors. Having at least one child increases the risk. Village living and lack of social support are also risk factors for DV against women (Brown et al., 2023; Ghoshal et al., 2023).

Given that many health consequences of a people exposed to DV (Bacchus et al., 2018), comprehensive and urgent interventions are needed in high-risk areas. In our study, about 5% of participants mentioned severe psychological and physical violence requiring precautions against possible violent injury. Regarding sexual violence, 14.5% of the women in the study were victims of serious sexual violence. Interventions should be done in different areas. Women's empowerment interventions can help increase women's self-efficacy and focus on improving skills and connecting with social support centers. Financial interventions aimed at helping them undertake income-generating activities can make them financially independent (Babaee et al., 2021). Women's empowerment and gender equality is the fifth Sustainable Development Goal that must be achieved by 2030. Under this document, countries commit to reducing all forms of violence against women in public and private context (Johnston, 2016).

Due to the complex nature of intimate partner violence and attention to the fact that domestic violence against women is not only an expression of men's power and superiority over women, but also a result of social laws that cause men to dominate women, intervention and preventive strategies are carried out at different levels of society, community, interpersonal relationships and at the individual level (Michau et al., 2015; Sangeetha et al., 2022). Interventions at the society level emphasize on supporting the change of discriminatory laws and ensuring that laws and policies support women who are subjected to violence. At the community level, healthcare providers are one of the first people outside the family who can see the symptoms of violence. Studies have shown that usually in the early stages of violence, it is more likely to refer to the healthcare system. Healthcare providers can identify her, and it is important to educate these people on how to respond, and educational interventions to increase the awareness and attitudes and practices of healthcare providers are important and can improve health outcomes in women who have been subjected to violence (Michau et al., 2015; Kalra et al., 2021).

The goal community-level interventions are to create an equal and violence-free environment for women. Because the presence and response to intimate partner violence depends on social norms regarding power and gender (such as male authority, acceptance of wife beating, and female obedience), and these norms can support or condemn violence. The role of the man as the provider of the woman, sexual activity as a sign of masculinity and the shamefulness of divorce are effective (Michau et al., 2015). In our study, it was also observed that sexual violence is the second type of violence that is probably due to the mentioned reasons and requires intervention in the field of changing the attitude of the IPV Offenders.

Another intervention strategy is programs to change and improve interpersonal communication. Individual attitudes and behaviors are formed in the family, and planning at this level should be implemented with the aim of supporting men and boys to encourage more equitable gender power relations and support the leadership and participation of women and girls (Michau et al., 2015). At the individual level, individual behaviors and attitudes, such as adherence to traditional male and female norms and indifference to violence and fear of intervention by women, contribute to the continuation of interpersonal violence, and aspirational programming can help these people to imagine a positive and fair perspective in relationships (Michau et al., 2015). Exposure to violence in childhood can also be one of the factors that can cause violence in the future. Boys who were punished in childhood or witnessed their mother being beaten have a high probability of violence against women, and programs should be made to prevent child abuse and such anomalies in the family (Heise, 2011). Intimate Partner Violence Offenders should also participate in intervention programs to prevent future violence. These people often have low motivation to change and deny their violent behavior because they have usually participated in intervention programs by introducing legal authorities and not voluntarily. It has been observed in the systematic review that interventions with motivational strategies including stage of change-based treatment,

strengths-based treatment, motivational interviewing and retention techniques can increase the effectiveness of interventions. The results of this study have shown that interventions without motivational strategies can increase the probability of dropout these interventions by 1.73 times (Santirso et al., 2020).

Conclusion

According to the results, only 20% of women have not experienced any type of violence and the most common type of violence was psychological violence. CUHSCs with a low socio-economic level had a higher total violence than highest socio-economic level.

Finally, health policy makers should design and implement intervention measures based on high-risk areas and Social Determinant of Health. The implementation of first-level preventive interventions and educational classes can help to reduce the incidence of DV against women. Also, second-level preventive interventions and early screening and identification of people exposed to IPV can prevent possible injuries. Also, designing and conducting interventional studies and research on the impact of these interventions in community will be helpful in future studies.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author/s.

Ethics statement

The studies involving humans were approved by Zanjan University of Medical Sciences with ethics code IR.ZUMS.REC.1400.474. The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study.

Author contributions

FK: Conceptualization, Investigation, Methodology, Project administration, Supervision, Writing – original draft, Writing – review & editing. FA: Data curation, Formal analysis, Methodology, Project administration, Software, Visualization, Writing – original draft, Writing – review & editing. VFA: Data curation, Formal analysis, Software, Visualization, Writing – original draft, Writing – review & editing.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Publisher's note

Supplementary material

The Supplementary material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fpsyg.2024.1347077/full#supplementary-material

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Watch the tone of your voice! An exploration of dehumanization of women by gender nonconformity based on tone of voice, occupation and appearance

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Dehumanization refers to the act of likening others to objects or animals. This, in turn, mitigates feelings of conscience, guilt, and moral obligation in the face of behaviors such as violence, mistreatment, or discrimination against the dehumanized individuals. The aim of this study is to determine the extent of which women with mismatching vocal tone, occupation and appearance to their gender expectations are dehumanized by others. To achieve this, we conducted a between-groups factorial design experiment. In the experiment, participants looked at the photo and listened to the voice of a target woman with either a gender congruent or incongruent vocal tone, occupation, or appearance. Participants indicated the extent to which human attributes were appropriate for this individual. The results revealed that the main effects of vocal tone and occupation were significant for both mechanistic and animalistic dehumanization. A target woman with a mismatched vocal tone and occupation was more dehumanized compared to those with a matched vocal tone and occupation. However, the interaction effect of vocal tone, occupation type, and appearance was found to be significant only for mechanistic dehumanization. Our study provides evidence to recent concerns that women may experience dehumanization due to their vocal tone and occupation.

KEYWORDS

voice tone, gender expectations, gender nonconformity, animalistic dehumanization, mechanistic dehumanization

Introduction

The BBC Worklife (2018) reported that women on television and radio have been altering their tone of voice in preference for deeper tones, emulating masculine tones, in the BBC recorded history. This simple news item led us to question the root causes of this change. Delving into the literature on the tone of voice (Andrews and Schmidt, 1997), we uncovered that the gender conformity and nonconformity of tone of voice has not been studied in terms of dehumanization of women at work.

Historically, deviating from gender norms or expectations has resulted in negative attitudes and reactions both in social life (Fiske and Stevens, 1993; Eagly and Wood, 2012) and in the workplace (Abele et al., 2016; Donnelly and Twenge, 2017). In order to avoid these

negative consequences, both women and men have been performed their gender expectations that leading to the perpetuation of gender inequalities (see Butler, 1990 for performing gender). Therefore, studies demonstrating how gender incongruence affects both social and work life in terms of gender roles, gender expression, and voice tone, and how this negative impact can be mitigated, are of paramount importance. Additionally, determining how these variables interact with each other will contribute to taking more accurate steps towards eliminating gender inequalities and formulating more appropriate policies. This study investigates the impact of women's voice tones, professions, and appearances on dehumanization. To achieve this goal, the study utilizes the two-dimensional dehumanization model proposed by Haslam (2006) and examines whether women with different combinations of gender incongruity experience mechanistic or animalistic dehumanization through experimental methods.

The following section delves into gender expectations in workplace. Subsequently, we analyze the gendered tone of voice, based on masculinity and femininity. We then investigate gender stereotypes and gender inequalities within the context of Turkey, and propose the study's hypothesis. Defining and explaining our methodological approach, we proceed to present our findings and draw conclusions. The paper concludes by addressing limitations and offering recommendations for future research.

Gender expectations in workplace

Traditional norms of masculinity and femininity are acquired through social learning processes, influencing the behaviors of individuals (Hemsing and Greaves, 2020) and contributing to the development of gender stereotypes, particularly in terms of competence and warmth (Eagly, 1987). These norms pertain to specific behaviors, expectations, and attributes that societies and cultures have constructed and accepted throughout history. Masculine roles encompass qualities expected from or attributed to men by society, while feminine roles represent attributes expected from or attributed to women (Eagly, 1987; Mahalik et al., 2005; Eagly and Wood, 2012). Therefore, women are traditionally expected to take on caregiving or emotional support roles within the family, while men are directed more towards outward, leadership roles (Eagly and Sczesny, 2019). In another word, expectations about possessing certain characteristics associated with gendered attributes profoundly affect career choices and can lead to gender discrimination, influences individuals' occupation choices, promotion opportunities, leadership skills, and work relationships (Koenig and Eagly, 2014; Abele et al., 2016; Donnelly and Twenge, 2017). Consequently, men have typically occupied high-status roles, such as those in technology, science, leadership, and engineering, which are often associated with masculinity, whereas women have been more commonly found in low-status roles, such as domestic responsibilities, nursing, and early childhood education, which are typically associated with femininity (Eagly, 2013).

Masculinity is often associated with competence, while femininity is associated with warmth (Fiske et al., 2002). Consequently, gender expression, appearances, and clothing choices play crucial roles in the workplace, significantly impacting individuals' professional identities. This is because gender expression is a critical determinant in assessing an individual's masculinity or femininity (Bullough and Bullough, 1993, p. 312).

Gender expression is defined as the way individuals present themselves to others (Morrow and Messinger, 2006). Women are typically encouraged to adopt more feminine clothing styles, while men are expected to prefer masculine styles. For instance, men are often expected to wear dark-colored clothing and have short hair, while women are expected to opt for lighter clothing and have long or loose hairstyles (Koenig, 2018; Van Grootel et al., 2018). Therefore, these factors can influence how individuals are perceived in terms of competence and warmth, given the association of competence with masculinity and warmth with femininity. Research has shown that a masculine appearance positively affects the perceived competence not only of men but also of women (von Rennenkampff et al., 2003; Klatt et al., 2016). However, masculinity can be associated with the attribution of fewer human nature characteristics to women (Heflick et al., 2011), a phenomenon known as mechanistic dehumanization (Haslam, 2006). Furthermore, individuals are expected to conform to gender roles stereotypically, and deviations from these roles can lead to negative reactions (Jetten et al., 2013). For example, Men who pursue traditionally "feminine" careers are often ridiculed (Isacco and Morse, 2015), while women who pursue traditionally "masculine" careers may face discrimination and bias (Jetten et al., 2013). Therefore, women in occupations incongruent with female stereotypes may also be dehumanized in both mechanistic and animalistic ways.

Gendered tone of voice

Women's voices are often characterized by higher pitch and softer tones, aligning with societal expectations of femininity, whereas men's voices tend to be deeper and resonate more, reflecting masculine ideals (Köylü, 2016). Examining the typical voice characteristics associated with gender reveals differences in fundamental acoustic components, particularly in frequency and formants. Lower-frequency voices are often perceived as more masculine, while higher-frequency voices are associated with femininity (Pisanski and Bryant, 2019). The larger larynx, longer vocal tracts, and lower-frequency voices commonly found in men are linked with masculine traits (Ohala, 1983, 1984). Therefore, tone of voice is a component cue for impression formation (Zimman, 2018), can influence the perception of attributes such as age, body size (see Puts et al., 2012; Pisanski and Bryant, 2019), attractiveness, intelligence and competency (Fraccaro et al., 2013; Hughes et al., 2014; Leongómez et al., 2014).

Research has indicated that, individuals with thin and sharp voices may be perceived as less trustworthy, less tense, and less emotional, while slower speakers might be viewed as less reliable, less credible, and less open (Apple et al., 1979). Despite women generally having higher-pitched voices, both women and men with voices that align with gender expectations are often considered attractive (Feinberg, 2008; Pisanski and Bryant, 2019). Another study found that lower voice pitch is associated with attributions of dominance and trustworthiness to the speaker (McAleer et al., 2014). Klofstad et al. (2012) demonstrated that participants were more likely to perceive a candidate as competent and trustworthy when speaking at a lower pitch, regardless of gender. Similarly, Borkowska and Pawlowski (2011) found that both men and women with lower-pitched voices were perceived as more dominant and trustworthy. Furthermore,

Tsantani et al. (2016) found that lower-pitched voices were consistently perceived as more trustworthy, especially for female speakers. However, for dominance, while lower-pitched male voices were preferred, there was no significant difference for female speakers. Moreover, Oleszkiewicz et al. (2016) reported conflicting results regarding female voice pitch. They found that lower-pitched female voices were rated as more competent but less warm compared to higher-pitched voices, adding complexity to the understanding of voice pitch in impression formation. Additionally, there are no studies showing the effect of voice tone on mechanical and animalistic dehumanization. Overall, the evidence on the role of female voice pitch in impression formation is inconclusive and requires further investigation.

Dehumanization of women

Dehumanization refers to a social process that leads to the perception of a group or an individual as lacking in humanity or the denial of their humanity (Smith, 2014). It has been studied in two primary forms, as defined by Haslam et al. (2005). Individuals to whom characteristics, such as curiosity, warmth, and possessing emotions were less attributed, were perceived as cold, passive, lifeless, and superficial, resembling machines/robots or objects. This dimension was termed "mechanistic dehumanization." On the other hand, individuals to whom characteristics, such as politeness, open-mindedness, rationality (analytical thinking), linguistic skills, maturity, and moral sensitivity, were less attributed were perceived as uncultured, rude, irrational, immoral, and childlike. Since the reduced attribution of these characteristics implied likening humans to animals, this dimension was termed "animalistic dehumanization" (Haslam et al., 2007). Both forms of dehumanization are associated with negative outcomes among individuals and groups (Haslam and Loughnan, 2014), such as less altruistic behavior and greater acceptance of violence toward outgroups (Viki et al., 2013; Andrighetto et al., 2014; Ellemers, 2017). It can occur both consciously, supporting aggressive policies (Kteily et al., 2015; Jardina and Piston, 2016; Kteily and Bruneau, 2017), and unconsciously towards specific groups (Haslam and Stratemeyer, 2016). Therefore, it also can trigger potential discrimination even without explicit hostility or, at the very least, exacerbate it (Bruneau et al., 2020).

Dehumanization of women is often ascribed to gender stereotypes (Diekman and Goodfriend, 2006) that are fundamentally based on the dimensions of competence and warmth (Fiske et al., 2002). Competence relates to perceived abilities such as intelligence, skills, and effectiveness, while warmth relates to perceived intentions, including friendliness, helpfulness, and sincerity (Fiske et al., 2007). Throughout history, women have often been stripped of their personhood and reduced to their bodily and sexual functions (see Fredrickson and Roberts, 1997 for sexual objectification). This enduring gendered perspective has led to the attribution of warmth and emotionality, associated with relational orientation, to women, while agency and competence, linked with task orientation, have been predominantly ascribed to men (see Fiske et al., 2002; Cuddy et al., 2008 for the stereotype content model; see Gray et al., 2007 for mind perception theory). The dehumanization of women is often linked to their objectification (Loughnan et al., 2010). Women are often perceived as resembling animals (Vaes et al., 2011), objects (Bernard et al., 2012), or both (Rudman and Mescher, 2012). Objectified women can become subjects of both mechanistic dehumanization (Heflick and Goldenberg, 2009) and animalistic dehumanization (Vaes et al., 2011).

It is well known that, in the incongruity of voice (Taylor and Raadt, 2021; Fasoli et al., 2023), in the incongruity of gender role (Jetten et al., 2013), and incongruity of gender appearance (Gill, 1994; Rudman et al., 2012) can lead to negative reactions (Jetten et al., 2013). As gender incongruity increases, negative attitudes and discrimination can also intensify and women face greater penalties for gender incongruity than men who transgress gender roles (Fasoli and Hegarty, 2020). However, studies examining the impact of incongruity between voice tone, appearance and occupation on dehumanization are limited. Therefore, the main aim of the study is to investigate the influence of voice tone, in conjunction with the interaction between occupation and gender appearance incongruity, on the dehumanization of women.

Context and hypothesis

Gender studies in Turkey have focused on the differences in roles between women and men in social, family, and work life (Dökmen, 2004; Sancar, 2011). In Turkey, the lack of equality laws, insufficient supportive political discourse, and organizational preparedness suggest that equality has not been achieved at the societal and organizational levels (Küskü et al., 2021; Kusku et al., 2022; Özbilgin et al., 2023). It is evident that women face inequalities in terms of education, employment, and representation, according to data from the Turkish Statistical Institute (2023). The Turkish labour market is dominated by middle-aged, Sunni Muslim, Turkish ethnicity, non-disabled heterosexual male workers (Göregenli et al., 2019). While typical workers dominate the labour market, ethnic minorities (Kurds), religious minorities, LGBTQ+ individuals, people with disabilities, immigrants from various countries, refugees, and women face low wages and limited job security in the Turkish labour market (Kusku et al., 2022).

Societal expectations regarding women and discrimination in the workplace serve as obstacles for women to reach managerial positions, causing a decrease in the number of women in managerial positions in the public sector (Bingöl et al., 2011). This contributes to high gender discrimination levels (Karatepe and Arıbaş, 2017, p. 7) in Turkey. Consistent with traditional gender roles, occupations such as teaching, medicine, and pharmacy, which are based on compassionate care and nurturing, are considered suitable pursuits for women, while professions like architecture, engineering, and management are not (Özkişi, 2012). It is deemed appropriate for women to work in jobs characterized by nurturing qualities and services, such as teaching, nursing, and flight attending, whereas men are expected to work in occupations requiring more independence, power, and leadership, such as engineering, contracting, management, and politics (Avcı et al., 2019).

Based on societal structures and related research, it can be said that the binary gender system that can be defined as the classification of individuals based on the sex characteristics assigned at birth, through social systems and cultural beliefs (Hyde et al., 2019; Morgenroth et al., 2021), is still more prevalent in Turkey (Köylü, 2016). The notion that men and women have different natures has

been accepted, and men are expected not to behave, dress, laugh in feminine ways, or engage in women's tasks (Gezici Yalçin and Tanriverdi, 2018). These differences have also been reflected in physical appearance and clothing choices, with clothing preferences becoming a significant reflection of gender norms.

As evident from the information provided above, gender inequalities persist in many areas of Turkey. Changing living conditions and cultural structures have the potential to reshape the meaning and content of gender. Especially with the influence of social media, femininity and masculinity have taken on new forms. What was once attributed to women can now be attributed to men, and vice versa (Gezici Yalçin and Tanriverdi, 2020). However, deviations from traditional masculinity can still lead to negative reactions (Gezici Yalçin and Tanriverdi, 2018).

Hypothesis

Gender stereotypes are associated with the phenomenon of dehumanization because they are formed through the socialization process. This is because traditional gender norms of masculinity and femininity, are also learned through social learning processes (Hemsing and Greaves, 2020). Because of these norms vary for men and women (Eagly, 1987; Fiske et al., 2007), individuals who do not conform to these norms may face negative reactions. For example, men who pursue professions considered feminine by society are subjected to ridicule (Isacco and Morse, 2015), while women who pursue professions considered masculine face scorn and discrimination (Jetten et al., 2013). Traditionally, women are expected to take on caregiving or emotional support roles within the family, while men are directed more towards outward, leadership roles (Eagly and Sczesny, 2019). So that we expect that occupation type will have a significant effect on the both mechanistic and animalistic dehumanization of women.

> *Hypotheses 1a*: Women in occupations incongruent with gender expectation will have higher scores of mechanistic dehumanization than women in occupation congruent with gender expectation.

> *Hypotheses 1b*: Women in occupations incongruent with female expectation will have higher scores of animalistic dehumanization than women in occupations congruent with female expectation.

Gender expectation about appearance also vary for men and women. In this regard men are often expected to have masculine appearance while women are expected to have feminine appearance (Connel, 1998, p. 109; Koenig, 2018; Van Grootel et al., 2018). However, individuals who exhibit behaviors not aligned with gender expectations face negative attitudes (Fiske and Stevens, 1993; Gill, 1994; Eagly and Wood, 2012; Rudman et al., 2012), research have found that gender expression has an effect on the mechanistic dehumanization. It was indicated that human nature characteristics are attributed more to feminine individuals compared to masculine individuals, regardless of sex (Diekman and Goodfriend, 2006; Heflick et al., 2011). Additionally, women who do not conform to gender expectations, based on gender expression, have higher scores of animalistic dehumanization compared to men who do conform (Tanriverdi and Gezici Yalçın, 2022). Therefore, we formulated hypotheses 2.

> *Hypotheses 2a*: Women with appearances incongruent with gender expectation will have higher scores of mechanistic dehumanization than those with appearances congruent with gender expectation.

> *Hypotheses 2b*: Women with appearances incongruent with gender expectation will have higher scores of animalistic dehumanization than those with appearances congruent with gender expectation.

Research about the impact of voice tone in impression formation are still inconclusive (Krahé and Papakonstantinou, 2020). In one study it is has been found that lower-pitched female voices were rated as more competent but less warm compared to higher-pitched (Oleszkiewicz et al., 2016). In another study both men and women with lower-pitched voices were perceived as more dominant and trustworthy (Borkowska and Pawlowski, 2011). However, some other studies imply that individuals with a tone of voice that is incongruent with their gender expectation may face negative reactions (Fuertes et al., 2011; Nelson et al., 2016; Fasoli et al., 2023). So that we formulated hypotheses 3.

> *Hypotheses 3a*: Women with a tone of voice that is incongruent with gender expectations will have higher scores of mechanistic dehumanization than women with a tone of voice that is congruent with gender expectations.

> *Hypotheses 3b*: Women with a tone of voice that is incongruent with gender expectation will have higher scores of animalistic dehumanization than women with a tone of voice that is congruent with gender expectation.

Visual and auditory cues can interact in the perception of gender (Smith et al., 2007) and influence social perception (Belin et al., 2004). As gender incongruity increases, negative attitudes and discrimination can also intensify. For instance, among women who identify as lesbians, those with a more masculine voice tone have been found to face more discrimination than men who identify as gay (Fasoli and Hegarty, 2020). Another study indicated that women who do not conform to gender expectations, based on gender expression, have higher scores of animalistic dehumanization compared to men who do conform and women who do not conform have higher scores of mechanistic dehumanization compared to women who do conform (Tanriverdi and Gezici Yalçın, 2022). Furthermore, individuals are expected to conform to gender roles stereotypically, and deviations from these roles can lead to negative reactions (Jetten et al., 2013). In addition, research suggests that although the perception of women's competence is on the rise, women are still expected to uphold their feminine characteristics to counteract negative attitudes and reactions (Koenig, 2018). For all these reasons, we formulated hypothesis 4: the interaction effect of voice tone, appearance and occupation will be significant.

> *Hypotheses 4a*: Women who are incongruent with gender expectations in terms of a greater number of variables (e.g., tone of voice, occupation, and appearance) are more likely to experience greater degrees of mechanistic dehumanization

compared to those who are incongruent with gender expectations in fewer variables (e.g., occupation and appearance).

Hypotheses 4b: Women who are incongruent with gender expectations in terms of a greater number of variables (e.g., tone of voice, occupation, and appearance) are more likely to experience greater degrees of animalistic dehumanization compared to those who are incongruent with gender expectations in fewer variables (e.g., occupation and appearance).

However, we anticipate nuanced effects within each gender-related factor, such that the interaction between voice tone, appearance, and work will lead to differential levels of dehumanization depending on the specific combination of factors present.

Method

Participants and study design

Prior to data collection, a power analysis was conducted using G*Power (see Faul et al., 2007), which determined that 240 participants would be sufficient for a power of 0.95 and a high effect size ($f = 0.80$). According to Hyde (2005), effect size is an important factor in indicating the statistical significance of differences between groups. The author interprets a value of $d \leq 0.10$ as insignificant. Therefore, in the current study, efforts have been made to maintain a high effect. In this study, a total of 255 university students who were pursuing undergraduate or graduate education in different departments of Zonguldak Bülent Ecevit University were reached. Before proceeding to basic analyses, it was checked whether there was any missing data, and no missing data were detected. One participant had ranked items in descending order (5, 4, 3, 2, 1), and 2 participants had responded in ascending order (1, 2, 3, 4, 5). Generally, participants of this kind typically mark items without reading them. Therefore, these participants were excluded from the dataset. Subsequently, responses to manipulation control questions were examined. It was observed that 1 participant had answered the first question incorrectly, 6 participants answered the second question incorrectly, and 1 participant had answered all three questions incorrectly. Incorrectly answering manipulation control questions indicates that participants are not paying attention to manipulation, especially to occupation type. Therefore, it cannot be known whether they answered the scale questions based on appearance, tone of voice, or profession type. However, participants should answer considering all three variables. Therefore, these participants were also excluded from the dataset. The analysis continued with the data of the remaining 244 participants. The gender distribution of these participants was 125 females and 119 males, as reported in self-report forms. Participants' ages ranged from 18 to 38 years ($Mean_{age} = 21.87$; $SD = 2.47$). A convenient sampling technique was applied to reach participants studying in various departments of their faculties, but randomization was carried out to assign participants to conditions. The study utilized a 2 (occupation: masculine, feminine) × 2 (gender appearance: masculine, feminine) × 2 (voice tone: masculine, feminine) between-subjects factorial design. The design of the research and the distribution of participants across conditions are presented in Table 1.

Data collection and measurement tools

Demographic information form

The demographic information form was designed to collect information such as age, gender, departments, and class levels of the participants in order to describe their demographic characteristics.

Dehumanization measurement

Studies have used human nature and human uniqueness characteristics to measure two forms of dehumanization (Haslam et al., 2005; Bain et al., 2009). The characteristics of human nature are common in society, universal across cultures, deeply rooted in humans and related to emotions, and are also formed at an early age in terms of development, while the characteristics of human uniqueness are formed later, are observed less frequently, and have relatively lower universality (Haslam, 2006). On the other hand, some of these characteristics (e.g., broad-minded, humble, polite, thorough) strongly distinguish humans from animal but lowly from machines; some of them (e.g., active, curious, friendly, fun-loving) strongly distinguish humans from machines but lowly from animals; and some of them (e.g., high-strung, insecure, irresponsible, reserved) strongly can distinguish humans from both animals and machines (Haslam et al., 2005). Therefore, we could not find a reliable and valid scale of the two forms of dehumanization in the literature. So that, based on the preview studies (e.g., Haslam et al., 2005; Bain et al., 2009), we used certain human characteristics such as "civilized," "fair," "logical," and "honest" to measure the dimension of animalistic dehumanization, and others such as "sincere," "warm," "social," "cheerful," and "friendly" to measure the mechanistic dimension, in this study.

In the literature, most rating scales for attitude and opinion measures typically contain either five or seven response categories. Some researchers have suggested that reliability is maximized with seven-point scales (e.g., Finn, 1972; Ramsay, 1973). However, others

TABLE 1 Study design and sample distribution ($N = 244$).

Work	Voice tone			
	Masculine		Feminine	
	Masculine	Feminine	Masculine	Feminine
Appearance				
Masculine	($n = 30$)	($n = 32$)	($n = 31$)	($n = 31$)
Feminine	($n = 30$)	($n = 30$)	($n = 30$)	($n = 30$)

have reported higher reliabilities for five-point scales (e.g., Jenkins and Taber, 1977; McKelvie, 1978). Additionally, research in cognitive psychology suggests that increasing the number of response options can lead to respondent confusion and increased cognitive burden (Cook et al., 2014). Thus, we rated the Likert-type scale ranging from 1 (Not at all appropriate) to 5 (Completely appropriate), aiming to minimize respondent fatigue and enhance the clarity and simplicity of the scale, thereby reducing the likelihood of response errors (Preston and Colman, 2000). Scores obtained from each attribute were reverse-coded, and to differentiate them into the two dimensions, their validity and reliability were tested. Higher average scores from each dimension indicate higher dehumanization in the respective dimension.

Procedure

Before commencing the study, ethical approval was obtained from the Human Research Ethics Committee of Zonguldak Bülent Ecevit University, dated March 29, 2023, under Senate Resolution 2014/08-13 (Protocol no: 93). To conduct the research, a laboratory was prepared. For the manipulation of voice tone, two female speakers (one with a feminine voice and one with a masculine voice) were selected from the Conservatory and Opera Department based on the opinions of four professional academics specializing in voice tone within the opera department. Then, in a quiet environment, using a plain-speaking style (e.g., accent-free, simple, and free from slang), the speakers recorded the standardized text (utilizing both feminine and masculine voices) containing the predetermined feminine and masculine professions. For the profession manipulation, engineering, considered masculine, and kindergarten teaching, considered feminine based on literature (Eagly, 2013) and studies in Turkey (see Özkişi, 2012; Avcı et al., 2019) were chosen. The name "Deniz," a non-binary gender name, was used for the target person in the vignette. Women with suitable voice tones read a text indicating that they belong to a profession, and these recordings were made. To manipulate appearance, lively colors, dresses, and long hair were preferred for a feminine appearance, while dark colors, suits, and short hair were chosen for a masculine appearance, based on literature (Ridgeway, 2014; Köylü, 2016). A photo shoot was conducted with a permitted model wearing these clothes. In Photoshop, hair lengths (short and long) were adjusted, and a single background (white) was used to prevent distracting elements. During data collection, participants were presented with this vignette in a laboratory setting while listening to it in either a masculine or feminine voice tone through a computer, and they were simultaneously shown a darkened image of a woman with either a masculine or feminine appearance. To ascertain participants' attentiveness to the manipulations, three questions were posed during data collection, focusing on Ms. Deniz's occupation, employment status, and level of education. Participants, admitted to the laboratory in pairs, were informed about the research and provided informed consent forms. Participants were instructed to select a number between 1 and 8, facilitating random assignment to conditions. Following this, audio recordings corresponding to their chosen condition were played through headphones, and a 5-point Likert scale was employed for dehumanization measurement based on the condition they listened to. Four experts in the field were consulted for manipulation control, and feedback was obtained from all experts confirming the successful implementation of the manipulation. In addition, participants were asked with two 5-point Likert-type questions ranging from 1 (Completely appropriate) to 5 (Not at all appropriate) to what extent they found the target person masculine or feminine for each (Voice, Work, Appearance) manipulation condition. One of these questions was reverse coded and whether there was a significant difference between masculine and feminine conditions was tested with independent samples t-test analysis. Data were subjected to MANCOVA (multivariate analysis of covariance) analysis.

Results

For the data analysis of this study, SPSS 26.0 statistical analysis software was utilized. Independent samples t-test analysis used for manipulations control, Exploratory Factor Analysis (EFA) was initially conducted to determine the validity of the measurement instrument used, and Cronbach's Alpha coefficient was calculated to determine its reliability. Skewness and kurtosis values of the dependent variables were examined to test whether the data followed a normal distribution. Subsequently, a multivariate analysis of covariance (MANCOVA) was conducted to test the effects of independent variables on dependent variables, with participant gender included as a control variable.

Results of independent samples *t*-test analysis

According to independent samples t-test analysis, the difference between the masculine voice ($M = 3.93$, SD = 1.71) and feminine voice ($M = 2.33$, SD = 0.75) condition was significant [$t(235) = 9.34$; $p < 0.000$, Cohen's $d = 0.51$]. The results of Levene's test for equality of variances showed violations, $p = 0.000$. This mean that the target person in masculine voice condition was perceived as having more masculine voice than the target person in feminine voice condition. The difference between the masculine work ($M = 5.60$, SD = 1.54) and feminine work ($M = 3.61$, SD = 1.74) condition was also significant [$t(235) = 9.26$; $p < 0.000$, Cohen's $d = 0.51$]. The results of Levene's test for equality of variances showed violations, $p = 0.004$. This mean that the masculine work condition was perceived more masculine than feminine work condition. The difference between the masculine appearance ($M = 6.57$, SD = 2.20) and feminine appearance ($M = 2.60$, SD = 1.33) condition was also significant [$t(235) = 16.77$; $p < 0.000$, Cohen's $d = 0.73$]. The results of Levene's test for equality of variances showed violations, $p = 0.000$. This mean that the target person in masculine appearance condition was perceived more masculine than the target person in feminine appearance condition. In overall, based on these results, it can be said that manipulation was achieved in all three conditions.

Findings of exploratory factor analysis and reliability analysis

In the factor analysis conducted on the 25 items in the dehumanization scale, we attempted to obtain a two-factor structure. A pre-determined value for the number of factors was not used; instead, a method is suggested in the literature where factors with

eigenvalues greater than 1 or equal to 1 are considered significant (Büyüköztürk, 2002). According to the analysis results, 8 items (10, 11, 16, 17, 19, 23, 24, 25) disrupt the two-factor structure. When these items were removed, the two-factor structure of the scale became more evident. Upon examination of the factor structure, it was observed that the factor loadings and cumulative values of all items were above 0.40. Consequently, the first factor with an eigenvalue of 7.83 explained a variance of 46.07%, while the second factor with an eigenvalue of 1.96 explained a variance of 11.58%. The total variance explained by these two factors was 57.66%. Considering previous studies (e.g., Haslam et al., 2005; Bain et al., 2009) the first factor, "Animalistic Dehumanization," consisted of 12 items with a reliability coefficient of $\alpha = 0.91$. The second factor, "Mechanistic Dehumanization," included 5 items, and the reliability coefficient was $\alpha = 0.90$. The total reliability coefficient of the scale was calculated as $\alpha = 0.92$ (see Table 2). These results suggest that dehumanization can be measured reliably and validly in two dimensions.

Findings of multivariate analysis of covariance

This study aimed to investigate the effects of voice, occupation, appearance, and interaction effects of these variables on dehumanization. Descriptive statistics were calculated to provide an overview of the dehumanization scores across different combinations of voice, occupation, and appearance (see Table 3). The mean mechanistic and animalistic dehumanization scores varied across these conditions, suggesting potential differences in how participants perceived individuals in each scenario. The overall model significantly predicted dehumanization levels for both mechanistic ($F_{(8, 234)} = 5.541$, $p < 0.001$, $\eta^2 = 0.159$) and animalistic ($F_{(8, 234)} = 2.368$, $p = 0.002$, $\eta^2 = 0.075$) dehumanization.

TABLE 2 Results of EFA and reliability analysis for the dehumanization scale.

Traits	Communalities	Factor load	
Item 6: fair	0.556	0.856	
Item1: trustworthy	0.403	0.802	
Item 5: honest	0.436	0.792	
Item 8: moral	0.542	0.765	
Item 22: conscientious	0.612	0.737	
Item 7: resolute	0.672	0.703	
Item 2: logical	0.455	0.677	
Item 9: creative	0.662	0.663	
Item 4: humble	0.458	0.603	
Item 18: able to plan	0.639	0.587	
Item 3: broadminded	0.769	0.551	
Item 20: capable of feeling guilt	0.844	0.532	
Item 14: friendly	0.761		0.947
Item 15: cheerful	0.429		0.893
Item 13: warm	0.574		0.859
Item 12: sincere	0.419		0.772
Item 21: social	0.572		0.664
Cronbach's alpha	0.92	0.91	0.90

Tests of between-subjects effects were conducted to examine the significance of the main effects and interactions on mechanistic and animalistic dehumanization. Results demonstrated that occupation type had a significant main effect on mechanistic dehumanization ($F_{(1, 235)} = 17.592$, $p < 0.000$, $\eta^2 = 0.070$) and animalistic dehumanization ($F_{(1, 235)} = 8.45$, $p = 0.004$, $\eta^2 = 0.035$), indicating that women who have masculine occupations are more dehumanized than who have feminine occupations. Hypothesis 1a and Hypothesis 1b are supported. Voice tone had also a significant main effect on mechanistic dehumanization ($F_{(1, 235)} = 13.532$, $p < 0.00$, $\eta^2 = 0.54$) and animalistic dehumanization ($F_{(1, 235)} = 4.68$, $p = 0.041$, $\eta^2 = 0.020$). Hypothesis 3a and Hypothesis 3b are supported. This suggests the women who have masculine voice are more dehumanized than who have feminine voice tone. This indicates that participants' perception of mechanistic and animalistic dehumanization significantly varied based on the voice tone and work occupation presented in the stimuli. However, the main effect of appearance, and participants' gender did not yield significance for either mechanistic or animalistic dehumanization ($p > 0.05$). Hypothesis 2 rejected. The interaction between appearance and occupation had a significant effect on mechanistic dehumanization ($F_{(1, 235)} = 6.010$, $p = 0.01$, $\eta^2 = 0.025$) but not on animalistic dehumanization ($p > 0.05$). Pairwise comparison indicated that engineer women who adopt masculine appearances are more dehumanized (Mean = 11.87, SE = 0.74) compare to engineer women with feminine appearance [Mean = 10.57, SE = 0.73, $p < 0.001$, 95% CI (2.018, 4.930)]. This implies that the effect of appearance on the mechanistic dehumanization of women depended to occupation. The interaction effect of voice and occupation and voice and appearance were not significant ($p > 0.05$). The three-way interaction between voice, appearance, and occupation was also significant for mechanistic dehumanization ($F_{(1, 235)} = 4.279$, $p = 0.04$, $\eta^2 = 0.018$) but not for animalistic dehumanization ($p > 0.05$). Hypothesis 4a is supported but hypothesis 4b is rejected. This indicates that the impact of voice tone on de mechanistic dehumanization in the workplace depend on appearance type. It also suggests that the more gender incongruity the more mechanistic dehumanization of women.

We used simple effect analysis to compare the levels of mechanistic dehumanization between different conditions (see Figure 1). The results showed that participants' scores for mechanistic dehumanization in Condition 1 (engineer women with masculine appearance and masculine voice: Mean = 12.91, SE = 0.74) were significantly higher than those in Condition 2 [kindergarten teacher women with masculine appearance and masculine voice: Mean = 8.95, SE = 0.74, $p < 0.001$, 95% CI (1.885, 6.013)]. This indicates that Engineer women with masculine voices and appearances face more dehumanization than kindergarten teacher women with similar voice tones and appearances. Participants' scores in Condition 1 (engineer women with masculine appearance and masculine voice: Mean = 12.91, SE = 0.74) were significantly higher than those in Condition 3 [engineer women with feminine appearance and masculine voice: Mean = 10.85, SE = 0.72, $p < 0.005$, 95% CI (0.015, 4.10)]. This suggests that engineer women with masculine appearances and voices are more dehumanized than those with masculine voices but feminine appearances. Participants' scores in Condition 1 (engineer

10.3389/fpsyg.2024.1387876

TABLE 3 Descriptive statistics.

Variables	Voice	Appearance	Occupation	Mean	Std. Dev.	*N*
Mechanistic	Masculine	Masculine	Masculine	12.9000	5.07428	30
			Feminine	8.9667	3.89945	30
			Total	10.9333	4.90543	60
		Feminine	Masculine	10.8438	4.00894	32
			Feminine	11.6333	4.08938	30
			Total	11.2258	4.03436	62
		Total	Masculine	11.8387	4.63484	62
			Feminine	10.3000	4.18350	60
			Total	11.0820	4.46768	122
	Feminine	Masculine	Masculine	10.8387	4.84491	31
			Feminine	7.8710	2.84888	31
			Total	9.3548	4.21588	62
		Feminine	Masculine	10.2667	3.86793	30
			Feminine	7.7000	3.67799	30
			Total	8.9833	3.95951	60
		Total	Masculine	10.5574	4.36472	61
			Feminine	7.7869	3.25635	61
			Total	9.1721	4.07916	122
	Total	Masculine	Masculine	11.8525	5.02605	61
			Feminine	8.4098	3.42236	61
			Total	10.1311	4.61752	122
		Feminine	Masculine	10.5645	3.91977	62
			Feminine	9.6667	4.33616	60
			Total	10.1230	4.13727	122
		Total	Masculine	11.2033	4.53033	123
			Feminine	9.0331	3.93686	121
			Total	10.1270	4.37495	244
Animalistic	Masculine	Masculine	Masculine	30.5333	8.01177	30
			Feminine	29.1000	9.98050	30
			Total	29.8167	9.00187	60
		Feminine	Masculine	30.3750	8.14684	32
			Feminine	30.0000	7.01230	30
			Total	30.1935	7.55925	62
		Total	Masculine	30.4516	8.01572	62
			Feminine	29.5500	8.56367	60
			Total	30.0082	8.26773	122
	Feminine	Masculine	Masculine	30.9032	8.72680	31
			Feminine	25.1613	6.71861	31
			Total	28.0323	8.24813	62
		Feminine	Masculine	29.7333	9.31048	30
			Feminine	24.9333	8.90538	30
			Total	27.3333	9.35127	60
		Total	Masculine	30.3279	8.96237	61
			Feminine	25.0492	7.80476	61
			Total	27.6885	8.77834	122

(Continued)

TABLE 3 (Continued)

Variables	Voice	Appearance	Occupation	Mean	Std. Dev.	*N*
	Total	Masculine	Masculine	30.7213	8.31491	61
			Feminine	27.0984	8.64042	61
			Total	28.9098	8.63780	122
		Feminine	Masculine	30.0645	8.66285	62
			Feminine	27.4667	8.34727	60
			Total	28.7869	8.57368	122
		Total	Masculine	30.3902	8.46365	123
			Feminine	27.2810	8.46288	121
			Total	28.8484	8.58829	244

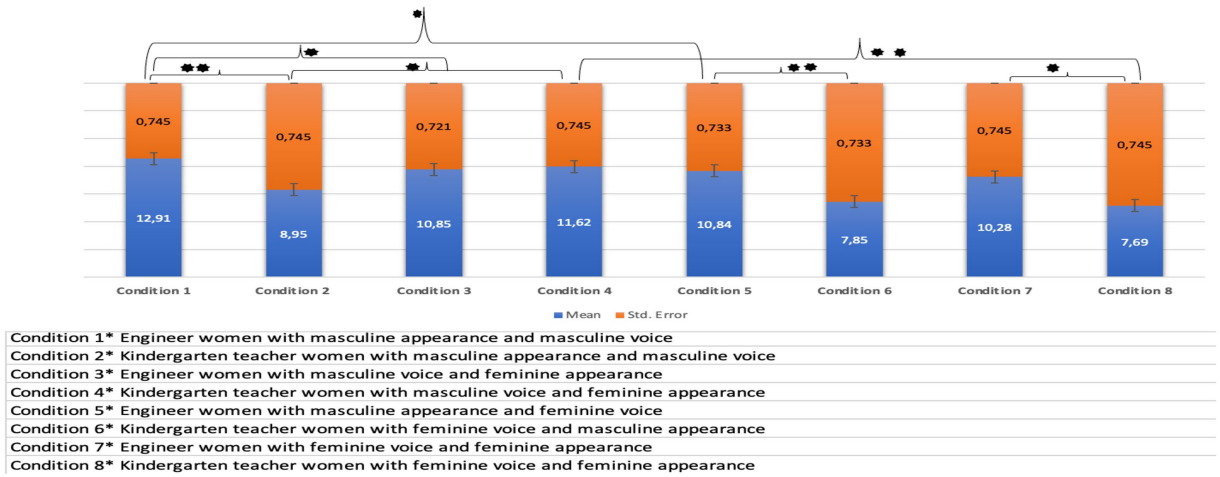

FIGURE 1
Pairwise comparisons of between subject.

women with masculine appearance and masculine voice: Mean = 12.91, SE = 0.74) were significantly higher than those in Condition 5 [engineer women with feminine voice and masculine appearance: Mean = 10.84, SE = 0.73, $p < 0.005$, 95% CI (0.015, 4.13)]. This means that engineer women with masculine voices and appearances face more dehumanization compared to those with feminine voices but masculine appearances. Participants' scores in Condition 4 (kindergarten teacher women with feminine appearance and masculine voice: Mean = 11.62, SE = 0.73) were significantly higher than those in Condition 2 [kindergarten teacher women with masculine appearance and masculine voice: Mean = 8.95, SE = 0.74, $p < 0.005$, 95% CI (0.54, 4.74)]. This indicates that kindergarten teacher women with masculine voices and appearances face more dehumanization than those with feminine appearances but masculine voices. Participants' scores in Condition 4 (kindergarten teacher women with feminine appearance and masculine voice: 11.62, SE = 0.73) were significantly higher than those in Condition 8 [kindergarten teacher women with feminine voice and feminine appearance: Mean = 7.69, SE = 0.74, $p < 0.001$, 95% CI (1.85, 6.00)]. This means that kindergarten teacher women with masculine voices and feminine appearances are more dehumanized than those with feminine voices and appearances. Participants' scores in Condition 5 (engineer women with feminine voice and masculine appearance: Mean = 10.84, SE = 0.73) were significantly higher than those in Condition 6 [kindergarten teacher women with feminine voice and masculine appearance: Mean = 7.85, SE = 0.73, $p < 0.001$, 95% CI (0.94, 5.03)]. This indicates that engineer women with a masculine appearance and a feminine voice experience more dehumanization than kindergarten teacher women with the same characteristics. Participants' scores in Condition 7 (engineer women with feminine voice and feminine appearance: Mean = 10.28, SE = 0.74) were significantly higher than those in Condition 8 [kindergarten teacher women with feminine voice and feminine appearance: Mean = 7.69, SE = 0.74, $p < 0.005$, 95% CI (0.51, 4.66)]. This suggests that engineer women with feminine voices and appearances may face more dehumanization than kindergarten teacher women with similar voices and appearances.

Discussion

This study aimed to investigate the impact of voice tone, appearance and occupation type on mechanistic and animalistic dehumanization of women. The findings emphasize the significant influence of societal norms and expectations on how individuals are perceived, highlighting that woman deviating from traditional gender

roles are at risk of dehumanization. As expected, hypotheses 1a and hypotheses 1b, emphasizing the impact of occupation type on dehumanization of women were supported. This result appears consistent with studies indicating that gender nonconformity is not well-received (Jetten et al., 2013; Isacco and Morse, 2015), that traditionally, women are directed towards lower-paying and lower-status jobs (Fiske and Stevens, 1993), and that in order to avoid these negative consequences, people performed their gender expectations that leading to the perpetuation of gender inequalities (Eagly, 1987; Butler, 1990).

Hypotheses 3a and 3b, which emphasize the impact of voice tone on dehumanization, were supported. Individuals with masculine voices and masculine occupations experienced both mechanistic and animalistic dehumanization. These results underscore the role of perception and bias associated with voice characteristics suggesting that individuals who do not conform to a gender-appropriate voice tone are likened to both objects and animals. Previous studies have underscored the positive impact of a lower-pitched voice, particularly in relation to the perception of competence (Borkowska and Pawlowski, 2011; Oleszkiewicz et al., 2016). The findings of the current study suggest that women who exhibit incongruence with their voice tone may be perceived as less human in terms of attributes such as friendliness, cheerfulness, warmth, and sincerity, as well as in terms of fairness, honesty, morality, conscientiousness, resolution, creativity, and open-mindedness. The findings more align with previous research indicating that incongruence with tone of voice can lead to negative reactions (Fuertes et al., 2011; Nelson et al., 2016; Fasoli et al., 2023).

Hypothesis 2a and 2b which emphasize the impact of appearance on dehumanization of women was not supported. However, the interaction effect of appearance and occupation was significant on the mechanistic dehumanization. This statement means that in the case of kindergarten teachers (congruence with occupation expectation), whether they adopt a masculine appearance or a feminine appearance does not significantly affect the level of mechanistic dehumanization they experience. However, for engineer women (incongruence with occupation expectation), there is a significant difference in mechanistic dehumanization between those who adopt a masculine appearance and those who adopt a feminine appearance. In other words, for engineers, the choice of appearance has a noticeable impact on the level of dehumanization they face, whereas for kindergarten teachers, appearance seems to have less influence on dehumanization. In addition, hypothesis 4a, regarding the interactive effects of gender role, gender appearance, and voice tone, was supported as well. This hypothesis suggested that the level of mechanistic dehumanization towards women would vary based on different combinations of voice tone, gender role, and gender appearance. The findings reveal that the combination of these variables creates differences in mechanical dehumanization. For example, women who are incongruent in all three variables are exposed to more mechanical dehumanization compared to those who are incongruent in appearance but congruent in voice tone or those who are congruent in appearance but incongruent in voice tone and occupation. This result suggests that women who deviate from traditional gender norms across multiple variables may experience higher levels of dehumanization. In other words, when women exhibit incongruence with societal expectations in terms of their appearance, voice tone, and occupation, they are more likely to face dehumanizing attitudes and treatment, consistent with preview study (Fasoli and Hegarty, 2020).

These results resonate with objectification theory, which posits that individuals, particularly women, are often objectified based on their appearance and perceived adherence to societal beauty standards (Fredrickson and Roberts, 1997). In this case, women with masculine voices and masculine appearance, and women working in masculine occupation may be objectified, as their characteristics deviates from traditional gender norms, leading to perceptions of them as less human (Fuertes et al., 2011; Fasoli et al., 2023).

On the other hand, hypothesis 4b, testing the interaction effect of the three variables on animalistic dehumanization, was rejected. While voice tone and occupation had significant effects on animalistic dehumanization, their interaction with appearance did not yield significant results. This means that both kindergarten teachers and female engineers, whether they adopt a masculine or feminine appearance or have a masculine or feminine voice, do not significantly affect the level of animalistic dehumanization they experience. Previews studies implied that gender expression in terms masculinity and femininity, is more closely associated with mechanistic dehumanization (Diekman and Goodfriend, 2006; Heflick et al., 2011; MacInnis and Hodson, 2012; Tanriverdi and Gezici Yalçın, 2022). This is also possible explanation of why our hypothesis 2b was not supported. The current study appears consistent with these studies. While voice tone does indeed have an impact on the dehumanization of women, it appears that this effect does not vary significantly based on occupation type. This suggests that regardless of the type of occupation, women may face similar levels of dehumanization based on their voice tone.

Additionally, the gender of the participants was found to have no significant effect on dehumanization towards women. This suggests that individual characteristics do not heavily influence dehumanization of women. Previous studies have also indicated that there is no significant difference in attributing human traits based on participant gender (Bain et al., 2009; Vaes et al., 2011).

One of the major contributions of this study is shedding light on how seemingly minor details, such as voice tone can play a significant role in dehumanizing women. Furthermore, this study contributes to a better understanding of the effects of occupation and societal norms in the workplace. It also offers insights into how various combinations of occupation, gender appearance, and voice tone can affect dehumanization of women, subsequently influencing their experiences of negative attitudes, behaviors, and discrimination. Overall, this study delves deep into the relationship between gender congruence or incongruence in occupation, gender appearance, and voice tone and dehumanization, helping us comprehend how gender norms and societal expectations impact dehumanization of women. Social and organizational interventions which target gender equality need to consider the impact of gender norms on dehumanization of women through processes of evaluation of occupation, appearance and voice tone. Recognizing varied manifestations of dehumanization of women, in turn, can contribute to design and development of gender equality interventions that combat dehumanization, promoting fairer and more egalitarian work environments.

Limitations and recommendations

One of the primary limitations of this study pertains to the manipulation of voice tone, which relied on information provided by

experts in the Conservatory and Opera Department as well as professionals in gender literature. Specifically, the categorization of masculine and feminine voices was determined based on the expertise of these professionals rather than through a systematic analysis of frequency and formant characteristics. Individuals with lower-frequency (within 100–120 Hz) voices are often perceived as more masculine while those with higher-frequency (200–220 Hz) voices tend to be perceived as more feminine (Pisanski and Bryant, 2019). Therefore, future research endeavors could benefit from conducting pilot studies aimed at analyzing the frequency and formant characteristics of voice in order to more accurately determine its masculinity or femininity.

Another limitation is that in this study we focused only on the dehumanization of women. Considering men in future research would enable us to explore whether similar principles of gender congruence and stereotypes apply, albeit within potentially different societal expectations and norms. Just as women may face dehumanization when deviating from traditional gender roles, men who display nonconforming traits or behaviors may also encounter negative reactions and biases. However, because of femineity related to human nature characteristic (Diekman and Goodfriend, 2006; Heflick et al., 2011) display nonconforming expectation may increase the attribution of human nature characteristics to men. By investigating these dynamics among men, we can gain a more comprehensive understanding of how gender norms influence perceptions of dehumanization in the workplace. Moreover however, research found that sexual orientation is related to mechanistic dehumanization, based on masculinity and femineity (MacInnis and Hodson, 2012; Vaughn et al., 2017), future research would also can test the interaction effect of voice tone, appearance, occupation type and sexual orientation.

Furthermore, in light of the findings of this study, there arises a necessity for more comprehensive research to investigate the effects of various combinations of occupation, gender appearance, and voice tone on animalistic dehumanization. It is evident that these variables interact to different extents in influencing mechanistic dehumanization, emphasizing the importance of conducting detailed investigations in this area. Moreover, other factors such as personality traits, cultural influences, and situational contexts were not fully examined. Future studies could incorporate these additional variables to gain a more nuanced understanding of the complexities surrounding dehumanization processes.

Lastly, the study utilized self-report measures to assess dehumanization, which may be subject to biases and social desirability effects. Incorporating objective measures or observational methods could enhance the validity and reliability of the findings.

Conclusion

This study highlights the persistent influence of gender expectations on dehumanization. The results demonstrate that various factors can significantly affect both mechanistic and animalistic dehumanization towards women. Voice tone and occupation type emerge as critical factors in the dehumanization of women. Having a masculine voice is associated with higher dehumanization of women. Similarly, women in professions challenging traditional occupations may also be more vulnerable to dehumanization. Moreover, the interaction of these variables can influence mechanistic dehumanization differently, revealing that the harmony or incongruity of voice tone, physical appearance, and occupation can impact mechanistic dehumanization. This suggests resistance to changing societal expectations, as traditionally masculine qualities, when displayed by women, may lead to their dehumanization. This finding aligns with previous research indicating that masculinity is highly valued and that women displaying masculine qualities can be dehumanized (Nutt, 2005; Boratav et al., 2017). Further research is needed to fully understand the complexity of the interaction of these factors, especially in relation to animalistic dehumanization.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Ethics statement

The studies involving humans were approved by Human Research Ethics Committee of Zonguldak Bülent Ecevit University, dated March 29, 2023, under Senate Resolution 2014/08-13 (Protocol no: 93). The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study.

Author contributions

VT: Formal analysis, Methodology, Writing – original draft. AY: Writing – original draft. ET: Writing – original draft. MO: Writing – review & editing.

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Conflict of ınterest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Publisher's note

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Women in higher education: leadership, coordination, and bibliography

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This study examines the role of women in the academic and scientific domains, emphasizing the need for institutions to ensure women's representation for an equitable system. We analyzed 794 syllabi from the Primary Education Degree within the Spanish University Network using a qualitative-comparative approach, focusing on women's involvement in the management and coordination of courses and their representation in the associated bibliographic materials. The findings reveal a predominantly androcentric environment, where, despite women's active participation in course leadership, their contributions to the bibliographic landscape are significantly limited. The research highlights the disparities in gender representation and underscores the necessity for measures to enhance women's visibility in academic and scientific spaces.

KEYWORDS

female presence, primary education, teaching guide, assignment management, bibliography

1 Introduction

One of the many challenges facing 21st-century societies revolves around reducing the gender-based inequity gap. This fact is not lost in the university educational reality and undoubtedly represents an element to address for all individuals involved in the academic sphere (Velasco et al., 2024). Indeed, some authors have highlighted the presence of sexist attitudes in this social reference space (Navarro-Pérez et al., 2019; Subirats, 2019; Fernández et al., 2022). In this regard, Maffía (2007) establishes a typological framework defining these attitudes in four different expressions: lack of recognition of scientific contributions, unequal professional positioning, a culturally biased biological conception regarding their physical, emotional, and psychological nature, and finally, a displacement of scientific rigor.

More specifically, in higher education, women face various challenges. For example, even though there are now more women in higher education than ever before, they do not appear to have the same opportunities as their male colleagues. In fact, the more senior the grade, the lower proportion of female academics in the grade. Furthermore, women in higher education make up 13% of professors in old universities, with success highly dependent on subject. In addition, leadership as a challenge for women in higher education. Accordingly, gender limits women in higher education (Cotterill and Letherby, 2005; Maphalala and Mpofu, 2017). It seems evident, therefore, that androcentric culture exerts multifaceted effects within the university and scientific context, precisely through symbolic constructions about men and women (González and Delgado, 2016), perpetuating a model that solidifies a collective imaginary where the male figure prevails over the female.

All of this occurs despite the gender equality principle (GEP) being enforced not only by various international bodies (UN Women, 2015) but also by European and state educational

and ordinary legislations (see Organic Law 3/2007, Royal Decrees 1393/2007, 861/2010, and the currently effective Royal Decree 822/202). Studies reveal the dominance of men in the norms and values determining and hierarchizing roles in the academic space (Becher, 2001; Mestre and Guil, 2004), operating as polarizers in academic duties both in teaching and research (Berrios, 2005; Maffía, 2007).

In this scenario, it becomes evident that both academic institutions and all involved parties must ensure an equitable system of relationships to provide formative outcomes that guarantee the inclusion of social and civic principles (Fernández, 2011). Presently, there exists an academic genre that allows visibilizing how women are positioned in various activities involving tasks both in teaching and scientific representation: the teaching guide (TG).

The TG is a highly rigorous document in its execution, published after review by different academic bodies and endorsed by various competent bodies in university institutions (Delgado and De Justo, 2018). This genre constitutes a publicly available document aiming to unfold all necessary information for monitoring a subject in the teaching action of an academic degree. Among this information, its sections deploy, in addition to the entire curriculum base of a subject, basic data of the faculty in charge of its direction or coordination, as well as all bibliographic information provided for student theoretical training.

Ultimately, the TG becomes a suitable instrument to contrast the visibility granted to women both in the teaching and scientific realms. Primarily, this document allows analyzing the bibliographic production displayed in the subjects. This element is of special interest as it has been scarcely studied, as revealed by the literature (García-Jiménez, 2021). Furthermore, it permits placing the relevance of women in theoretical training or, in other words, the place occupied by scientific production generated by women. Secondly, the approach to said scientific production offered through the bibliography in university training subjects allows identifying whether the GEP is taken into account in the students' theoretical training. In this case, no contributions regarding this aspect were found in the reviewed literature. This is considered a fundamental element as it would identify the level of acceptance of the GEP among university faculty. Finally, the TG allows visibilizing the representation of women in the direction and coordination of university subjects, as one of its sections deals with identifying the faculty responsible for each subject.

As previously noted, studies analyzing the framework of symbolic relationships and the prestige and power system between men and women in different academic disciplinary communities are scarce (Sánchez, 2011). Approaches exist from the disciplinary field of sociology (Lengermann and Niebrugge, 2007) as well as from the realm of communication (García-Ramos et al., 2020; García-Jiménez, 2021; García-Jiménez and Simonson, 2021; García-Jiménez et al., 2022; García-Jiménez and Herrero, 2022). This research aims to contribute to visualizing the situation of women in the disciplinary space of Education and more specifically in the Primary Education (PE) Degree area.

In this framework, the study aims to determine the presence of women in the development of subjects within the PE Degree in the Spanish University Network (SUN)based on the variables: disciplinary context, autonomous community (AC), and type of ownership.

The overarching goal of our research is further delineated into the following specific objectives:

1. Determine the presence of women in the bibliographic production declared in the TGs of the PE Degree in the SUN.
2. Identify the inclusion of the GEP in the bibliographic production declared in the TGs of the PE Degree in the SUN.
3. Determine the presence of female teachers in the direction or coordination of the subjects in the PE Degree in the SUN.

2 Method

For this purpose, a qualitative research approach has been developed, addressing the study of a corpus composed of 794 TGs.

This study was conducted using a qualitative, descriptive, and comparative method, displaying generalizable and representative results of the selected population (Hernández et al., 2006). Additionally, it is a non-experimental investigation, given that the variables have not been manipulated but are integrated into the research and have already exerted their effects (Sierra, 2007).

2.1 Corpus

The corpus formation began with the analysis of the curriculum of the 68 Spanish universities offering the PE Degree during the academic year 2020–2021. Three of these universities were excluded as they did not have public TGs, resulting in a total of 65 universities for the analysis. Subsequently, inclusion and exclusion criteria were defined for the final corpus formation. Therefore, included in the corpus were those universities offering the Primary Education Degree and possessing TGs for the academic year 2020–2021. Additionally, the TGs had to belong to specific didactic subjects and be written in Spanish. Conversely, excluded were TGs belonging to Double Degrees or postgraduate courses, those from previous academic years to 2020–2021, those referencing technical subjects or purely declarative knowledge, and those written in English, French, Basque, Galician, or Catalan.

Initially, a total of 842 SGs were reported, but 51 were excluded after applying the described criteria. Thus, ultimately, a corpus of 794 SGs was obtained (93.4% of the total), divided as follows: pilot corpus (40 SGs), test corpus (222 SGs), and general corpus (532 TGs). Each was registered with a unique identifier code that included information about the autonomous community it belonged to, the university ownership, document number, and the didactic area it corresponds to (for example: PV_P_01_Q).

The following graph (Figure 1) illustrates the final composition of the analyzed corpus.

2.2 Instrument development

Firstly, analysis categories were established to explore the presence of women in the bibliographic production of the TG, the inclusion of GEP in those guides, and women's involvement in leading or coordinating subjects. Categorization was conducted by collecting data on the authorship of the bibliography (female, male, or neutral if gender identification was impossible) and the presence of gender equality in the thematic content of the proposed documents. Regarding the

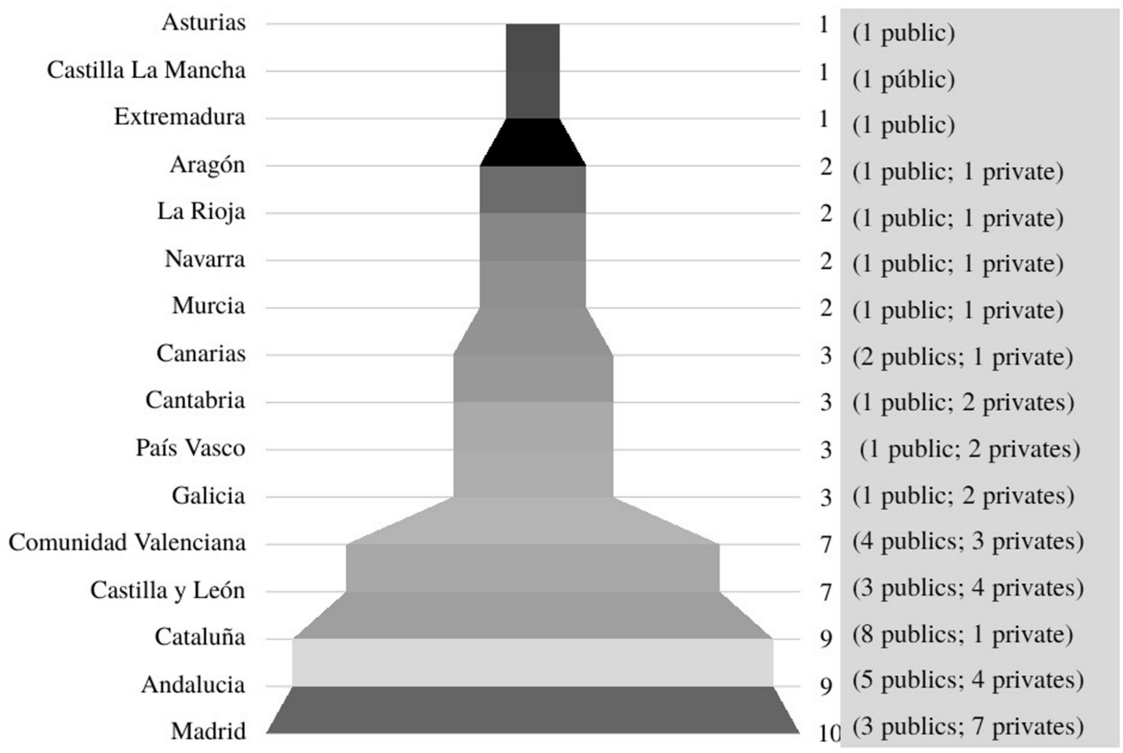

FIGURE 1
Corpus of the Spanish universities participating in the study by autonomous community and ownership.

analysis instrument, its development process followed several phases: initially, each researcher coded and labeled a small sample of TGs (5% of the total). Subsequently, triangulation was conducted based on the collected data. Codes that raised doubts were noted, and then the resources and provisional labeling for the analysis were collaboratively outlined. Next, there was a consultation with experts in language and gender issues to evaluate the reliability of the defined categories for corpus analysis. At this stage, experts proposed adjustments in the theoretical definition of some categories. Further validation involved analyzing a test subcorpus (28%), followed by an expert judgment process involving two Spanish experts and one from Chile. An Excel template was created for the experts to indicate the agreement, relevance, and clarity of each defined category with a "yes" or "no." The level of agreement among evaluators was calculated using Fleiss' Kappa test ($K = 0.72$), indicating a considerable degree of agreement.

2.3 Analysis procedures

Data were collected on individuals responsible for leading and coordinating the TGs. Subsequently, the documents were analyzed based on the established categories: (1) rate of female and male authorship in the bibliographic references included in the TGs, (2) rate of bibliographic references addressing gender equality, (3) rate of female and male representation in subject leadership, and (4) rate of female presence in subject coordination.

It's noteworthy that Microsoft Excel was utilized for the corpus analysis, recording the data corresponding to each category in the analyzed TGs.

3 Results

The results obtained after analyzing the 794 TGs comprising the corpus are presented below, organized into two sections. The first section provides the results related to the analysis of the proposed bibliography within the TGs (presence of women and inclusion of the GEP in the bibliographic production), while the second addresses issues regarding their coordination and management. Everything based on the three previously mentioned variables: disciplinary context, autonomous community, and type of ownership.

3.1 The analysis of the proposed bibliography within the TGs

Firstly, it is pertinent to note that in 53 of the analyzed TGs, there is no section dedicated to bibliographic references. Therefore, in this part of the analysis, the remaining 741 have been considered.

According to the data, it is possible to assert that in the proposed bibliography within these TGs, the number of identified male authors is significantly higher—almost double—compared to female authors (62.41 and 33.21%, respectively).

If these general data are analyzed based on each of the didactic areas considered in this research, the results are presented in Table 1.

These data indicate, that there is a common trend across all considered didactic areas: male-authored bibliography clearly prevails over female and neutral authorship. Nevertheless, certain areas stand out prominently. This is the case, for instance, in Physical Education and Social Sciences, where the number of male authors triples that of

TABLE 1 Percentage of female, male and neutral authorship in the proposed bibliography by didactic area.

Didactic area	Female authorship (%)	Male authorship (%)	Neutral authorship (%)
Social Sciences	23.3%	72.7%	4.0%
Art	35.4%	60.0%	4.6%
Physical Education	23.6%	71.7%	4.8%
Mathematics	36.8%	59.9%	3.3%
Natural Science	38.3%	58.8%	2.9%
Language and Literature	43.1%	48.9%	8.0%

TABLE 2 Percentage of female, male and neutral authorship in the proposed bibliography by autonomous community.

Autonomous community	Female authorship (%)	Male authorship (%)	Neutral authorship (%)
Andalucía	33.2%	61.3%	5.5%
Aragón	32.4%	54.4%	13.2%
Asturias	29.1%	66.8%	4.0%
Cataluña	38.9%	55.1%	6.0%
Castilla y León	32.3%	62.8%	4.9%
Castilla la Mancha	26.0%	71.9%	2.1%
Canarias	33.0%	62.4%	4.5%
Cantabria	32.5%	60.7%	6.8%
Extremadura	33.2%	64.3%	2.5%
Galicia	34.6%	62.0%	3.3%
La Rioja	40.4%	57.0%	2.5%
Madrid	34.6%	62.6%	2.7%
Murcia	29.8%	67.6%	2.6%
Navarra	29.0%	65.3%	5.7%
País vasco	35.5%	61.2%	3.3%
Valencia	30.0%	64.9%	5.2%

TABLE 3 Percentage of female, male and neutral authorship in the proposed bibliography by ownership.

Titularidad	Female authorship (%)	Male authorship (%)	Neutral authorship (%)
Public	32.7%	62.9%	4.4%
Private	34.2%	61.4%	4.3%

female authors. In the rest of the considered areas, the proportion of female authorship ranges between 35.4 and 43.1%. It is worth mentioning that, although the percentage is lower than that of male authorship in all cases, the situation of Language and Literature stands out, presenting the highest frequency of female authorship (43.1%).

When conducting the analysis by AC, the results obtained are presented in Table 2.

As seen, TGs from all ACs exhibit a higher rate of male authorship. This difference is particularly pronounced in the case of the Castilla La Mancha communities, where the rate of male authorship is almost triple that of female authorship. A similar scenario occurs in Asturias, Murcia, Navarra, and Valencia, where there are also more than twice as many male authors as female authors. In contrast, Catalonia and La Rioja are the communities where there is the least difference between the number of female and male authorships (16.2 and 16.6%, respectively).

Next, in Table 3, the results obtained for the percentage of female, male, and neutral authorship are systematized in relation to the third variable considered in this research, namely, the ownership of higher education institutions.

Indeed, there are no differences between the results obtained in private and public universities. In both cases, the rate of female authors corresponds approximately to one-third of the total proposed authors (32.7% in the case of public and 34.2% in the case of private institutions).

Regarding the visibility of the gender equality principle in the proposed bibliography, Table 4 presents the different results for each of the analyzed didactic areas.

Only a few proposals related to gender equality have been found. On this occasion, Social Sciences is the area that presents the highest percentage of proposals related to gender equality. In the rest of the studied didactic areas, the outlook is even more pessimistic, as there are hardly any proposals related to gender equality included.

Table 5 presents the same results obtained, this time considering the AC variable.

As it was the case with the didactic areas, the bibliography that highlights gender equality is almost non-existent in all Autonomous Communities. In this context, Andalusia is the community with the most bibliographic proposals referring to that concept (1.3% of the bibliographic proposals).

Finally, Table 6 presents the results related to the frequency of bibliographic references highlighting productions related to gender equality according to the ownership variable.

As the data shows, very few guides present bibliography that highlights the topic of gender equality. Additionally, all of them belong to public universities, and none to private institutions.

3.2 Analysis of the direction and coordination of the teaching guide

Another aspect analyzed in this research is the direction and coordination of subjects in the Primary Education Degree in the Higher Education Institution. As mentioned, the direction refers to each teacher who teaches the subject and edits the corresponding aspects in the Teaching Guide. The number of people responsible for the direction varies in each case. Regarding coordination, however, this task always falls to a single person, who may or may not be a teacher of the subject.

In general terms, the data shows that 47.4% of subject directions are held by women. Similarly, in the case of coordinations, there are also high percentages of female coordinators (46.3% of the total). To further break down this general result according to the different

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TABLE 4 Percentage of proposed bibliographic references that make visible productions related to gender equality in each didactic area.

Didactic area	Bibliographic references (%)
Social Sciences	1.6%
Art	0.2%
Physical Education	0.0%
Mathematics	0.0%
Natural Science	0.1%
Language and Literature	0.0%

TABLE 5 Percentage of proposed bibliographic references that make visible productions related to gender equality in each autonomous community.

Autonomous community	Bibliographic references (%)
Andalucía	1.3%
Aragón	0.0%
Asturias	0.0%
Cataluña	0.7%
Castilla y León	0.0%
Castilla la Mancha	0.3%
Canarias	0.7%
Cantabria	0.2%
Extremadura	0.5%
Galicia	0.3%
La Rioja	0.0%
Madrid	0.0%
Murcia	0.0%
Navarra	0.0%
País vasco	0.0%
Valencia	0.0%

variables included in this study, Table 7 presents the results by didactic area.

In Table 7, it can be observed that Physical Education and Social Sciences are the areas with the lowest rate of female direction (28.2 and 36.1%, respectively). Conversely, Language and Literature is the area where the highest presence of female directors is observed (61.8%). In the case of Physical Education, the data is particularly low. Regarding the coordination of Teaching Guides, only in the area of Physical Education does female coordination (22.22%) not surpass male coordination (78.78%).

On the other hand, it's worth noting the case of Social Sciences, one of the areas that shows lower presence both in terms of subject directors and authors in the proposed bibliography, yet it presents a 50% female coordination.

Table 8 presents the results of female representation in the direction and coordination of subjects according to the Autonomous Community (AC) variable.

As depicted in the table, only in seven Autonomous Communities, female direction of subjects is lower than male direction: Andalusia (46%), Castilla la Mancha (48%), Canary Islands (37.8%), Cantabria (33.3%), Extremadura (39.2%), Murcia (37.8%), and Valencia (36.9%). In the rest of the communities, female direction is higher than male direction, highlighting the case of Aragon, where the percentage of female direction is 100%.

Regarding the coordination of subjects, this time, there are seven communities in which coordination is held by a woman in at least half of the cases: Andalusia (50.00%), Catalonia (57.4%), Castilla y León (50.9%), Galicia (62.1%), Madrid (54.7%), Navarra (52.6%), and Basque Country (100%). It's worth highlighting the latter, the Basque Country, where all subject coordinations belong to women.

Finally, in Table 9, the results regarding the direction and coordination of subjects related to the ownership variable are presented.

In terms of ownership, this time, there are also no major differences between public and private universities, as evidenced by the data presented in Table 9. As seen, both in public and private universities, there is approximately 48% female direction in specific didactic subjects. In the case of coordinations, there is a slight increase in the percentage of Teaching Guides coordinated by a woman in private universities (49.5%) compared to public ones (45.9%).

4 Discussion

The results regarding the analysis of the bibliography provided in the TGs, which show a bibliographic compilation where male authorship almost doubles the rate of female authorship, evidence a clear androcentric tendency also identified in other studies (Lengermann and Niebrugge, 2007; García-Ramos et al., 2020; García-Jiménez, 2021; García-Jiménez and Simonson, 2021; García-Jiménez et al., 2022). These data, in turn, demonstrate that the knowledge transmitted in the Primary Education Degree of the Higher Education Institution is mainly based on the contributions of male authors. The low proportion of female authorship confirms, on the one hand, the undervaluation of women as authors in the construction of knowledge (Maffía, 2007) and, on the other hand, that the training of Primary Education students is materializing through the invisibility of these women.

This is worrisome, as it constructs an educational interpretation of future Primary Education teachers based on a clear bias against the recognition of women. In this line, research in recent years (Arias, 2016) states that the incorporation of bibliography by female authors in TGs is fundamental to establish the importance of women in various historical moments and sociocultural conditions, moving away from the construct that depicts women as exceptional individuals unrelated to social processes and structures. In this sense, the incorporation of a higher rate of bibliography by female authors in the Teaching Guides of Primary Education could contribute to students accessing a less biased, and male-centric, view of the different topics addressed during their academic formation.

Accordingly, the analysis carried out concerning the didactic area variable allows for the visibility of that reality within the scientific realm. Despite a low representation of the principle of equality and female authorship, it's interesting to note how humanistic areas such as Social Sciences, although showing a higher presence of female authorship as seen in other works (Montané and De Carvalho, 2012) and inclusion of the gender equality principle (Aguilar, 2015; Díez et al., 2016; Moreno and Díez, 2018; Ortega and Pagés, 2018; Velasco et al., 2024), evidence that education within this area is clearly androcentric and therefore biased.

TABLE 6 Percentage of proposed bibliographic references that make visible productions related to gender equality by ownership.

Ownership	Bibliographic references (%)
Public	0.5%
Private	0.0%

TABLE 7 Female representation in direction and coordination by didactic area.

Didactic area	Female direction (%)	Female coordination (%)
Social Sciences	36.1%	50.0%
Art	52.3%	48.4%
Physical Education	28.2%	22.2%
Mathematics	51.6%	53.3%
Natural Science	54.3%	51.2%
Language and Literature	61.8%	55.6%

TABLE 8 Female representation in direction and coordination by autonomous community.

Autonomous community	Female direction (%)	Female coordination (%)
Andalucía	46.0%	50.0%
Aragón	100.0%	—
Asturias	53.8%	31.6%
Cataluña	62.1%	57.4%
Castilla y león	50.7%	50.8%
Castilla la mancha	48.0%	40.0%
Canarias	37.8%	36.0%
Cantabria	33.3%	33.3%
Extremadura	39.2%	26.7%
Galicia	57.1%	62.1%
La Rioja	54.9%	33.3%
Madrid	51.8%	54.7%
Murcia	37.8%	26.9%
Navarra	62.5%	52.6%
País vasco	68.8%	100.0%
Valencia	36.9%	41.2%

TABLE 9 Female representation in direction and coordination by ownership.

Ownership	Female direction (%)	Female coordination (%)
Public	48.1%	45.9%
Private	48.5%	49.5%

The analysis of the autonomous community and ownership variables affirms that the presence of female authors is very limited, resulting in a lack of recognition of their achievements and contributions in the content covered in various subjects. Consequently, female cultural references are poorly represented in the materials used to educate students within the Spanish University Network. Therefore, with this low presence of female authorship references, it's not surprising that, as López and Querol (2014) point out, there is a collective belief that women have hardly contributed to social and cultural development. Higher education institutions play a crucial role in debunking this belief. One way to do this would be through gender parity in the bibliography used to educate students.

Once again, similar to the inclusion of female authorship, the inclusion of the gender equality principle in the bibliography content is very low. The analysis of the variables yields results very similar to those shown in the inclusion of female authorship in the bibliographic proposal. Thus, regarding the disciplinary area variable, once again, the Social Sciences area shows the greatest display despite its low inclusion ratio. Similarly, the autonomous community and ownership variables again show very low appearance rates, and it also confirms what was mentioned earlier, asserting that there is no ideological-political pattern.

Ultimately, there is clear underrepresentation of women in the bibliography, as well as a lack of deployment in the content of the gender equality principle. This is a widespread fact, regardless of the didactic areas, the Autonomous Community, or the type of institution taken into account. This non-equitable female representation undoubtedly contributes to perpetuating gender gaps existing in academia, as well as causing a gender bias in the Primary Education stage where women are clearly left behind.

Another aspect analyzed in this research is the direction and coordination of subjects in the Primary Education Degree within the SUN. Considering that, according to data collected in the academic year 2016/2017 by the Ministry of Education and Vocational Training, 41.3% of university teaching staff are women (Ministry of Education and Vocational Training, 2019), it could be asserted that the percentage of female university professors in didactic subjects in the Primary Education Degree in the SUN is higher than the average. In this regard, high percentages of coordination are also observed (46.3% of the total).

Regarding the didactic area variable, it's notable that Physical Education demonstrates the lowest ratio. This could be attributed to the historically low presence of women in this area and the fact that, although by the end of the 20th century women had gained visibility in this context, the sports environment remains predominantly male (Pérez-Ugena, 2020), resulting in a very limited space for women in this field (Piedra et al., 2013).

Considering these results and those presented in the previous section, a significant relationship emerges. There seems to be a connection between the direction of a subject and the proposed bibliography. Specifically, lower female direction corresponds to a lower rate of female authorship in the proposed bibliography. Therefore, the results suggest that having more female directors in subjects could lead to the inclusion of a higher amount of female-authored bibliography in Teaching Guides. In this regard, subject directors might be more conscious about the importance of incorporating a significant amount of female bibliography in the Teaching Guides. This finding is highly relevant, allowing universities, for instance, to take concrete actions to enhance the visibility of women in the education they provide.

To conclude, it's relevant to mention that the absence or lack of representation of women in different aspects of Teaching Guides and, consequently, in university education, has significant repercussions. This positions women as second-class citizens, leading to an undervaluation of their contributions in the academic sphere and society at large. Furthermore, the exclusion of women from the discourse conveyed in educational content, through Teaching Guides, represents an unacceptable lack of rigor (López and Querol, 2014). On the other hand, it transforms Teaching Guides into instruments perpetuating inequalities.

5 Conclusion

The main objective of this study was to determine the presence of women in academic-university education in the Primary Education Degree within the Spanish University Network (SUN) concerning disciplinary context, Autonomous Community (AC), and type of ownership variables. Firstly, the results indicate a clear predominance of male authorship over female authorship in the proposed bibliography within Teaching Guides (TG), regardless of the didactic area, AC, or type of ownership. There are slight variations in the rate of female authorship in some didactic areas (for example, in the Social Sciences area or in Physical Education compared to Language and Literature) or between some communities (Navarra versus La Rioja), but in none of the cases does the rate of female authorship equal that of male authorship. This reflects an evident androcentric view, where women's productions in the academic sphere are invisibilized (Maffía, 2007). This impacts the training of future teachers in the sensitive stage of Primary Education, fostering bias and clear exclusion of women in these contexts. The perpetuation of these gender biases is especially relevant in teaching practices as they reinforce the gender system and, therefore, inequality both in the classroom and in society (Díaz de Greñu and Anguita, 2017).

Additionally, the inclusion of the Gender Equality Principle (GEP) in the proposed bibliographic production within the TG of subjects is minimal based on the obtained results, where no significant rate was found in any case. This is particularly striking in the case of Social Sciences, which, while presenting a slightly higher rate than other didactic areas, remains surprisingly low (1.6%), despite being considered an area of reference in social pattern creation (López and Querol, 2014).

Moreover, the CA variable does not show significant differences. Although Andalucía is the community that most visualizes the GEP in its proposed bibliography, it is still almost non-existent (1.3%). Therefore, there are no clear ideological or geographical patterns regarding the inclusion of the GEP.

The same applies to the ownership variable. In this case, all universities that highlight the GEP in their proposed bibliography are public universities, but the rate obtained (0.5%) is not sufficient to make any generalizations regarding the inclusion of the GEP. However, although the proposed bibliography in the guides yields rather disheartening results in terms of female authorship or the GEP, it's worth mentioning that the results are more positive when analyzing the presence of women in the direction or coordination of didactic subjects in the Primary Education Degree within the SUN.

In view of these results, it's striking that, despite the high rates of female direction and coordination in almost all cases, the analysis of the proposed bibliography in the TG does not show more positive outcomes. Nevertheless, there seems to be a relationship between the rate of direction or coordination of subjects and female presence in the bibliography; that is, a higher female presence in management positions correlates with a higher female presence in the proposed bibliography within the GD of subjects. For instance, consider the case of Language and Literature, where the rate of female authorship in the proposed bibliography was the highest among all analyzed didactic areas (43.1%) and also had the highest rates of direction and coordination (61.8 and 55.6%, respectively). In summary, while the presence of women is quite similar to that of men in management positions of didactic subjects in the Primary Education Degree within the SUN, there is still much progress needed in terms of the visibility of women and gender equality.

Limitations of this study include the inability to access all universities within the spectrum of the Primary Education Degree in the SUN (65 out of 68). Additionally, it would have been interesting to cross-reference the TG data with the participation of stakeholders related to the analyzed gender (department heads and faculty). In this regard, future enriching this study with other qualitative techniques is projected.

On the other hand, the strengths of this work lie in the following aspects. Firstly, the consideration of two variables that have allowed for the analysis of specific aspects and undoubtedly open avenues for new research spaces. Secondly, the study focuses on an extraordinarily necessary topic, namely the analysis of discriminations and, in particular, the discriminatory reality experienced by women. This is accentuated in the academic and scientific spheres, where androcentric construction patterns prevail, as evidenced from both the literature and the data in this study. In conclusion, this study provides solid and valuable results that allow us to continue advancing towards the recognition of women compared to men.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Author contributions

JH-R: Conceptualization, Formal analysis, Methodology, Resources, Supervision, Writing – original draft, Writing – review & editing. PM: Conceptualization, Formal analysis, Methodology, Resources, Writing – original draft, Writing – review & editing. EV: Conceptualization, Formal analysis, Methodology, Resources, Writing – original draft, Writing – review & editing.

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The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Young users of social media: an analysis from a gender perspective

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One of the major challenges for edu-communication research is to analyze the influence of social media on young and adolescent users. This article examines the evaluation of gender inequalities – real and symbolic – in the consumption of social networks such as YouTube and Instagram among young people. Within the framework of a Research & Development & innovation (R&D + *i*) project, it presents a discursive-theoretical analysis of how young users of social media perceive the presence and representation of gender on social media and whether such digital representations can be associated with an empowering gender perspective. This study presents results from 14 focus groups ($N = 83$), composed of students aged 12 to 18, drawn from three Spanish Autonomous Communities (Catalonia, the Balearic Islands and the Basque Country). The results show that gender issues arise in participants' conversations, especially among female participants, who perceive the importance of physical appearance on platforms such as Instagram and TikTok. Female participants feel more pressure in terms of appearance and dress compared to male participants. Among male participants there are more expressions of self-affirmation and more mentions related to fun and social prestige. Both male and female participants express concern about the impact of that pressure on younger girls. The influence of social media on self-image is more evident among female participants, who make frequent mention of the importance of self-esteem in relation to beauty standards and exposure to idealized body images. Notably, there were no comments by male participants that acknowledge any influence of social media on their self-image. The findings are in line with existing research and taken as a whole gives rise to concern as to the gender disparities observed in the use of social media, which do not constitute a picture of female empowerment. This research underlines the importance of promoting a respectful and equitable environment in relation to gender equality within digital spaces. Thus, this study provides support for the need to develop and implement edu-communicative initiatives to foster critical thinking around the influence of social media in this context and the evaluation of the impact of such initiatives in future research.

KEYWORDS

gender, social media, adolescence, youth, edu-communication, empowerment, perception, media literacy

1 Introduction

One of the major challenges for research in edu-communication – a term used in the field of Communication (Orozco, 1997, 2010; Kaplún, 2013) and which UNESCO defined in 2002 as teaching and critical learning about the media – and its dissemination to the wider community is to analyze the influence of social media on young users. Prior research has indicated the significant impact of social media on identity development (Ahn, 2011; Valkenburg and Peter, 2011; boyd, 2014; Baym, 2018; van Eldik et al., 2019). Social media such as YouTube and Instagram are considered privileged spaces for the construction and (self-)representation of youth identity (Cover, 2012; Thumim and Enli, 2012; boyd, 2014), and allow for parasocial relationships with influencers (Rihl and Wegenerpp, 2017; Ferchaud et al., 2018; Rasmussen, 2018), who may act as role models (Westenberg, 2016). As studies in Spain and internationally show, adolescents are now heavy users of social media use, especially YouTube and Instagram (Ríos Hernández et al., 2022; IAB, 2023). Here, however, we are concerned with the extent to which this scenario of hyperconnectivity favors or impedes the (co-)responsibility of the new generations for gender equality in the digital media space, as new moral subjects – active audiences (Ruiz, 2015). That responsibility is linked to the concept of participation that we take up here from the perspective of the complexity and ambivalences that its practice requires (Jenkins and Carpentier, 2013), so as to overcome the magical or cosmetic roles often assigned to that have often been attributed to the participatory activity of audiences (Bergillos, 2019).

As is well known, digital platforms are part of the societal and media discourse that constitutes and shapes collective imaginaries, including representations of gender. Since the 1970s, the incorporation of gender into research approaches has highlighted stereotypical representations of men and women (Bernárdez, 2015) that lead people to internalize inequality in ways that even today continue to hinder the development of fairer societies.

Progress toward equality and women's empowerment has been marked by a number of milestones on a global scale, such as the Fourth World Conference on Women in Beijing in 1995. Within the European Union there has been progress at a political level such as the Charter of Fundamental Rights, the creation of the European Institute for Gender Equality and the issue of the Gender Equality Strategy by the European Commission (García-Ruiz et al., 2014). In fact, gender equality and empowering all women and girls is one of the UN's 17 Sustainable Development Goals and is integral to every facet of inclusive, sustainable development. As stated by UN Women (2023), there is an urgent need to identify and eliminate all forms of discrimination against women and girls, in both the public and the private sphere. In Spain, it is a cause for concern that the progress made in bridging the gender gap since 2006 (IME, 2023) will come under threat between 2021 and 2023 (Statista, 2023), at the same time as the country is seeing growing anti-feminism and denial of gender violence among adolescent males (Boneta-Sádaba et al., 2023).

In the digital space, the rise in hate speech aimed at feminist principles or directly against women, has been noted, as shown by different assessments of the internet and social media (EIU, 2021; Tortajada and Vera, 2021). Several studies show how users of social media tend to coalesce around highly polarized positions driven by partisan differences in the framing of discourse (Demszky et al., 2019). As Diepeveen (2024, p. 5) points out, "over the past ten years, online spaces with content that rejects feminism and gender equality and promotes male supremacy – sometimes termed the "manosphere" (Marwick and Caplan, 2018; Kimeu, 2023) have become increasingly prevalent." Some authors (Medina and Talarn, 2020, pp. 494–495) observe the spread of a neo-liberal feminism among young men and women, "the belief that the acceptance of rigid patterns of an idealized femininity is, in fact, an exercise of free and determined will." Among the risks of social media consumption among young people, the impact of esthetic standards from the world of fashion and the persistence of stereotyped roles are highlighted (Fernández-de-Arroyabe-Olaortua et al., 2018). Nevertheless, there are other more encouraging developments. The notoriety of popular feminism (Banet-Weiser, 2018) seems to have influenced the digital imaginary around the construction of gender, giving rise to more diverse and inclusive representations that partially invalidate postfeminist theses (Caballero-Gálvez et al., 2017; Keller and Ryan, 2018). The opportunities that the consumption of digital sources can offer compared to the use of other media are said to include less divergence in the roles assigned to males and females (Feijoo and García-González, 2017). In Spain, according to the Youth Report (Injuve, 2021), young people have an interest in gender inequality, very possibly in consequence of having been socialized in an environment in which the most actively advocated social issues were associated with feminism (Peña-Fernández et al., 2023).

In order to understand the evidence on whether, how and to what extent social media affect gender norms among adolescents, in 2023 the ODI (Diepeveen, 2024) conducted a targeted review of empirical studies published since 2015, focusing on publications in English, Spanish, French and German on adolescent boys. Included in the review were 51 studies on social media platforms with public-facing content, such as Instagram and YouTube. The evidence was diverse. As Diepeveen (2024) summarizes, many of the quantitative studies explored correlations and tended to assume that the direction of influence went from social media platforms to gender norms and attitudes, rather than vice versa or in both directions. Qualitative studies provided a useful corrective, revealing the many ways in which adolescents use social media and select and produce online content in function of their pre-existing interests and attitudes.

Our article provides qualitative research that captures the subtle and sometimes contradictory comments of adolescents themselves about what they perceive social media to be and, in turn, what it is that social media entrench or undermine.

For all these reasons, it appears to us appropriate to address the discourse of adolescents from a gender perspective, in order to determine whether they take gender differences into account in their assessments of social media such as YouTube and Instagram and whether they make any link between those differences and forms of power and discrimination (EIGE, 2023). The gender perspective is (or should be) understood, consequently, as a consubstantial element of the (trans)media education or literacy of digital generations, in line with the understanding of those terms and the importance attributed to them by various authors (García-Ruiz and Pérez-Escoda, 2019; Balladares-Burgos and Jaramillo-Baquerizo, 2022) and international organizations and initiatives such as Unesco, the Agenda 2030 action plan and Unicef. Spaces for reflection, debate and content creation from a feminist perspective can be created for young girls and adolescent women and their male peers through such media empowerment (Tornay-Marquez, 2019).

2 Gender perspective and transmedia education

Despite the theoretical nuances between their conceptual frameworks, edu-communication and transmedia education or transmedia literacy can be understood as convergent approaches from the perspectives of education and communication, respectively, to the growing interrelation between media, communication and education in different stages of the lives of children, adolescents and young adults. Both theoretical frameworks aim to encourage and facilitate critical reflection and empowerment of users of media, information, and communication technology.

The concept of media literacy has been approached from different perspectives and has evolved as digital and virtual technology has developed. As Ríos Hernández et al. (2022) point out, in today's digital ecosystem audiences have a more active role, generating a relationship of dialog between different media and their users. Thus, Scolari (2018) posits the term transmedia literacy to reflect contemporary reality: such literacy consists not only in critical analysis of content, but also in treating consumers of media as active subjects in the digital world, with increasingly sophisticated interpretative and creative skills.

In relation to the media literacy of young people, we are in agreement with theoretical stances that reject simplistic solutions or hypodermic' processes (Bragg et al., 2011). Zimmerman (2000) expands this holistic approach by emphasizing the positive aspects of human behavior (including identification and capacity building) that accompany "the analysis of the influence of the environment rather than blaming the victims" (Silva and Martínez, 2004, p. 2).

Several formulations have been proposed of the competencies and indicators that make up (trans)media literacy. For example, the dimensions of media competence put forward by Ferrés and Piscitelli (2012): language, technology, processes of interaction, processes of production and dissemination, ideology, and values and esthetics. Similarly, Scolari (2018) posits the following transmedia competencies: production, management, performative, media and technology, narrative and esthetics, risk prevention, and ideologies and ethics.

Our principal interest resides in the competencies that can be seen as making up a journey, since such a journey can bring together the notion of transmedia education – alert to new technological and social realities – with empowerment as a process (Montero, 2003). That is so not only because it is a non-linear model of change (Kabeer, 1999), but also because it is in itself a double process: individual, as the acquisition of greater autonomy, and collective, "with the aim of achieving a fair and egalitarian society, especially in terms of relations between men and women" (Charlier and Caubergs, 2007, p. 6).

Making a link between media literacy and the concept of empowerment raises the issue of the role of men's and women's involvement and participation in the digital environment. In academic works, different studies (Tufecki, 2017; Dussel et al., 2021) discuss the contradictions of the new conditions of popular participation in the digital world. While some authors observe that more gender differences have been found in the offline world, in the "real" life of young people (Renau et al., 2012), others continue to focus on the risks presented by beauty standards and the persistence of stereotypical female roles (Fernández-de-Arroyabe-Olaortua et al., 2018; Santos et al., 2022) and stereotypical gender roles in general (Ringrose et al., 2013; Van Oosten et al., 2017). In other words, there may be inequalities in media access and representation that reflect differences in digital participation. We want to determine whether any such inequalities are found among adolescents and young adults: a particularly important stage in the journey of edu-communication and transmedia literacy development.

Previous studies on social media and young people point out that, beyond the interests of each individual, the self-perception of the skills and competencies needed to manage cyberspace is different between males and females, with males more positive (Siddiq and Scherer, 2019; Estanyol et al., 2023). However, there are also studies that point to the influence of sexist stereotypes that can sentence one of the genders to a position of inequality in the "onlife reality", a term used by Floridi (2015, p. 1) to refer to a hyperconnected reality in which online and offline realities are in practice inseparable [cited by Serrate-González et al. (2023)].

Specifically, we are interested in the perceptions conveyed by male and female participants of their experience on YouTube and Instagram around gender identity in the representations and discourses in these media. To that end, our research questions can be summarized as two questions:

> *RQ*1. How do young users of social media such as YouTube and Instagram of either sex see the presence and representation of gender on social media?
>
> *RQ*2. Is it possible to say that the way they see gender on social media is empowering for them?

3 Materials and methods

3.1 Participants

An exploratory qualitative study was carried out using focus groups (FG) with adolescents aged 12 to 18 in the Autonomous Communities of Catalonia, the Basque Country and the Balearic Islands in Spain according to a criterion of convenience, in light of the location of the three universities participating in the project. The selection of the sample responds to age criteria, to cover the three stages of adolescence (UNICEF, 2024): early or initial adolescence (10–13 years), middle adolescence (14–16) and late or post-adolescence (17 up to as late as 21 years of age), in three geographic areas, and to a criterion of convenience in the selection of the three Autonomous Communities, corresponding in which the three participating universities are located (anonymized). The sample was selected with the help of the educational settings that had participated in a previous questionnaire (Aran-Ramspott et al., 2022) using two filter criteria:

- age of the participants: three categories according to stage of education, first year of Compulsory Secondary Education (approximately 12 years of age); fourth year of Compulsory Secondary Education (15–16 years old) and first year university students (18–20 years old) following Communication and Education courses most closely related to Media literacy at each of the three participating universities.

- gender balance.

Finally, in late 2021 and early 2022, 14 FGs were held, involving a total of to 76 students (37 male, 39 female): five FGs of first year of Compulsory Secondary Education, five FGs of fourth year of Compulsory Secondary Education and four FGs of first year university students.

3.1.1 Procedure

The focus groups were designed with semi-structured prepared questions and topics and were conducted and audio-recorded in the settings with the consent of the parents or guardians of participants under 18 and of the students themselves. The open-ended script is based on the prior literature review (Buckingham, 2008; Ferrés and Piscitelli, 2012; boyd, 2014; Gill, 2017; Aran-Ramspott et al., 2018, 2022; Scolari, 2018), the method (Barbour, 2007) and the objectives of the study. The script, which was intended to be flexible as this was an exploratory analysis, initially canvassed general categories related to the participants' views of social media, their preferences and motives for consuming social media; types of functions and uses made; characteristics of preferred YouTubers and Instagrammers; and specifically, toward the participants' identification and perception of (trans)media competencies in Ideology and Ethics [Aran-Ramspott et al., 2024; based mainly on Ferrés and Piscitelli (2012) and Scolari (2018)]. These competencies can be summarized as the ability to detect and critically analyze representations of stereotypes related to gender, or sexual and gender orientation, among other things, and the ethical and social implications related to processes of emotional identification, manipulation or invisibility of certain groups, including women. Gill (2017) particularly allows us to review notions seen in contemporary culture as "postfeminism" which currently operates as a kind of gender neoliberalism ("cultivation of the "right" dispositions to survive in neoliberal society: confidence, resilience and self-confidence").

The open-ended script design facilitated the coding of categories; new categories emerged from participants' comments. First, the literal comments (in sentences or phrases) related to the priority dimensions of the script were independently analyzed by each researcher. Second, they were cross-checked within the team to refine and validate the coding in successive sessions (Bryman, 2012), taking into account their nature and importance, and in light of their frequency, occurrence and repetition. In order to gather data on participants' gender perspectives, the relevant interventions were taken to be those in which an informant reflected their personal gender perspective in the discourse in relation to social media. We analyzed co-occurrence with the type of social media, content, reasons for use, references to influencers, (trans)media competence and characteristics of the remarks by age and gender (in function of how each participant introduced themselves). The location variable proved not to be significant in the focus groups. Coding shows the FG number _age_gender (F: Female/M: Male, the numbers show order of intervention where there is more than one participant of a given gender).

The research was approved by the Ethics Committee of University Ramón LLull University, Barcelona, which confirmed that participation was voluntary and anonymous, the confidentiality of the participants' data, the collection of permissions and informed consents. This research was overseen and monitored by the public body that financed the research project.

4 Results

The most relevant results directly related to the research questions for the study are presented below. First, we show distribution by gender and age of the total number of comments by participants in the FGs in relation to gender perspective in their discourse in relation to social media (Figure 1), so as to show the origin of each remark. Figure 2 shows principal co-occurrences of the gender perspective in the discourse in relation to the dimensions set out in the materials and method section.

Explicit mentions of gender perspective have been broken down by gender of the participants. As can be seen in Figure 1, female participants made almost 70% of the total number of comments. By age, the gender perspective is mentioned progressively more at older ages: 27.7% among 12–13 year-old participants (1st year of Compulsory Secondary Education), 33.8% in 15–16 year-olds (4th year of Compulsory Secondary Education) and 38% among 18–19 year-olds (first-year university students).

Figure 2 shows not only how female participants comment materially more on the gender perspective, but also how the information from the focus groups identifies the dimensions that students consider more important. Thus, dimensions related to the type of social media, the type of content, the definition of influencer, (trans)media skills and age are more salient in participants' discourse. Further detail is provided in the following paragraphs.

4.1 Participants' perception of gender perspective by type of social media

The analysis of the perceptions of adolescents and young people of gender on social media shows that most comments concern Instagram (23%), TikTok (20%), and YouTube (17%). TikTok was spontaneously mentioned by participants. In terms of gender, females make more mentions than males, and refer to Instagram, TikTok and YouTube in descending order.

But what is the discourse of young people as revealed by these comments about social media? In relation to Instagram, TikTok and YouTube, the significance attributed to personal appearance is what is most commented on. The obsession with physical appearance is expressed in terms of self-representation, whereby appearance contributes to identity in terms of approximation to esthetic ideals and beauty standards:

> "Lots of girls who go on TikTok may be affected by seeing influencers who look perfect, at least at first, and then they may look at other bodies and that may lower their self-esteem" (G9_12–13_F).

The same is true of the sexualization of physical appearance, which participants refer to, directly or indirectly, in relation to the bodies of girls and women. Instagram is perceived to be somewhere where females can more readily take a leading role.

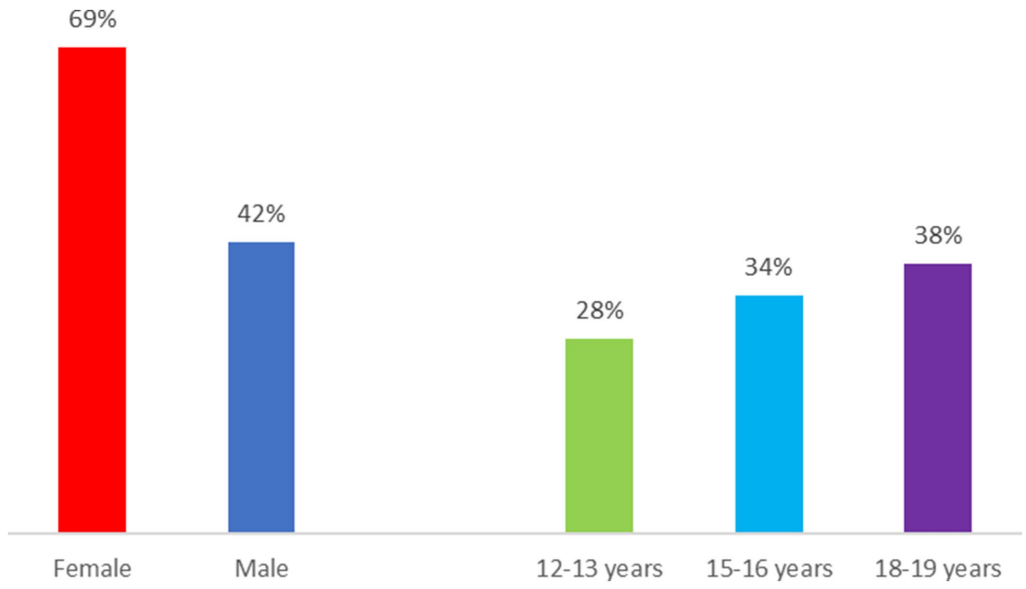

FIGURE 1
Distribution by gender and age of comments concerning gender perspective.

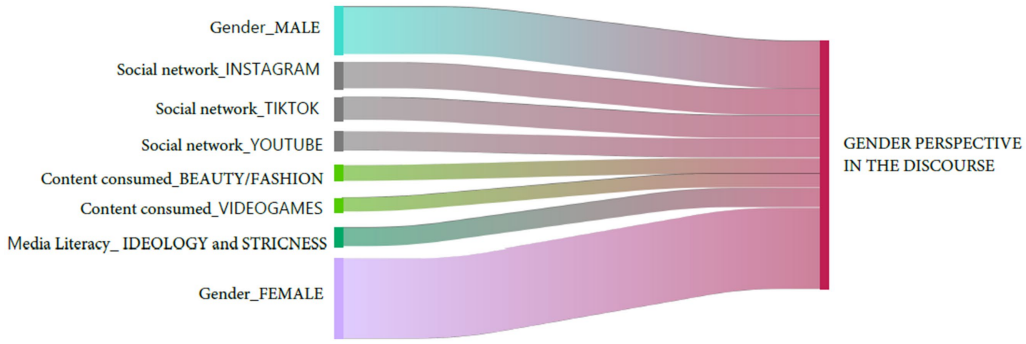

FIGURE 2
Principal co-occurrences of the gender perspective by dimension (Sankey Diagram).

> "Boys are more popular on YouTube and on Instagram it's women, perhaps girls' content seems more attractive, not only because it is more or less sexualized, which depends, but because on Instagram you have to be really careful, you have to know what photo to take, how, what lighting, see how you tell the story, whether you post it this way or that way, and girls take greater care over those details, and so they are more popular" (G14_15–16_F).

Females make almost twice as many comments about the importance of body image as males (21 and 13 quotes, respectively):

> "I think as girls we expose ourselves more" (G4_18–19_F).

In turn, they are more affected by beauty standards, including the risk of developing an eating disorder.

"[Referring to the influencer Marina Yers]… but to say that after eating, being sick is good for you… That can lead to illness in 12-year-old girls" (G2_15–16_F).

On the other hand, there are female participants who demand parity with males in relation to the display of the body on the social media, with comments that identify contradictions inherent to post-feminist discourses (Gill, 2017), by presenting as a personal choice what others might see as the internalization of objectification or sexual neoliberalism (de Miguel, 2015).

> "TikTok also does a lot of harm, for example if any of the three of us posts a video of us wearing a top or bikini, TikTok unpublishes it, it does not let us post it, but the guys can post videos in their underwear or shirtless, and TikTok's algorithm does not say anything to them. We are super censored (G10_15–16_F).

- -And on Instagram even more so (G10_15–16_M).
- No (G10_15–16_F2).
- More on Instagram than TikTok (G10_15–16_M).

- I posted a video in trackies and T-shirt and they censored it" (G10_15–16_ F3).

YouTube is seen as a social media platform on which people can find less invasive spaces and activities supportive of the manifest need to improve self-esteem and build a more empowered attitude. On two separate occasions, 12-year-old girls explicitly mention an empowering movement, "Love in positive" and, from a feminist perspective, "Me too."

> "I have watched a YouTuber who I think is a good influence, there are a lot of people now who say they feel insecure because of their body, but this influencer was about "Love in positive," love yourself as you are, and I think that a very good thing about social media is people like that who are trying to boost your self-esteem, make you feel confident" (G11_12–13_F).

Self-confidence, related to satisfaction with a person's own body, is shown on social media through the control of image, posture, and esthetics. Young people subject themselves to those mechanisms depending on what is trending. No comments were collected, however, in which male participants acknowledge the influence of social media on their image. In contrast to females, their attitude appears distanced or rebellious.

> "I like to be happy, and fashion is the last thing that interests me, for example, if everyone is wearing Nike, I'll still wear Adidas (…) I'm fine with my 80s hairstyle" (G10_15–16_M).

4.2 Participants' perception of gender perspective by type of content consumed

Generally speaking, the discourse of both male and female participants shows that the content consumed is highly gender specific.

"Do boys and girls follow the same things at this age? (Moderator 1, G1_12–13).

- No (G1_12–13_F&M).
- Some things Yes and some things No (G1_12–13_F).
- Sometimes maybe, what we have most in common is series, films…(G1_12–13_F2).
- Him and me do not share any content, he's more into sports and I'm more into languages, travel…" (G1_12–13_F).

Comments about entertainment in terms of watching series and films come equally from male and female participants. There are differences in which types of content are most frequently mentioned: Beauty/fashion and Videogames. Dance is only commented on by male participants ("usually the dances on TikTok are by girls"), in contrast to current affairs. This confirms earlier results on gender specific preferences for content types (Fernández-de-Arroyabe-Olaortua et al., 2018; García-Jiménez et al., 2021), and about motivation, where boys and young men express a preference for entertainment (Lozano-Blasco et al., 2023). In this study, entertainment and strengthening friendships are positively rated by both genders. For example:

> "(On Youtube), but I think my friends are more on Instagram, they make stories and I see what happened to them during the day, we talk and you can also go to the entertainment area…" (G11_12–13_M).

4.3 Participants' perception of gender perspective by influencer

Basque streamer Ibai Llanos is most recognized for his positivity – acknowledging his personal and financial interests – and for his friendly personality. Consequently, he is the influencer who has the most followers, both male and female.

> "And we are talking about YouTube, Instagram and TikTok, which are, like, social media, at the end of the day kids are searching for tutorials on how to play Minecraft, they are searching Ibai, because a lot of boys, and some girls of course, are obsessed with Ibai. I see Ibai as everything, super-responsible and very incisive. There are many others who aren't, but Ibai just is. At the end of the day, if you upload content, you are going to influence those children through that content" (G6_18–19_M).

The participants associate the term influencer more with women who are successful on social media (Dulceida and Paula Gonu, two Catalan bloggers seen as celebrities, clearly figure in that role in the comments). The association between girl or woman and influencer is much more apparent as perceived by the participants, and is attributed to fame (celebrities, It Girls) and to so-called posing, which does not seem to apply to boys or young men.

> "There are also influencers, boys, (…) but I have not seen a boy say he is an influencer, or that he uploads that type of content" (G6_18–19_F).

Some girls, especially older girls, explicitly express pleasure in displaying themselves, in line with the style of some influencers. For instance:

> "I really like influencers, seeing how they dress, to keep up to date with fashion and I also really like to display my life, especially for the people around me to see what I do, I like them knowing about it" (G4_18–19_F).

At the opposite end of the spectrum to popular influencers, there is universal criticism of Naim Darrechi, a TikToker from Mallorca, known for his controversial sexist remarks, which have even led him to be accused of seeking to justify rape and sexual abuse.

> "He is a sexist and has done a lot of bad shit" (G7_15–16_ M).

> "There are people who follow him and the worst thing is that he's proud of what he says and even has a lot of followers" (G2_15–16_F).

4.4 Participants' perception of gender perspective by transmedia competence

The vast majority of comments linking the gender perspective to transmedia competencies (Scolari, 2018) refer to the dimension of Ideology and Rigorousness, which by definition includes stereotyping, emotional identification mechanisms and recognition of manipulation (e.g., fakes). Comments, especially from female participants, reflect participants' awareness of the need to (self-)regulate their media diet and of the risk of becoming addicted, even though a number of participants, particularly younger participants, explicitly state that they have been given cybersafety training at school.

> "Right, I think it's the typical thing that you say to everyone "Instagram is bad, do not be on it so much", but I know that there are things that you cannot watch and I do not watch them, but my parents aren't on my case the whole time" (G1_12–13_F).

The rest of the (trans)media competencies identifiable in the discourse of the young participants from a gender perspective were only commented on by the female participants. In descending order, comments fall under Language and Esthetics, Technology, and Production and Dissemination, where female participants comment on aspects such as the algorithm used.

> "It's that TikTok gets you addicted, you say you are going to watch it for 5 min and then a whole day goes by (…) with Instagram it's harder to get addicted, because on TikTok you scroll down and more and more videos come up, and on Instagram there's a moment when there's nothing else to see" (G1_12–13_F2).

4.5 Participants' perception of gender perspective by age

In the results, the gender perspective also appears to be related to age, expressed as a concern for children.

> "There are a lot of 11 and 12-year-old girls (…) most of them are girls (…) who join a fan club, whatever. And they do not stop to think what nonsense the people are talking. And I think so much freedom has been given to those content creators that they think they have the right to publish whatever they want, without thinking that their fame is due to people who aren't mature enough to think and weigh opinions, and to see what's right (…) your followers are at an age when if you tell them something, they'll believe you, it's like you are indoctrinating them, they are so young that they'll believe anything you say" (G10_15–16_M).

5 Discussion and conclusions

The presence and use of social media by young people requires a debate in wider society and the academic community around the opportunities and risks that social media present in the construction of young people's identities. Of particular importance is the analysis of the gender perspective that emerges in the context of digital empowerment, since it reflects the expression by young people of differing levels of awareness of their responsibility for progress toward a just society, free (among other things) of gender-based prejudice and inequality.

In relation to the first research question, whether young people of both sexes consider gender in their assessments of social media – such as YouTube and Instagram -, the results show that it is principally females who refer to gender in their comments. They associate gender with the importance of image and appearances on social media, principally on Instagram and TikTok. Our results are partially consistent with a focus group study with 15 to 19-year-old teenagers in Finland ($N = 35$) and provided understanding of the important role of commercial social media in young people's consumption styles. While in the Finnish study boys appeared more materialistic and interested in luxury and sustainable consumption seemed to be a more "girly" thing (Wilska et al., 2023), in our research boys do not acknowledge the influence of social media on their image. Female participants perceive that they are more exposed and under greater pressure than boys and young men, a perception also reflected in the comments of male participants. They also associate that pressure mostly with fashion and, to a lesser extent, with trends in consumer or capitalist society. Among male participants, there are more expressions of self-assertion and self-judgment. Both genders express concern about the effects of this body-image pressure on young girls. There is no mention of other possible gender identities beyond male and female (non-binary, gender-fluid…).

The obsession with image as a way of making visible the self is part of a generational culture of appearance and public approval (Guardiola, 2018), which is acknowledged with critical reflection by both male and female participants. Sexualization is associated with certain influencers.

In relation to the second research question, whether the perception of male and female social media users can be seen as empowering for them, most of the positive comments from both genders in discourse concerning YouTube and Instagram refer to entertainment and the strengthening of friendships and the sense of belonging to a peer group. This feeling of belonging, which is reinforced by influencers, can be recognized in a small-scale qualitative research work in Germany: adolescents are often particularly attracted to influencers they believe themselves to have things in common with, such as around gender/sex, hobbies, and geographical location [Bamberger et al., 2022, cited in Pérez-Torres et al. (2018), Diepeveen (2024)].

The results allow us to identify comments that include some sensitizing concepts (Gill, 2017) articulated around the construction of gender on social media, such as comments on the "Me too" movement. However, as noted, the importance of image is mentioned to a greater extent by female participants and in relation to material on social media directed at girls and women, while male participants particularly mention having fun and success or social status. Explicit references to self-esteem are also more common among female

participants, especially among young girls, in the form of concern about low self-esteem due to the influence of ideal bodies, as often displayed by influencers. In fact, there are no comments from male participants that acknowledge the influence of social media on their self-image, rather the reverse. This may suggest less external oversight and greater self-confidence than among female participants. The spontaneous expressions of such views may reflect the internalization of personal empowerment among male participants.

On the other hand, some of the youngest girls (aged 13–14) demand fairer treatment on social media and that demand is based on the rejection of censorship of their bodies by social media platforms. As Caballero-Gálvez et al. (2017) point out, we can reconcile the apparent paradox of freedom of choice and the forcefully expressed demands of young girls for the recognition of an (idealized) image rather than gender equality. In relation to the characteristics of postfeminist discourse (Gill, 2017), we saw this emphasis on bodily self-monitoring, especially among female participants, related to the management of the individual's own image and perceived sexualization in some representations.

The contribution of this study is to attend to the voices of adolescents and young people, providing them with a platform to express their views freely in focus groups. This approach offers valuable insights into their perceptions and experiences with social media and gender. Focusing on young people's perception of gender issues on social media is a critical additional layer in the discussion around the potential consequences for young adults and adolescents of content, use and engagement in social media. For adolescents, social media constitute a new arena in which they can express themselves and explore, but they are also to a significant forum for the dissemination of certain beauty standards that may represent a risk to adolescents in relation to their body image (Arab and Díaz, 2015; Segovia Aguilar et al., 2016; Malo-Cerrato et al., 2018; Shah et al., 2019). One can find on social media content related to the human body that may influence adolescents and cause them to obsess about their appearance and the photos that they post (Goodyear, 2020). In that sense, the risk resides in interiorization of such messages, especially by girls, which may have significant repercussions on their body image and mental health (Fredrickson and Roberts, 1997; Karsay et al., 2018). Given differences in gender roles and societal pressure, there is a need to display an image that society considers acceptable. In that sense, social media and mass communication media play a fundamental role in objectification, and may have a significant impact on self-esteem, self-image, body positivity and psychological wellbeing (Aydm and San, 2011; Shah et al., 2019). In short, this research shows how the digital empowerment of young people is constructed through the dominant paradigm of image in its presence and representation on social media.

However, from a gender perspective, female participants perceive the negative dimension of this (false) empowerment more than males. Across social media platforms, as also noted by Scharrer et al. (2023), our results show that YouTube is perceived to give more equal prominence to the genders and to have more balanced activities and content suitable for each gender relative to Instagram and Tiktok. In our results, the impression predominates that YouTube is where males contribute more content. On Instagram, on the other hand, the importance of body image is clearly recognized by young people, especially females, in consequence of the centrality of (self-)image on Instagram, which in turn reflects the logic of today's society of (hyper) visibility (Imbert, 2004).

Finally, we have identified tensions that could even be seen as contradictions in the perceptions of young users of social media, in relation to life offline. The blurring of the boundaries between intimacy and extimacy may be a cause for more hope than might appear: Sabich and Steinberg (2017) believe that, although the discourse of YouTubers is trapped in a consumer culture, those online spaces for interaction allow the construction of symbolic bonds of belonging, that are particularly propitious for young people.

"The evidence indicates there is not a simple cause and effect relationship between social media use and (harmful) gender attitudes" (Diepeveen, 2024, p. 9). Part of the context for our research is the fact that the relationship between use of social media and gender equality is not simple and involves at least three different elements: personal experience and social context, i.e., individual perceptions; platform design, and online experience, especially the types of relationship built with social media (Diepeveen, 2024). Our study highlights different aspects in relation to those different elements, based on the perceptions of our young participants. The limitations of our study include that the sample was drawn from a specific geographic area and culture in Spain. Some prior research in Spain (e.g., García-Jiménez et al., 2021; Herrero-Curiel and La-Rosa, 2022; Serrate-González et al., 2023) studied the behavior of adolescents on social media in general, "but so far as we have been able to confirm there has been no research looking at their preferences in relation to the content generated specifically by their favorite influencers" (Martín-Cárdaba et al., 2024, p. 83). Another limitation is that the study coincided with the Covid-19 pandemic. This exceptionality meant that the importance of social media was increasing (Wilska et al., 2023).

The results of our research are consistent with other works in expressing concern about gender differences that go beyond differences in degree of participation and topics engaged with on social media. Our data align with findings in Europe [EU Kids online 2020 in Smahel et al. (2020)] that show that the digital gender divide does not reflect a significant difference among European youth in terms of access. It rather betokens prevalent differences in the modalities of use and consequently in the skills deployed (Masanet et al., 2021). Processes of socialization reflect the structural inequality fostered by, among other agents, the media system itself. That seems to be a persisting historical issue rather than a contemporary anomaly and entails a so-called cognitive cost for the most disadvantaged, including women (Benesch, 2012).

From a developmental perspective, here we take up Kabeer's (1999) idea of trajectory, describing a notion of transmedia education that engages with new technologies and social realities, with empowerment as an individual process leading to greater autonomy and capacity to make life choices; and as a collective process of the development of a group's capacity to drive social change so as to create a just, fair society, particularly in terms of relationships between men and women (Charlier and Caubergs, 2007, p. 6). In other words, empowerment here means achieving not power over but power to, power with and power within, as described by those authors (Charlier and Caubergs, 2007, p. 10).

The fact that the study's sample was drawn from three Autonomous Communities increases the diversity of perspectives and enriches the data collected. While it limits the extent to which the findings can be generalized to other cultural or geographical contexts, it opens avenues for future research.

Despite the limitations of extrapolating qualitative data to adolescents and young people in Spain more widely, this study allows us to hear the participants and so develop greater understanding of digital empowerment from an edu-communication and gender

perspective. The interpretation of the results points to the need for transmedia education that promotes reflection and critical production among adolescents and young people, specifically from the perspective of their as-yet only partially constructed identities that pays greater heed to the importance of aspects of their lives beyond conventional ideas of physical beauty. In that area, users need to become more aware of the influence of social media in the construction of notions of gender and to develop their capacity to engage critically with such notions in both formal and informal settings. That will enable them to engage with postfeminist perspectives in the context of the dominant values of today's neoliberal society (Medina, 2021), particularly as concerns the internalization of rigid beauty standards in relation to the bodies of women and girls especially, through (for example) programs to make people more aware of their own stereotyped beliefs around gender (Panerati et al., 2023). The journey is for both boys and girls, men and women, toward greater empowerment of women and girls and a respectful, fair system that embraces diversity.

Although this study acknowledges gender disparities in social media, to delve deeply into the potential causes or solutions would strengthen the impact of future works. The evolving nature of social media platforms and research with "big data" in the field of perceptions and sexist content is still limited, not only because of the role of algorithms, but also because of aspects such as pseudonymization (Lozano-Blasco et al., 2023) or because of adolescents' own search for an ideal representation of themselves (Stockdale and Coyne, 2020). Moreover, adding a comparative analysis with older age groups or with data from other countries could offer a broader perspective on how these perceptions might vary across different demographics or cultural contexts.

Based on our findings, we provide specific considerations for educators, policymakers, and social media platforms on how to address the identified issues. Furthermore, future works should develop, implement and evaluate edu-communicative and media education initiatives to develop critical reflection on the influence of social media, given that the results of this study underline the importance of a respectful and equitable environment in relation to gender equality in digital spaces, which helps to implement educational measures for working with esthetic and erotic body image (Pires et al., 2021), to develop self-awareness and self-regulation (Mirgos et al., 2023) and to deepen protective factors against the risks online (Ramos-Soler et al., 2018). Along those lines, the sessions focused on the responsible critical use of the Internet and digital devices for adolescents aged 13–15 developed by Cuervo et al. (2022a), and aged 12–17 by Medrano et al. (2019) and Cuervo et al. (2022b); the classes put forward by Mirgos et al. (2023) around hate speech, privacy, digital intoxication, and perceived values on social media; the digital interactive tool to develop and assess the media competence of European students aged 14–18 (Ferrés et al., 2022); the worksheets in Scolari (2018); and the use of Service Learning proposed by Villacampa et al. (2020) for collaboration to eradicate gender violence through online behaviors deserve special attention. Moreover, we consider that in this process both teachers and families should be involved together with students, to educate in the ethical and responsible use of social networks, for example using the guides developed by Martínez Ten (2021).

As discussed above, future works should address the role of digital platforms in highlighting stereotypical representations of men and women (Bernárdez, 2015) could lead people to internalize inequality, due that evolving nature of social media platforms and research with "big data" in the field of perceptions and sexist content is still limited.

Policy makers should consider the importance of promoting a respectful and equitable environment in relation to gender equality within digital spaces, in order to provide support for the need to develop and implement edu-communicative initiatives to foster critical thinking around the influence of social media in this context and the evaluation of the impact of such initiatives in future research.

Data availability statement

The anonymised raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Ethics statement

The studies involving humans were approved by the Research Ethics Committee of the project's coordinating University (Blanquerna School of Communication and International Relations, Ramon Llull University, Barcelona, Spain). The studies were conducted in accordance with laws applying throughout Spain and locally to the research institutions and the requirements of those institutions. Written informed consent for participation in this study was provided by the participants and/or their legal guardians/next of kin. Online written and paper written informed consent was obtained from the individual(s) and/or participants' legal guardians/next of kin for the publication of any potentially identifiable data included in this article.

Author contributions

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Conflict of interest

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Are surveys blind to sexual and gender diversity? Reflections and an open proposal

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This article presents an open proposal on how to include questions that capture different gender identities and sexual orientations in quantitative research. Our theoretical framework is feminist theory and the evolution of feminist debates on identity categories, where the introduction of an intersectional gender perspective has been an important paradigm shift. We have compiled different previous categorization proposals and consider the consequences of not including categories that reflect identity diversity in surveys in order to finally offer our proposal for operationalizing identities. The proposal aims to ensure comparability in longitudinal studies and, at the same time, to incorporate new identity frameworks and an intersectional perspective in quantitative methodology research.

KEYWORDS

intersectionality, gender, sexualities, quantitative methodology, identities, indicators

1 Introduction

This article is based on the following research question: Is it possible to include new sociodemographic questions that capture diverse gender identities whilst maintaining the comparability of longitudinal studies? The initial response to this question was yes, however, another question immediately arose: How can this be done to not only capture the diversity of identities but also the feminist epistemological disparity in this area? Here the response was more complex. We have taken as a starting point the feminist debate on gender categories, sexualities and intersectionality. We consider that the incorporation of an intersectional gender perspective is an important milestone in feminist epistemology which involves taking on pending methodological challenges as, in most cases, the decision to include diversity and break with androcentrism has been made through qualitative methodologies. Nonetheless, quantitative methodology also needs to take on the challenge to measure, explain and consider identity diversity. The article goes on to examine the different ways of operationalizing sex and gender variables in surveys. We also consider the consequences of not including new variables and categories in surveys and for this purpose we focus on the European Values Study. Finally, we present our proposal of categories; a proposal that is open to scrutiny and debate.

2 Feminist debates on categories: gender, sexuality and intersectionality

The categories and concepts used in the social sciences and in everyday life are not mere neutral, natural and immutable definitions that reflect reality as if it were a mirror, but social

and historical constructs. This implies that such constructs have developed and evolved over time and hold a particular meaning in a specific historical place and time (Royo, 2012).[1] In the field of gender and sexualities, the last decades have seen the questioning of relevant concepts such as sex, gender or women, and the popularization and proliferation of new categories, for example, intersexual, cisgender, heteronormativity, transgender, transexual, *queer,* non-binary. This has shaken the foundations of gender binarism and has turned the very subject of feminism into the object of debate, shaping one of the most controversial debates in feminist theory and praxis in the last few decades. This section provides a brief contextualization in order to understand the principal categories related to gender and sexualities and the debates around them.

The notion of gender has challenged biological determinism by revealing that feminine and masculine are not natural or biological facts but social constructs (Cobo, 1995). Although the development of gender as a concept is relatively recent, the idea that inequality between women and men does not come from nature has a long and hidden history, and refers to feminist theory (León, 2015). To name a few examples, we can turn to Poulain de la Barre who, as early as the 17th century, considered female inferiority a prejudice "as old as the world" (Poulain de la Barre, 1984, p. 9); to the enlightened Mary Wollstonecraft, who rejected the idea that sexual difference is arbitrary and would not occur "if women were not oppressed from the cradle" (Wollstonecraft, 2005, p. 313); to John Stuart Mill, who, similar to Wollstonecraft, asserted that the alleged "nature of women is an eminently artificial thing" (Mill, 2001, p. 171); and, of course, to the existentialist Simone de Beauvoir, and her paradigmatic maxim:

> One is not born, but rather becomes, a woman. No biological, physic or economic destination defines the figure that the human female takes on in society; it is civilization as a whole that elaborates this intermediary product between the male and the eunuch that is called feminine (De Beauvoir, 1972, p. 13).

But one would have to wait for the "second wave" of feminism – in the second half of the 20th century – in order for its protagonist, radical feminism, to systematize and diffuse the concept of gender, which Millet understands as "personality structure in terms of sexual category" (Millet, 2000, p. 29).[2] Thus, the notion of gender, that would later be used in United Nation conventions and in the institutional sphere, links feminist theory to the division of power and to the patriarchy, fundamental aspects of radical feminism (Oliva, 2005). The concept of gender arose in opposition to sex within a framework of binary opposition. It can be defined as a combination of practices, beliefs, representations and social norms that emerged from members of a human group based on the symbolization of the anatomical difference between women and men, whilst sex alludes to the anatomical and physiological characteristics that differentiate the human female from the human male (León, 2015).[3]

Over the last decades, the concept of gender has been the focus of intense debate (Oliva, 2005). Since the 1970s, Black and Chicana feminist voices from the United States (Combahee River Collective, 1981; Hooks, 1981; Moraga and Andalzúa, 1981; Davis, 1983; Andalzúa, 1987; Hill Collins, 1990) have rejected the unambiguous use of the female category and the construction of the female norm "based on the experience of white, heterosexual, middle-class, Christian women" (La Barbera, 2016, p. 108). Awareness of the limitations of using gender as a sole analytical category has led to a broad consensus on the need to adopt an intersectional approach in feminist analysis (Nash, 2010, cited in Gandarias, 2017, p. 74), and intersectionality (Crenshaw, 1989) has become a mark of identity of the third and fourth waves of feminism (Silvestre et al., 2021). "Intersectionality is a method, a disposition, a heuristic and analytical tool" (Carbado et al., 2013, p. 303); a way of understanding and analyzing the complexity of the world, people and human experiences, that allows us to comprehend that social and political events, and one's own subjectivity, are shaped by many factors or categories in diverse and mutually influencing ways (Hill Collins and Bilge, 2016), and impact an individual's life and identity in ways that exceed the sum of its parts (Severs et al., 2017). In order to understand the complexity of relationships, social problems, people and the notion of identity itself, Platero proposes the image of a "tangled mess" (2013: 45) that provides us with a "multifaceted gaze." This perspective allows us to appreciate the intersectional nature of our lived experiences and identify hidden experiences of subordination or privilege in a specific sociohistorical context (Platero, 2012).

Similarly, we can also refer to theoretical developments that, rather than considering sex as something biologically determined and gender as something that is culturally acquired, affirm that both are socially constructed (Giddens, 2002, p. 158).[4] From this perspective, *sexuality* emerges as a social and historical construction that constitutes a new field of study (Maquieira, 2001, pp. 173, 177). Rubin (1989) is one of the classical theorists that promotes this line of thought and argues that a politics of sexuality independent of a politics

1 As Platero notes, "our concepts of sex, sexuality and identity are constructed with many layers of history, geography, political relations, economic relations, etc." (2013: 52).

2 The term "gender" was coined by John Money (New Zealand doctor and psychologist) in 1955 in the context of his research on hermaphroditism, to designate modes of behaviour, expression and movement as well as play and conversation preferences that characterised masculine and feminine identities (Puleo, 2008, p. 15).

3 Gender Studies introduced by the North American academy and the term "gender" were not without their critics who highlighted that this term blurred the activist nature and the social transformation of the "demonised" term "feminism" (Rodríguez Magda, 2015, pp. 25, 32).

4 According to Laqueur (1994, cited in León, 2015), sex is a contextual construction – inseparable from the discursive medium – of the 18th century, when sexual differences between men and women were determined according to observable biological distinctions (previously it was thought that women had the same genitals as men inside their bodies).

of gender is essential.[5] According to Rubin there is "a hierarchical system of sexual value" (1989, 136) in modern Western societies that hierarchically classifies the following categories: monogamous heterosexual men and women, bound by a monogamous marriage with children; unmarried monogamous heterosexual men and women, with or without offspring, followed by most other heterosexuals; gays and lesbians in stable relationships, promiscuous gays and lesbians and, finally, the most despised sexual castes that includes, among others, transgender people, fetishists, sadomasochists or prostitutes. For Momoitio (2019), the idea that underpins this erotic pyramid is still current and can be summarized as "there are sexual-affective relationships that are more valued than others" (2019: 55),[6] whilst Platero (2012, p. 18) points out that "sexualities stigmatized as "abject" or "belonging to the margins" or "dissident" (…) are exactly those that help us to understand how power and privilege work in all sexualities and in all individuals."

Theorists such as Rivera Garretas (1994, p. 168) have highlighted that the concept of gender – and specifically the emphasis on the relational dimension of femininity and masculinity – is primarily rooted in heterosexual sexuality. "Lesbian feminism emerges expressly as a challenge to the gender category, as a critique to the essentialist definitions that speak of women from a heterosexual experience"[7] (Álvarez, 2001, p. 275) and it rejects compulsory heterosexuality as a political institution (Rich, 1999; Wittig, 2009). Rich (1999) theorizes "the lesbian existence" in history and "the lesbian continuum," a host of experiences that shape a sense of feminine homosexuality throughout a woman's life (Rich, 1999), while Wittig (2009) affirms that the heterosexual norm oppresses by rejecting all discourse that escapes that logic. She sustains that "lesbians are not women," as women "only have meaning in heterosexual systems of thought and heterosexual economic systems" (Wittig, 2009, p. 143), thus advocating for "a political transformation of concepts" (Wittig, 2009, p. 141).[8]

Within the framework of radical anti-essentialism, queer theory proposes a complete break from identity categories and questions everything that hegemonic narratives consider valid, true and immutable. This perspective interrogates traditional categories of sex, gender and sexuality and assumes that, among other things, the term *queer* can not only be applied to lesbian women and gay men, but it also encompasses bisexual, transexual and intersexual individuals, even heterosexuals whose practices transgress normative models (Jackson and Scott, 2010, cited in Suarez, 2019).

Butler (1990), well known for their contributions to queer theory, describes gender as a *parody* and defends the inclusion of all discourses on sex (*ironic games*) to destabilize gender. For Butler (2022, p. 15), "performativity must not be understood as a singular or deliberate act, but rather as the reiterative practice by which discourse produces the effects that it names." For Guerra and Fernández (2022), Butler's most notorious and polemical idea is precisely the one that states that sex is a social construction, an historic category, so that, in Butler's words, "the distinction between sex and gender is shattered," that is, "what, if anything, is left of sex, once it has assumed its cultural character and has become gender?" (Butler, 2022, 19). Gender would emerge as a term that would absorb and displace sex, reducing it to fiction or linguistic fantasy. The regulatory norms of "sex" operate in a performative way to construct the materiality of the sex of the body (sexual difference), "in order to consolidate the heterosexual imperative" (*ibid*, 15). Thus, Butler does not interpret sex as something that one has, nor as an immutable description of what one is, nor as "a bodily given on which the construct of gender is artificially imposed, but as a cultural norm which governs the materialization of bodies" (*ibid*, 15).

The formation of the subject takes place by assuming a sex, that is, by identifying with the normative specter of sex by rejecting "abject beings," those who are not subjects and constitute the outside of the subject's world (and inside the subject as its very abhorrence that constitutes it) (*ibid*, 15). Therefore, as Bagiotto (2019) synthesizes, gender is a performative practice that does not start from the nature of sex/body, but it acts on this norm, determining its formation and characteristics. In repetition, gender generates itself as a – heterosexual – norm. By following the heteronormative gender, the sex/body in turn reinforces the norm and thus they are both culturally

5 In her work "The Traffic in Women: Notes on the 'Political Economy' of Sex", Rubin (1986) coined the concept sex/gender system which can be understood as "the set of arrangements by which a society transforms biological sexuality into products of human activity, and in which these transformed sexual needs are satisfied." However, in her essay, "Thinking sex: Notes for a radical theory of the politics of sexuality," although she admits that sex and gender are related, she considers it a mistake to have taken them for interchangeable cogs in the same process of social exclusion. She points out that gender, as a category of analysis, is insufficient to explain the sexual oppression that arises as a result of individuals' sexual orientation (Rubin, 1989). She recounts that in the US from the late 1940s to 1960, alongside communists, homosexuals were the "object of purges and witch hunts throughout the country" (1989: 118–119). The questionable spectre of the sex offender that was applied to rapists and child molesters also functioned as a code for homosexuals, in this way blurring the distinction between sexual assault and illegal, although consensual, acts such as sodomy (Rubin, 1989).

6 For Rubin (1989) this is reflected in public policies and in cultural representations.

7 Nevertheless, part of lesbian theory proposes an essentialist vision of lesbians (Álvarez, 2001, p. 275).

8 For this author, heterosexual society is based on the necessity of the other/different, who is no other than the dominated. To construct and control difference is in itself an act of power, essentially a normative act. The concept of sex differences constitutes women as others/different; men are not different, in the same way that whites are not different, nor the masters (in contrast to blacks and slaves). "For us, this means there cannot any longer be women and men, and that as classes and categories of thought or language they have to disappear, politically, economically, ideologically. If we, as lesbians and gay men, continue to speak of ourselves and to conceive of ourselves as women and as men, we are instrumental in maintaining heterosexuality" (Wittig, 2009, p. 140).

co-produced; "the norm regulates the body, and the body regulates the norm" (Bagiotto, 2019).[9]

For Coll-Planas (2010), there are three distinct ways of understanding sex and gender: (1) Gender as a product of sex, from biological determinism that claims that gender identity emanates from our sexual characteristics (chromosomes, gonads, hormones…); (2) Sex and gender are two relatively separate elements that distinguish the biological dimension (sex), and behavior and personality traits (gender), understood as a social construct. This assumes that sex is something immutable in an individual and gender is variable and can be culturally modified, which infers that biology and culture are distinct elements;[10] (3) Sex as a product of gender, which is the position that Coll-Planas takes, aligning with Butler's contribution. Thus, gender can be understood as "a social product that shapes human beings into men and women, not only in their behavior and subjectivity, but also in the physical dimension," questioning the pre-social character of sex (Coll-Planas, 2010, p. 69).

Conversely, binary conceptualizations of gender have led to discourses and explanatory frameworks that capture diverse expressions of masculinity and femininity, such as Raewyn Connell (1995), who studied masculinities structured around hegemonic masculinity that occupy the pinnacle of the gender order and dominate all femininities[11] or Velasco's (2009) work on traditional and modern femininities and masculinities or those in transition. Marcela Lagarde refers to the "syncretism of gender" (Lagarde y de los Ríos, 2000, p. 45), to describe how contemporary women – and men – are a mixture of traditional and modern gender traits, in a way that this simultaneity of gender cultures, with respect to sexuality or roles "can create contradictory situations, conflicts or subjective paradoxes" (López Sáez and García-Dauder, 2020, p. 22).

As already mentioned, the different theoretical perspectives on gender and sexualities has generated debate between those who, from queer positions, attempt to destabilize these categories that they understand as fluid (Platero, 2012, p. 37) and those who defend "we, the women" as a political subject "necessary to achieve visibility and attainment of rights" (De Miguel, 2014, p. 34).[12] Similarly, the well-known controversy "recognition or redistribution" that puts at odds the theorists Butler and Fraser (2000), raises discourses "difficult to reconcile," inasmuch as the former prioritizes the search for solutions to problems of social justice – considering that the politics of redistribution seem to take second place compared with the extension of policies recognizing diversity – whilst the latter defends the centrality of cultural problems, addressing social and political practices (in particular those that affect sexuality) and how these shape new possibilities for life (Galcerán, 2000, p. 8).

Delving deeper into the core of intersectionality, McCall (2005, cited in Platero, 2012), discusses three different ways to approach this perspective that she classifies as: anticategorical, intercategorical and intracategorical. For the first approach, the only way to eliminate discrimination is to abolish the same categories that differentiate and classify people into groups, deconstructing those categories that we consider unquestionable, aligning with the contributions of queer, postcolonial or crip theory. The intercategorical approach attempts to document and analyze inequality within the multiple dimensions and social groups that exist as a consequence of social categories. Finally, the intracategorical approach, which falls between the other two, critiques the usual social categories, without ignoring their importance in understanding society and relationships. The emphasis would be on those individuals who blur the boundaries of these categories to understand the complexity of lived experiences and the social norms that we consider natural (McCall, 2005, cited in Platero, 2012, p. 36).

Nonetheless, "however imposing we want to be with sex and gender categories, they are constantly being rearticulated" (Platero, 2013, p. 48) and this poses new challenges for the social sciences if it does not wish to use obsolete instruments in the face of a changing reality that it seeks to understand.

3 How to capture these categories in surveys

As we have just shown, we are faced with a major challenge when thinking about "how" to ask about these questions if we really want to adapt to new realities, and how we can measure them from both a quantitative and qualitative viewpoint.

Official datasets of population diversity in terms of gender are limited and deficient. Statistics are needed not only to capture data on individuals' sex, gender and sexual orientation but also to bring to the fore new diversities and respond to the United Nations sustainable development objectives of the 2030 agenda to "leave no one behind" (Instituto Nacional de Estadísticas, 2022). Therefore, our aim is to contribute to the development of new questions and response categories that reflect the diversity of bodies, genders and sexual orientation (Stang, 2019).

It is important, therefore, to understand how to formulate survey questions on gender in such a way that all participants feel included and can respond comfortably. It is evident that sexual identity, gender identity and sexual orientation are not the same. Until relatively recently, and still today, a clear conceptual differentiation, and their measurement, are issues that are barely taken into account when developing sociodemographic questions in surveys.

We are interested in advancing and carefully addressing this question as it will allow us to conduct a more exhaustive analysis of respondents and their relationship with specific answers to different topics of study beyond the traditional MALE and FEMALE binary classification of the (biological) sex variable that usually appears in surveys and

9 Some of the objections to Butler's theory have questioned the voluntarism or the radical deconstruction of the body that they confronts in their work "Bodies that Matter," and whilst this theory focuses on the issue of recognition rather than redistribution, what is lacking is the connection between the themes that they address and the current economic reality of capitalist societies (Guerra and Fernández, 2022).

10 As Tubert (2003) questions, referring to sex at the biological level and gender as a cultural fact reproduces the nature-culture dichotomy.

11 We should also mention Azpiazu (2017) and his work "Masculinidades y feminismo".

12 For Ana de Miguel (2014) only from a "we," which allows us to theorise on "what unites women," is it possible to develop the diversity and intersectionality of feminism and understand the ways in which oppression manifests in women's lives (191). She considers that the proliferation of identities on which queer theory focuses weakens this political subject and that its claims do not represent the majority of women, as shown by its lack of meaning for "the millions of women in the world who cannot control men's access to their bodies" (De Miguel, 2014, p. 199).

administrative records. For example, the Center for Sociological Research (CIS), which is a reference at the Spanish level, continues to use the sex variable (M and H) in its studies. Most studies carry out an analysis by sex (female and male) and there are still few authors who have considered the importance of an analysis by gender (García-Vega et al., 2005). In this sense, some authors consider that the inclusion of the independent variable "sex" in logistic regression models is not sufficient to explain the complexity of gender relations (Rohfl et al., 2000). Therefore, it is necessary to include the category gender.

As we have shown, the use of identification variables (sexual and gender) has evolved, and we find ourselves faced with new sociological realities to which the ways of questioning need to be adapted in order to capture all possible responses. Current research in the social sciences, gender-related issues, the increasing awareness of equality, and the growing literature make it clear that to categorize human beings into two options is outdated and ethically incorrect. Further, depending on each survey's objective, analyses can be much more accurate if the demographic data are divided into more than two categories.

Nonetheless, given the broadness of the concept of GENDER, it can be difficult for researchers to develop appropriate questions and responses of gender options. What is clear is that when a question is drafted, it must be done in a respectful and inclusive manner.

There is now considerable consensus on the need to differentiate between the concepts of sex and gender. Gender, categorized as feminine or masculine, defines the stereotypes that a given culture at a given time considers to be associated with one or the other sex (Blanco, 2016). Thus, there are two relevant questionnaires that have been generated from the perspective of the double factor: the BSRI (Bem, 1974) and the EPAQ (Spence et al., 1979). These two scales continue to be the most widely used for the assessment of gender identity, although they are not free from criticism. Exempt from criticism, for example, the validity of the items at present or the disregard for the multidimensionality of the gender construct (Guerrero and Mirón, 2016). If we take into account sex-gender differentiation, we see that the most traditional concept that the various measurements from surveys and administrative records seek to approximate is that of biological sex. This concept, which refers to the body, indicates the sexual characteristics that people are born with, which are determined by their genital organs (internal and external), hormones, chromosomes and genes. The categories used to refer to this concept are: "Female" and "Male" (Instituto Nacional de Estadísticas, 2022).

Currently, the options that are most used in relation to the sex variable can be seen in the following examples:

V. SEX	MALE	FEMALE	Other

The Basque Immigration Observatory (IKUSPEGI), for example, uses the option "Others" in its studies. Other studies such as one conducted by the Spanish Equality pf Ministry (2022) include the non-binary category.

V. SEX	MALE	FEMALE	Non-binary

This is the simplest way of posing the question which aims to include a third response option, beyond the binary, without making the classification too long and that enables everyone to position themselves. However, using the term "other" or "non-binary" does not address or name new realities nor would individuals be given the visibility they deserve if they were included in a third, neutral or "not identified" group. Moreover, the "other" category seems to suggest a definition of otherness or peripheral of anything that does not fit the gender binary. For this reason, some surveys have started to include as another possible option the intersex category.

The measurement standards proposed by the Australian Bureau of National Statistics (ABS, 2021) and New Zealand (Stats NZ, 2021) have discouraged the measurement of intersex as a third sex. Instead, they propose that it should be addressed by means of an additional question to probe for the presence of variations in people's sex characteristics. Thus, one of the basic principles of measurement is self-declaration, i.e., that it is the person himself/herself, whether or not he/she experiences the attribute, who provides the answer. This decision is based on the need for further research into the correct way to include the measurement of intersex, either as a third category in the "sex" variable or as an additional question (Instituto Nacional de Estadísticas, 2022).

V. SEX	MALE	FEMALE	INTERSEX

Bayond sex, gender identity may or may not "match" with the biological sex or the sex assigned at birth. Internationally, the terms "transgender" and "cisgender" are used to classify people according to the relationship between sex and gender. In the case of direct respondent operations, this would be self-perceived gender (Instituto Nacional de Estadísticas, 2022).

In relation to the gender with which we identify, some response options are as follows:

GENDER with which you identify	MALE	FEMALE	
GENDER with which you identify	MALE	FEMALE	OTHER
GENDER with which you identify	MALE	FEMALE	BIGENDER

Another classification is as follows (García et al., 2019):

GENDER with which you identify	Male	Female	Androgynous	Undifferentiated

Bearing in mind that a person's gender may or may not correspond with their sex assigned at birth, there are other, somewhat more developed options (Instituto Nacional de Estadísticas, 2022):

GENDER with which you identify	Male	Female	Bigender	Transgender	Not sure	None	Prefer not to say

Some surveys include the variables listed above by incorporating a "time" element (at birth, or at the present time) (Instituto Nacional de Estadísticas, 2022).

10.3389/fpsyg.2024.1369214

Biological sex you were born with	Female	Male	Intersex
Gender assigned at birth:	Female		Male
According to your gender identity, you currently identify yourself as:			
Female	Male	Transgender	Bigender	None

Where until recently the term sex was used, there is now a widespread tendency to replace it with gender and its derivatives, or for sex and gender to share space in scientific work, referring to two distinct domains. It is important to stress the need for a model capable of integrating both complex realities, that of sex and gender, as this approach can have important consequences in the field of research, in education, in the experience of women, men and ambiguous people, and in the clinical field (Fernández, 2010).

For those who do not feel comfortable or do not wish to be classified as a closed and specific option, there is also the option to leave the gender question open-ended so that each individual may express their own gender identity more freely. Another option is to use a continuum on a scale of 1 to 10. The difficulty then would be to quantitatively interpret the responses or establish classifications to capture patterns of behavior according to gender.

Finally, in relation to sexual orientation, some surveys capture this aspect as follows:

According to your sexual orientation, you identify yourself as:					
Heterosexual	Homosexual	Bisexual			
Heterosexual	Gay	Lesbian	Bisexual	Not sure	Prefer not to say

In any case, what is clear is that the formulation of questions and answers should be adapted to the changes and new realities according to current times.

The Questionnaire of Attitudes towards Gender Equality (CAIG), elaborated by De Sola et al. (2003) includes the right to free choice in sexual orientation. According to the Instituto Nacional de Estadísticas (2022), in the context of the standard, the dimension that needs to be addressed is that of self-identification, in line with the need to make sexual diversities visible based on the self-perceived orientation of the informant at the time of the interview. Sexual orientation is also widely collected in the UK's National LGTB Survey or in the EU-LGTBI Survey II.

4 The consequences of limiting sociodemographic variables: the case of the European values study

In addition to demonstrating how questions and answers relating to identities are formulated in surveys in general, it is interesting to present an example from a specific survey and examine how questions are posed and the limitations that these may impact the subsequent analyses, given they continue to follow a traditional format. To do this, we have chosen as a case study the European Values Study whose application in Spain is coordinated by our research team.

The European Values Study (EVS), that began in 1981 and has nearly 40 participating European countries, has not significantly evolved in the way sociodemographic identity questions are formulated. It only includes a question about the "sex of the respondent" with a binary response option: 1. Male 2. Female. It also includes "do not know," "no response," but only as a "spontaneous response," that is, it is not asked by the interviewer and the reasons for the lack of response are not recorded.

The main justification for this approach given by surveys that have been conducted over decades, as is the case of the EVS, is the need to maintain the wording of the questions to guarantee comparability in longitudinal studies. This is a valid argument but does not justify the failure to include new question forms that allow for adaptation to theoretical and methodological developments and to a rapidly changing reality. One of the most relevant advances in critical social theory is the notion of intersectionality and the demand to apply an intersectional gender perspective in social research. This approach tends to be associated with a qualitative methodology; for example, when Sandra Harding defends Feminist Stand Theory, she notes three criteria that any feminist and inclusive investigation should meet (Silvestre et al., 2020). Firstly, it should provide new empirical resources based on the experiences of women and minorities, traditionally excluded from knowledge. Secondly, the investigation should bring new proposals to the field by positioning itself in favor of women, opposed to the traditional androcentric privilege, which implies a commitment for social transformation. Thirdly, it should provide a new object of study, situating the researcher on the same level as the object of study (subject/object of research relationship). The first and third criteria also challenge quantitative research. In the first case, the "experiences" of women and minorities are usually collected through qualitative techniques, however, quantitative research should not be excluded from this data collection and, to do this, it is necessary to understand the diversity of gender identities. In the third case, placing the subject and object of study on the same plane implies not only legitimizing the inclusion of diversity between those who research and theorize, it also entails legitimizing and including diversity in what is observed. To capture the diversity in what is observed, it is important to anticipate it in advance, as what is not sought is not found. This is where it becomes necessary to include a series of sociodemographic variables that include the different vectors of inequality that condition people's lives, as those inequalities can be explanatory elements and significant predictors of the reality we are studying. In this sense, when the EVS asks about the degree of agreement of the statement "Homosexual couples are as good parents as other couples," it cannot ignore that sexual orientation can be an explanatory variable in this question, as it also surely is when being asked to explain the degree of justification of "homosexuality."

In this respect, the EVS, heir to the theoretical and methodological legacy of Ronald Inglehart, contains a set of questions that aims to study the change of values in society and the impact of modernity. Inglehart (1977) spoke of the "silent revolution" which associated socialization in the contexts of economic growth, with a change of values that entailed a shift from materialist values to post-materialist values. This process of modernization has also been linked to the process of secularization and, for example, in Spain, the relationship between moral permissiveness or openness and the process of secularization is very evident. Where religion is less important or less present there is greater moral permissiveness. In contrast, those who

are more aware of religion and its dogmas tend to be governed by these and to be more morally strict, which is also linked to a conservative ideology (Silvestre et al., 2022). In summary, we know that changes in values are interwoven with religiosity, age and ideology but we cannot know if there is a relationship with gender identities, ethnicities or sexual orientation because this is not part of the question set.

5 Proposal of sociodemographic questions that include the categories of sex, gender and sexual orientation

It is a fact that certain questions may infringe on privacy and cause discomfort to respondents, but this is also the case in political questions such as vote recall. Ensuring anonymity and confidentiality of surveys, whilst meeting the required ethical criteria, is a way of promoting a climate of trust and honesty in respondents' answers. In this regard, an approach to data collection that can guide us is the one proposed by the United Nations (2018) based on human rights to leave no one behind in the 2030 Agenda for sustainable development. This proposal upholds six principles: participation, data disaggregation, self-identification, transparency, privacy and accountability (United Nations, 2018, pp. 1–20).

1. Participation of relevant population groups in data collection exercises, including planning, data collection, dissemination and data analysis, that includes the assurance that the opinions of vulnerable and marginalized groups who are at risk of discrimination are represented.
2. Disaggregation of data allows users to compare population groups and to understand the situation of specific groups. On this point, it is noted that the collection of data to allow disaggregation may require alternative sampling and data collection approaches.
3. Self-identification: for the purposes of data collection, populations of interest should be self-defining. Individuals should have the option to disclose or withhold information about their personal characteristics. This point is key for the categories that we are dealing with and justifies the inclusion of open-ended questions that allow sexual and gender identity to be freely expressed (or not).
4. Transparency implies that data collectors should provide clear and accessible information about their operations, including the research design and data collection methodology. Further, data collected by State organizations should be accessible to the public.
5. Privacy is ensured when data is protected and kept private, ensuring confidentiality of individuals' responses and personal information.
6. Accountability: data should be used to hold States and other actors to account on human rights issues. This refers to the second characteristic of Feminist Stand Theory which calls for a commitment to social transformation to achieve fairer and more egalitarian societies.

Not all surveys need to include an extensive set of sociodemographic questions; this should be determined by the object of the research, its objectives and stated hypotheses. However, if the study applies an intersectional gender approach, a broader set of questions may be beneficial to provide new empirical evidence. Finally, to achieve representativeness and reliability in every category undoubtedly makes sampling more complex and costly which is why the possibility of alternative sampling and data collection approaches are discussed.

Our proposal includes different ways of asking about sexual and gender identity to maintain comparability in longitudinal studies and official statistics. We recommend including the proposed set of questions in the same block with the following introductory text: "Below we ask you to answer a series of questions that aim to find out about your sexual and gender identity and your sexual orientation as we believe that these identities may shape and explain your ways of thinking and acting. Feel free to respond or not.

- Sex assigned at birth (female/male/"intersex"): this question aims to ensure longitudinal comparison with previous studies. In Spain, for real and effective equality of transgender people and to guarantee the rights of LGTBI people, the 4/2023 Law of 28 February delays sex assignment at birth to 12 years of age when there are doubts. In this case, the category "intersex" should also be included as there could be situations in which the male/female sex is not assigned.

- Gender identity:

o Transgender
o Bigender
o Female
o Male
o Androgenous
o Non
o Do not know
o Prefer not to say
o Prefer to define myself as ……

- Do you identify as trans? (Instituto Nacional de Estadísticas, 2022)

o Yes
o No
o Do not know
o Prefer not to say

- Sexual orientation: we chose to open up the category "homosexual" to make visible lesbian women who often remain hidden behind this category.

o Gay
o Lesbian
o Bisexual
o Asexual
o Heterosexual
o Do not know
o Prefer not to say
o Prefer to define myself as …….

6 Discussion and conclusion

As reflected above, the categorization of the population according to demographic data such as sex and/or gender is a very common practice, especially from a binary, cisgender, heteronormative approach. This dichotomous categorization, oversimplifying human diversity and its realities and reducing it to these two possibilities can have serious consequences and may compromise the scientific rigor of the entire research process, from sampling to the collection and analysis of information and, also, its results and conclusions. In addition, it renders non-normative groups and realities invisible.

It is for this reason that we consider it necessary to make a proposal such as the one presented here, applied to the European Values Survey or to any other survey.

We have formulated a proposal that aims to grasp different sexual and gender identities and diverse sexual orientations. We have combined closed and open-ended questions that favor self-assignment, as well as offering a non-response option. We believe that it is important to alternate the order of response options to avoid always asking about normative identities first. Our proposal allows comparability with previous studies and opens up the opportunity for in-depth intersectional analyses. One of the fears in introducing new ways of asking about identity is the loss of information for comparability with previous studies. Our proposal retains sex and introduces gender and thus allows comparability with previous studies. In other words, the potential use of this proposal is that it allows us to cross variables by sex and continue making diachronic comparisons, while at the same time introducing the analysis in terms of gender identity and sexual orientation, which is essential if we want to achieve an adequate understanding of the current social reality. Family dynamics, political experiences, or the phenomena of inequality and violence faced by these groups are just some examples of this. This would contribute to alleviating the scarcity of data on the lives of LGBTI people, which, as stated by the World Bank (2024), constitutes a fundamental obstacle to addressing stigma and exclusion based on sexual orientation and gender identity in different parts of the world.

It should also be noted that this proposal and the selection of the aforementioned categories is not based on statistical validity criteria, but on the epistemological issues discussed above. Statistical validity will be an *a posteriori* consequence of its application. To conclude, we believe that it is necessary to continue working on the current debate on this issue from a quantitative as well as a qualitative perspective as it is essential to continue measuring social reality in a way that is appropriate and adapted to the present times. A future line of research derived from our proposal could be the validation of its content by mixed techniques such as interviews or the validation by expert judgement. It should also be noted that statistical validity will be *a posteriori* consequence of its application.

Author contributions

RR: Conceptualization, Supervision, Writing – original draft, Writing – review & editing. IA: Data curation, Formal analysis, Methodology, Writing – original draft, Writing – review & editing. MS: Conceptualization, Formal analysis, Funding acquisition, Resources, Supervision, Validation, Writing – original draft, Writing – review & editing.

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Catalysts of violence against women students: the role of the university, aggressors, and victims

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Purpose: The purpose of this study is to bring a multilevel perspective to the discussion of the antecedents of violence against women in higher education settings.

Originality/value: This paper was guided by the need indicated in the literature for research on the multiple levels that constitute the context of violence against women, as this is a public health problem, a designation that indicates the urgency with which this pervasive phenomenon should be addressed. The university context is conducive to this type of research, as it includes situations that favor instances of violence. Additionally, it aligns with the United Nations Sustainable Development Goals (SDGs) of Gender Equality and Quality Educations.

Design/methodology/approach: This paper follows a qualitative and interpretative approach. This choice was due to the need to know the "how" and "why" elements that are part of violence against women in the university context. As the main source of evidence for the study, we conducted 20 in-depth interviews with women (victims) and men (aggressors), all university students involved in situations of violence. The transcription of the interviews generated 346 quotations, including 41 analysis codes.

Findings: After conducting the data coding, we identified that (i) the actions and omissions of the educational institution, (ii) the taste for violence, the perception of self-efficacy and the influence of the aggressors' group of friends, and (iii) the apparent dichotomy between women's vulnerability and women's strength are among the main antecedents of violence against women. The article concludes with possible research questions to combat violence. Among the contribution of the discussions presented in our article, we highlight the importance of adopting a multilevel view so that we can better understand and fight against this violence, the existence of which is not restricted to the university context.

KEYWORDS

university context, violence against women, women vulnerability, women strength, victims and aggressors, gender equality, quality education

Introduction

The fight against violence directed toward women is an urgent matter. A quarter of women worldwide aged between 15 and 24 years have been victims of gender-based violence, which takes the form of physical, sexual, psychological, and economic violence (European Institute

for Gender Equality, 2019; Cepeda et al., 2022). In addition, one in three women worldwide is subjected to physical or sexual violence by partners or strangers, which corresponds to approximately 736 million women in total. The numbers are even more worrisome in low-and middle-income countries, in which more than 37% of women aged 15–49 years have suffered physical or sexual violence by a partner. Brazil, the country chosen for field research in this article, is among these countries (for more data, see the report of the World Health Organization, 2021).

The failure to prevent violence against women and to respond to women who experience violence is unscrupulous. Martin (2016) proposes the path of investigation that we used in this article. The author emphasizes that it is necessary to study multiple levels in the context of violence against women in depth, both theoretically and empirically, so that we can better act against this type of violence.

Previous studies on gender-based violence in the context of universities have had different objectives: to measure the scope of this violence in educational institutions (Benson and Thomson, 1982; Fisher et al., 1999; Bryant and Spencer, 2003; Orchowski and Gidycz, 2012; Valls et al., 2016); analyze incidence rates, types of violence, profiles of victims and perpetrators, circumstances in which violence occurs, and reactions of victims and observers (Kalof et al., 2001; Banyard et al., 2005); highlight the problem of tolerance of sexual harassment (Reilly et al., 1992; Bryant and Spencer, 2003); understand students' perceptions of the social environments in which gender-based violence occurs (Littleton et al., 2009; Koelsch et al., 2012); explain participants' reactions to rape prevention programs based on the Men Against Violence model (Hong, 2000; Choate, 2003); and to expand the state of the art on the mechanisms and processes that are effective (or not) for overcoming this problem outside the university context (Puigvert et al., 2019). This set of studies has contributed significantly to the creation of gender-based violence prevention programs that train students to combat violence more effectively (Coker et al., 2011).

These and other important research efforts (e.g., Colpitts, 2022; Joelsson and Bruno, 2022; Shannon, 2022) have been made to investigate specific elements that lead to violence against women in different social contexts, but to the best of our knowledge, such efforts have not yet embraced a multilevel perspective.

We found that the university context is conducive to this type of study for two main reasons. The first reason is based on the precepts of Harkins and Dixon (2010), Carey et al. (2015), Martin (2016), and Colpitts (2022), which point out the presence of multiple situations in the university context that seem to facilitate violence against female students, such as cocktail parties, parties where illicit drugs are available, the presence of fraternities and athletic teams, the hazing of freshmen, and fierce athletic competitions among universities. This context makes the statistics of violence worrying: as an example, the study by Bondestam and Lundqvist (2020) highlights that, on average, one in four female students reports having suffered sexual harassment, numbers that double, according to the authors, when we add other forms of sexual violence to the analysis. Second, the educational setting operates on multiple levels, involving the educational institution at a broader level, formal and informal groups of students at the middle level, and the victim (s) and the aggressor (s) at the individual level.

According to Bondestam and Lundqvist (2020), research on sexual harassment in higher education lacks theoretical, qualitative, and intersectional approaches and perspectives. Therefore, based on the need for a multilevel analysis of violence against women (Martin, 2016) and the relevance of the university context to this endeavor (Carey et al., 2015; Cruz, 2021; Colpitts, 2022; Shannon, 2022; Coffey et al., 2023), we ask the following questions: What are the main catalysts of violence against young university women in the university context? How do these catalysts manifest at multiple levels, and how do these levels merge to impact violence against young university women?

Theoretical context

In search of contributions from a multilevel perspective

Within the topic of violence against women, there are three main lines of studies on the subject in the university context: one that focused on the figure of the aggressor and the victim, one that focused on groups, and one that focused on the educational institution. For example, Abbey (2002) argues that at least half of aggression among students occurs due to alcohol consumption, which has psychological, cognitive, and motor effects on both aggressors and victims. Schrock and Schwalbe (2009) argue that the need for demonstrations of virility and masculinity reproduces gender inequalities, as men sometimes demonstrate their virility by demeaning women (McCarry, 2010). They also argue that research is needed to investigate how men encourage one another in their demonstrations of virility, relegating women to certain roles. Boyle and Walker (2016) argue that parties promoted by fraternities and athletic teams are examples of environments in which men, influenced by these subcultures, engage in violence to demonstrate their virility and later often deny that such violence has occurred. Foubert et al. (2020) contribute to this line of thinking by emphasizing that young men who participate in these groups are more likely to commit violence against women than young men who do not participate. In this scenario of violence, we must keep in mind that students who are exposed to these situations suffer physical, psychological and professional consequences. Examples such as irritation, anger, stress, discomfort, feelings of powerlessness and exclusion, are highlighted by the literature (Bondestam and Lundqvist, 2020).

Another category of studies on violence in the university context focuses on the role of institutions. For example, Holland and Cortina (2017) emphasize that, despite the increasing support that universities have provided victims of violence in recent years, victims do not seek university support for various reasons. One reason is nonexistent or inadequate communication by the university, which sometimes does not make the details of this support clear to students; another reason is victims' perception is that it is not worthwhile to lodge complaints or ask for support because the university "would do nothing about it." In addition, Jozkowski and Wiersma-Mosley (2017) emphasize that institutional factors, especially in contexts of class privilege, contribute to the establishment of patterns of power and control that ultimately facilitate acts of violence against women, argument also present in studies published by Phipps (2018), Colpitts (2022), and Shannon (2022) on neoliberal universities. Moylan and Javorka (2020) highlight the importance of analyzing the antecedents of violence against women at different levels in the university context, and they suggest

the need for studies that investigate the culture of the institution and its context as factors that contribute to violence against women. The aforementioned works were fundamental for understanding the specific elements that precede violence against women and provided us with the opportunity to perform a multilevel analysis. In other words, although previous studies have examined important catalysts of violence against women in the university context, they have not combined the various levels of these catalysts.

We contribute to the identified gaps in the literature by performing a necessary multilevel analysis that focused on the antecedents of violence against women. Martin (2016) emphasizes that this multilevel view is fundamental for understanding the details of this type of violence; furthermore, and corroborating Harkins and Dixon (2010), Carey et al. (2015), and Colpitts (2022), we argue that the university context is conducive to this type of research, as it includes situations that favor instances of violence against women. Similarly, Jozkowski and Wiersma-Mosley (2017) argue that it is essential to analyze the factors that influence the occurrence of violence against women, as this is a public health problem, a designation that indicates the urgency with which this pervasive phenomenon should be addressed.

Materials and methods

The Brazilian university context

In Brazil, university students engage in activities beyond their studies, such as parties and sports games. These games are organized by the academic directories and athletic associations of the universities. Academic directories represent undergraduate students, primarily promoting social and cultural events. Athletic associations, similar to academic directories, promote university sports, organizing interclass and interuniversity championships in various modalities. During these events, students represent their universities, competing for medals and trophies. Those who do not participate as athletes can join the audience or musical groups, such as the student drums, responsible for animating the events with music. This is the context in which the higher education institution of our research is inserted, as well as its students and their situations of violence.

The evidence

This study is the result of a broad research project on gender in organizations. Starting from a qualitative approach, the research project as a whole adopted an interpretive epistemological position because we always seek to analyze the details of certain situations, which includes focusing on the reality underlying these details and the subjective meanings that motivate human actions; therefore, there is a great emphasis on people and their feelings (Saunders et al., 2009; Burrell and Morgan, 2017).

The main data source for our article was in-depth interviews conducted with 20 students from a university that is considered elite in the Brazilian context. As selection criteria for respondents, all participants were required to be students of the educational institution and to be current or former members of a student organization. Participants are, on average, 21 years old, and are students of Business Administration, Public Administration or Economics. Most of the interviewees are in the final phase of the Undergraduate course, which contributed to a more accurate data collection due to the fact that these students have been inserted in the context of the educational institution for some years and have participated in student organizations throughout their student trajectories. The interviews were conducted between 2017 and 2018, had an average duration of 81 min, totaling 27 h, and resulted in 378 pages of transcripts, single-spaced and written in 12-point Times New Roman. We interviewed young women and young men who were studying or had studied at this institution and who were or had been members of groups of students, such as the feminist collective, the student union, the university band, and athletic teams. Specifically, we heard from nine young women from the feminist collective, the group that is responsible for collecting complaints of violence against women. We also interviewed six young women from other groups. Following the precepts of Patton (2002), we interviewed five young men who were part of student groups at the institution other than the feminist collective to confirm or refute the reports made by the young women. The young men confirmed the young women's reports; because we found patterns in the answers that the young men provided, we concluded the interview phase of the study and began analyzing other sources to triangulate the data and increase internal validity (Lincoln and Guba, 1985; Leech and Onwuegbuzie, 2007; Creswell, 2009). Our semistructured script was organized into three categories of questions: (i) the student's trajectory at the university; (ii) reports of violence within the university; and (iii) actions taken to respond to situations of violence. To maintain the anonymity of those involved, we use pseudonyms for all of the sources used in our article.

Analysis

The transcription of the interviews generated 346 quotations, including 41 analysis codes. After organizing the codes, we deepened the study of the literature on violence against women to refine our categories of analysis, following the precepts of Glaser (1994) and Corbin and Strauss (2015). Then, we organized our categories of analysis in terms of catalysts of violence against women from a multilevel perspective: that of the higher education institution, with its actions and omissions; that of the aggressor and his taste for violence, perception of self-efficacy, and socioeconomic origin and the influence of friends; and that of the victims and due to the apparent dichotomy of their vulnerability and strength. Our multilevel analysis is strengthened by the fact that we also considered the groups that influence the actions of aggressors and victims and did not limit our focus to factors intrinsic to the individuals involved. In this sense, the group to which the aggressors belong (characterized as the origin of the aggressors), their group of friends at the university (characterized as influences on the aggressors), and the social group of the feminist collective (characterized as a generator of strength for victims) also constitute a substantial part of our analysis and discussion.

Catalysts of violence against women in the university context

Young women who are university students are subjected to various types of violence (Barbosa et al., 2020). The first type is

physical violence arising from the hazing of first-year students when they enter college. Jessica, who witnessed one of these events and said she was traumatized, states, "A friend of mine left the party with hypothermia because they threw a lot of beer at her. It was winter, and she was taken by the ambulance, and that only happened because she was beautiful, new to college, and the young men wanted to take advantage of her." During other types of student events, physical violence against young women is common, as another witness points out: "I have seen young men who bit, embarrassed, scratched, and beat the young women."

Throughout their studies at the university, these young women also suffer sexual and psychological violence. Mary showed indignation when remembering a situation she had experienced; she was with a friend at a university party, and while they were waiting in line, a young man took advantage of the chaos at the location and stuck his finger underneath the young women's skirts. She states, "It was me and my friend, and he stuck his finger in us [...]. I screamed and then we tried to find him, but he had already gone in the midst of the crowd. I never went out in a skirt again. I was very nervous; that day was difficult. I was in shock." In addition to such situations, freshmen hazing also provides a context for sexual and moral violence against young women. Hollander (2021) emphasizes that the vulnerability of women in certain situations makes them much more afraid of violence than men. Nguyen (2019), in turn, understands that the victim's vulnerability can in itself create the conditions necessary for the aggressor's action, which can intensify as the vulnerability increases.

We must always consider that violence against women generates a series of negative consequences for their lives as students. Coffey et al. (2023) point out, for example, that students who have suffered violence have persistent stress and anxiety, impaired sense of ability, and difficulties in meeting deadlines and academic expectations. It is within this difficult context of frequent violence against women that we must examine the catalysts of violence, which are center on the institution (university), the aggressors, and the victims (and social groups that interact with them).

The university: dangerous actions and omissions

"I always have to give the young men the benefit of the doubt." (University director, in the film *Promising Young Woman*, directed by Fennell, 2020)

> "It is good for you to discuss these issues [violence against women] because they are not part of your life, but it is good for you to be concerned with the lives of the most vulnerable women. You're from the upper class; this doesn't happen to you." (speech by a university administrator, reported by Margareth, an interviewee)

Real life and fiction are confused in regard to violence against women. As an illustration, the film *Promising Young Woman* (2020), winner of the 2021 Academy Award for Best Original Screenplay, portrays a situation in which the director of the university is negligent in denouncing violence by a student, a neglect that leads to impunity for the aggressors and the subsequent suicide of the victim. Unfortunately, this situation is not limited to movie screens. In real life, one of the administrators of the university where we conducted our study was also negligent in addressing violence against women, denying its existence with statements such as "they are not part of your life" and "this does not happen to you," even in the face of ample proof of the aggression against female students and despite being part of the administration at a university that, as reported by Martin (2016), has characteristics that favor violence against women – on this point, we highlight Colpitts (2022), who warn us about the dangers of omitting violence against women. For the authors, omission is sometimes as dangerous as part of violent actions.

This university is an elite institution with a high degree of competitiveness and high academic demands; it is highly capable of investing the necessary resources to consolidate the formal and informal groups within its facilities, such as the student union and athletic teams. The existence and strength of these groups creates a situation of parties fueled by alcohol and other drugs, fierce athletic competitions, and the hazing of first-year students, a scenario that the literature indicates as one of the most conducive to violence (see classic works by Martin and Hummer, 1989; Frintner and Rubinson, 1993; Renzetti, 1996, regarding violence at these scenes). On this point, works published by Phipps and Smith (2012), Phipps (2018), and Shannon (2022), is also pertinent. As pointed out by the authors in their studies, our investigation also indicates that the university acts, to a certain extent, as a neoliberal institution that contributes to the perpetuation of male hegemony.

Competitiveness is a strong principle in this institution and is illustrated by Pietra when she describes one of the songs composed by members of the student drums: "Our mascot is the best, there is no one like it, your (competing institution) diploma is the worst one, but the best thing is when you bring my coffee; come, and I pay you minimum wage." This competitiveness is also illustrated by the degree of difficulty of admission to the courses offered by the university. To gain admission to the university that was considered in this study, the candidate must pass a competitive entrance examination. The institution's monthly fee is 5–10 times higher than that of other private educational institutions in the country that offer the same programs; on the one hand, this fact can fuel students' pride in belonging to the institution, but on the other hand, it can lead them to disparage students from other institutions, especially young women.

Within this context, after entering the university, students face heavy academic demands, which can have serious consequences for them. This situation is highlighted by Andrew's sad remembrance of a close friend who committed suicide: "One of my best friends, who was in my class, killed himself in 2015. He was feeling a lot of pressure from the university. The risk of being dismissed was great, and the college had a considerable probability of dismissing him." Paul also highlights the effects of this heavy demand on the students' social life; he reports, "Look, I know how to do math, I know how to run a model, but I do not know how to approach a woman." It is within this context that university parties, most of which are promoted by student groups supported by the institution, can offer escape valves and fun for students; at the same time that they can be environments of tension and fear for young women students, culturally, they serve as a source of relief for men (Quinn, 2002; Hollander, 2021).

The institution's omissions—situations in which it should prevent or react to violence against women but does not—also act as a catalyst for violence. Institutional neglect and tolerance of sexism are examples of this fact, as one student reports in a critical tone: "[...] we have the

desire to make an anonymous denunciation channel, and the university always creates obstacles to this. Its position is always, 'Bring the proposal for us to evaluate'. After we present the proposal, it always looks for supposed flaws and does not approve the project." In addition to hindrances to the creation of the reporting channel, on one occasion, a student who experienced harassment and wanted to report the aggressors heard the following from managers of the institution: "Do not wear yourself out; do not try to go much further with this story. Do not let it get to the media."

Renzetti (1996), Martin (2016), and Hurtado (2021), emphasize that it is relatively common for universities not to give due attention to these cases, partly because their administrators have multiple roles, and although they do not want violence to occur, they are negligent when they should take action. Complementarily, Gillander Gådin and Stein (2019) point out that situations of violence can be normalized at the organizational level because they are more frequent and ubiquitous in educational institutions than in other organizations. Joelsson and Bruno (2022, p.178), in turn, arrived at the following result in a study carried out in Swedish schools: "our analysis highlights a normalization of violent spatialities in young people's everyday lives at school. Violence was normalized by framing violence as 'unreal,' fun and an inevitable part of growing up." We understand that these findings are also applicable to the university context. As a result of this evidence, organizational neglect perpetuates an unequal and discouraging institutional environment for women (see Lee and McCabe, 2021, for the concept of a "chilly climate") while also clearing the way for the actions of aggressors.

The hierarchical structure of the educational institution in our research places female students in a position of inequality. They report facing significant challenges due to this context. According to the interviewees' reports (corroborated by the literature on the subject), there are still situations in which professors perpetuate derogatory stereotypes about women in the classroom, especially stereotypes of a sexual nature (Benson and Thomson, 1982; Marks and Nelson, 1993; Kalof et al., 2001; Bondestam and Lundqvist, 2020). This is reflected both in teaching materials, such as slides and books, as well as in inappropriate comments about students' bodies, or even in disbelief about the performance of groups composed exclusively of women in certain academic activities, such as mathematics.

In addition, Melissa highlights the underrepresentation of female professors, evidencing structural inequality: "We have fewer female professors. This semester I did not have any, I only had 4 female professors throughout the four semesters of the course." This lack of representation extends beyond the classroom, reaching the coordination of courses and the direction of the university, in which the female presence is minimal. Sexist comments, such as the one reported by Marcela about a law professor who justified an offensive phrase during a class, demonstrate how hostile and unequal the academic environment can be for women: "A law professor said in the context of an administrative proceeding, 'Excuse me to feminists for what I'm going to say now, but there are women who deserve to be beaten.' I remember the room was silent, everyone was scared." In addition, Henrique mentions a troubling practice in which a professor shows a preference for female students by offering massages only to them during classes, while ignoring male students. "There's a professor who, in almost every class, goes to the back of the room and gives a massage to a student, never to a male student." These reported situations are detrimental to female students, because when harassment occurs in more established relationships between students and professors, women often lose academic self-confidence and become disillusioned with male professors. The prevalence of this type of situation has, among other things, the effect of undermining women's possibilities in male-dominated careers (Benson and Thomson, 1982).

The aggressors: taste for violence, self-efficacy, origin, and friendships

"O friendship all unfriendly! You strange seducer of the soul, who hungers for mischief from impulses of mirth and wantonness, who craves another's loss without any desire for one's own profit or revenge—so that, when they say, 'Let us go, let us do it', we are ashamed not to be shameless" (Augustine, 2017, 74).

> "The woman is an incomplete man" (Gaarder, 2012, p. 133, referencing Aristotle).

The second group of catalysts for violence against women exhibits characteristics of the aggressors, such as a taste for sexist or violent behavior and a sense of self-efficacy that is evident in the song lyrics written by the young men. One of these songs was played by Melissa during the interview and has the following content: "I want more big breasts, I want more big asses, I want more whorehouse. I want more money in my shorts, I want more money. I want to show how it is done. I want orgy, I belong to orgy. Because I'm a whoremonger. I'm from the bacchanal. Lick my whole body, grab my dick here." It is through the feeling of self-efficacy through aggression that the young men "want to show how it is done"; this feeling is also illustrated by a need for self-assertion, a need to present a hegemonic masculinity marked by references to superlative female erogenous zones, the drive to have physical relationships with as many women as possible (in reference to orgies), the economic power derived from the money they have, and to the male genital organ as a source of power (Barbosa et al., 2023 p.9).

This abuse among the young men can be explained by the fact that they consider this type of interaction between men and women normal. There is an element of trivialization inherent to this conduct, as if there is no problem with lyrics that place women in subordinate positions and echo Aristotle's statement about a woman being "an incomplete man." This reasoning is in line with the thinking of Quinn (2002), who argues that women tend to see harassment where some men see fun or normal interactions between people of different genders. Complementarily, McCarry (2010) argues that "playing violently" is one of the constituent elements of hegemonic masculinity. Based on this view, acts of violence can also be explained by ignorance on the part of young men. The trivialization of this behavior is so great that, sometimes, young men show a sense of artistic pride in the lyrics they create, without reflecting on the damage they can cause to others. This observation is evident in the report by John, a student, of a comment he made to one of the creators of a song: "Your song was so good; you sounded so cool; you made fun of the girls from other universities in a disrespectful way, but not too much."

In addition, the aggressor's origin appears to be an important environmental factor that catalyzes violence against women. As an illustration, the student Peter reports his context of origin when asked

about situations of violence he has experienced: "I am white, a kid, straight, rich, so I think these situations practically do not happen to me, so it is difficult for me to relate." The young man's comment is associated with a certain normalization of situations of violence. This report does not imply that violence occurs to a greater degree among students with wealthier backgrounds, but we found that in young men, socioeconomic privileges seem to be associated with the trivialization of violence and with difficulty empathizing with victims or putting themselves in the other person's shoes. The results of the study by Jozkowski and Wiersma-Mosley (2017), demonstrate that class privilege is a factor that can promote violence against women.

The contemporary philosopher Hannah Arendt (1906–1975), the greatest exponent of the discussion of the banality of evil, posits that there is radical evil (present in people at the top who perpetrate evil and symbolized by the hegemonic group of Nazi leaders in the context World War II) and banal evil; the latter is largely responsible for maintaining and strengthening the former and comprises a mass that closes its eyes and accepts radical evil (according to the philosopher, banal evil is present in a portion of the German population in the context of World War II concentration camps). Applying this view to our study and keeping the degree and scope of violence in their proper proportions, the young men seem to exhibit a group alienation behavior that interferes with their judgment of their own actions (see Arendt and Kroh, 1964, on the loss of capacity for judgment). From this perspective, violence can be seen as a collective privilege and not as an individual aberration (Connell, 2005).

It is within this context of collective privilege that the influence of colleagues and friends can also act as a catalyst for violence against women. In this context of influence from friends, the male students kept a diary in which they wrote drafts of new song lyrics. It contains numerous sexist, homophobic jokes and other prejudiced content. Elizabeth reported her point of view on the diary: "I am shocked when I see things that have happened, like the diary I read. They keep making fun of things, saying "oh they do not shave," they are really childish." In this diary, information was also written about the day when the women members of the feminist collective organized an event to talk about the importance of a less sexist and more equitable environment for female students. Elizabete says that "they wrote the report of the day of the auditorium and let it be understood that what happened at the university was the fault of the female students and they cursed them a lot, there was not much constructive in this diary."

This reality was described in the Middle Ages by Augustine of Hippo (354–430 AD), who was later raised to the status of saint by the Catholic Church but who demonstrated violent behavior in his youth and committed robberies that were encouraged by a type of group behavior. In his book *Confessions*, he describes his behavior at the age of 16, when he stole fruits from a backyard with his friends: "I could not have done it alone. I loved it then because of the companionship of my accomplices, with whom I did it. The pleasure I got was not from the pears; it was in the crime itself, enhanced by the companionship of my fellow sinners" (Augustine, 2017, pp. 69–74). Going back to our investigation, John, one of the interviewees who had finished his university studies at the time of the interview, recalls with a certain nostalgia the complicity among friends: "I can tell you that every now and then, I still sing the songs [which were banned by the university]. When you are with people from that time, when you are drinking with friends who saw that and saw the whole process of banning that, you always end up singing." This strength of complicity, also present in Harkins and Dixon (2010) and Martin (2016), leads the young men to meet their most primitive need to be included in the group, but at the same time, it can cause irreversible damage to someone's life trajectory.

The victims: the apparent duality between vulnerability and strength

"She is determined and differentiated in relation to man, while he is not in relation to her; she is the inessential in front of the essential. He is the Subject, he is the Absolute. She is the Other" (Beauvoir, 2010, 26).

> "To all girls who have faced injustice and been silenced. Together, we will be heard" (Yousafzai, 2013, p. 5).

At the same time that women are subjected to the vulnerability derived from being "inessential," as described by de Beauvoir (2010), there is also strength in being a woman; in Malala Yousafzai's quote, this strength is characterized by their collectivity, which will ensure that "together, we will be heard." We argue in this section that women's vulnerability in certain contexts acts as a catalyst for violence against them. In addition, our evidence points to an apparent dichotomy, guided by the idea that a woman's strength can also place her in circumstances that make her a victim of violence. Malala herself, a 2014 Nobel laureate, is an example of women's strength as a catalyst for violence, as the young woman became known worldwide after she was shot in the head by the Taliban for defending the right of young women in her country to attend school. In this situation, her strength of speech and resistance made her a target of a violent extremist group, which saw her as a threat, and the terrorist who shot Malala took advantage of the fact that she was helpless, completely vulnerable, in the back seat of a school bus (Yousafzai, 2013). In this section, we will present more evidence regarding strength as a catalyst for violence; first, however, we will talk about vulnerability, which, in the interviewees' reports, exemplifies a context of increased power of hegemonic masculinity, weakness of the rights obtained by women, and the notion of an inability to resist (on these points, see Gross et al., 2006; Schrock and Schwalbe, 2009; Jozkowski and Wiersma-Mosley, 2017).

Sarah portrays the male hegemony at the university as follows: "I can count on one hand how many female teachers I have had since the first year of the program; I think there were five, at most." The fragility of the women's rights is illustrated by Mary in the following statement: "I was still insecure as president (of the student union). I was not going to talk to the coordinators of the university; the young men would go, especially the general secretary and the vice president. I did not have any confidence to do things. I was [involved] in the internal management of minor things." Patricia's statements portray the notion of an inability to resist: "The girls had to go up on stage and do something to win the beauty contest. They said, 'I will get you drunk; you'll drink a lot, and you will not notice that you are up there.' A girl took off her clothes, and the guys encouraged her. The next day they were calling her 'bitch.'" In the reports, we noted that the young women who participated in the activities were encouraged by other people and gave in to the public's demands for them to act the way they were expected to act, such as dancing sensually, taking off their clothes,

showing intimate parts of their bodies, and kissing other young women on the lips to attain the audience's approval and avoid retaliation.

The incidents that the young women reported confirmed can be explained with the perspectives of MacKinnon (1983) and Gross et al. (2006), who argue that women, in situations of vulnerability associated with violence committed by men, can accept this condition to avoid conflicts. When aggressors perceive that there will be no resistance on the part of the victim, they can infer that they will have an easier time successfully committing their violent acts and will not be punished for them.

In addition to the context of vulnerability in which women exist, women's strength is also a category of analysis, which presents an apparent dichotomy. In our study, we identified two important events that illustrate women's strength: the first is the creation of the feminist collective by an engaged group of female students, and the second surrounds the prohibition of the offensive songs composed by young men in the university band, which was an important achievement of the feminist collective and the university board and even made this prohibition official with a private institutional document in the form of communication to students, which was shown by Mariana during our interview. Both events have something in common: they seem to have fostered, for different reasons, a series of violent acts against the women involved. This overlap indicates that although women's strength is illustrated by their conquest of rights, their spaces for speech, and their resistance, it can prompt counter resistance by aggressors (Kärreman and Alvesson, 2009; Barbosa et al., 2023). In the case of the events described above, this counter resistance was marked by strong acts of violence by male students in response to the creation of the feminist collective and the subsequent prohibition of the songs, which leads us to argue that these acts of strength on the part of women also served as catalysts for violence against them. This phenomenon is illustrated by Deborah, who was a victim of physical aggression because of her role in the feminist collective: "I became very well known as the face of feminism in college. On the one hand, it was cool because they came to me asking for help, but everyone who was against feminism came to fight with me. Once, they threw beer in my face at a college party."

This context of violence against women intensified after the prohibition of the songs composed by young men, as Jane recalls: "I remember going to a bar, and the students did not lend me a lighter because I was a feminist, and there was a fight in the bar because of this. It was very tense." Angela reports what she heard from the young men, "[...] 'You oppose the words of the songs. Let us sing! You are ruining everything.'" Another student describes the violence she experienced: "There was a guy who texted me to fuck off. He said at the party that he would sing the offensive songs on the microphone using my name in them." During the same period, women were also attacked on the way to athletic events, especially on the bus that transported the participating students. The songs were accompanied by offensive shouts, such as "screw the feminist collective," "all feminists are fat," and "badly fucked feminazis." While singing these passages and harassing the members of the feminist collective, some students drew serious insults on the bus windows, as Jane reports: "They sang the song that I consider the worst of all, offending women. A boy began to say that we were Nazis (hence the use of the term "feminazi"). He drew on the bus window the symbol of the feminist collective associated with that of Nazism! I thought, 'My God, how can this make sense in someone's mind?' It was very shocking!"

Our evidence regarding women's strength as a catalyst for violence against them can be explained, in part, by the concepts of male hegemony, resistance and counter resistance present in the literature on gender. According to Hollander and Einwohner (2004), hegemony within a group—in this case, the hegemony of young men over young women—can lead to the creation of a resistance group that seeks to join forces against the dominant group and to modify a current social structure that it considers unfair. In the case of our study, the resistance group is the feminist collective, and the dominant group is represented by the young men, who exercise a hegemonic masculinity. This hegemonic masculinity in turn resists the resistance (i.e., the concept of counter resistance described in Kärreman and Alvesson, 2009).

Conclusion

Our research offers insights into the antecedents of violence against women in the university context. Based on a multilevel analysis centered on the institution (macro level), aggressors (micro level), victims (micro level), and social groups (meso level) that interact with them, we identified, through multiple sources of evidence, that the main antecedents of violence against women include (i) the actions and omissions of the educational institution; (ii) the taste for violence, the perception of self-efficacy, the origin and the influence of friends among the aggressors; and (iii) the apparent dichotomy of vulnerability and strength in women. We argue that when a university creates an environment of high competitiveness among students and includes little female representation in the faculty and student body, while neglecting manifestations of sexism in a context of hegemonic masculinity, it creates conditions that favor and perpetuate acts of violence against female students, especially at student events outside the classroom, at gatherings, or during collective projects. Similarly, when young men take intrinsic pleasure in violence, believe that they will be successful in their aggressive actions (self-efficacy) and are strongly influenced by an origin of socio-economic privilege that places them in a position of power and by friends who think similarly, these factors may create a higher incidence of violence against women. In such situations, women are victimized because of both their vulnerability, a condition that aggressors use to their advantage, and their strength—sometimes alone, sometimes as part of a feminist collective—which can provoke strong retaliation by their aggressors. Nonetheless, feminine strength, whether individual or collective, is also fundamental for women's protection.

The implications of these results are profound. We understand that to better combat violence against women, we need to understand its antecedents at different levels of analysis (Martin, 2016). This need was our main theoretical motivation for conducting our research. Based on our analysis and other research on this topic, we identified an urgent need for educational institutions to develop policies and actions to combat violence against women (see Bryant and Spencer, 2003; Choate, 2003; Banyard et al., 2005; Coker et al., 2011; Koelsch et al., 2012; Orchowski and Gidycz, 2012; Valls et al., 2016; Puigvert et al., 2019; Bondestam and Lundqvist, 2020). These policies should be based on intolerance of any form of violence against women, on the intervention of bystanders, and on support and solidarity with victims

and their supporters. It is essential to promote more equitable spaces, with the presence not only of women in the role of professors, but also as academic managers, creating a more welcoming environment for female students. In our study, the educational institution presented difficulties in balancing the presence of female professors in the classroom and in administrative functions. This directly influences the confidence of female students in the classroom and in the environments of the institution as a whole. The students did not feel comfortable denouncing situations of violence suffered because, in addition to not having an adequate space for it, there was no presence of women to be able to dialogue. They stated that it was very embarrassing to tell a male professor or coordinator about the violence they had suffered. In particular, they stated that they were afraid of not being understood and, at times, judged as wrong or guilty for having suffered a certain situation of violence. In other words, the presence of more women, although not the only solution, is presented as one of the main means of social awareness so that situations of violence can be better combated.

To strengthen ourselves in this fight, it is necessary to implement training programs, disciplinary codes, and initiatives to prevent and raise awareness about violence against women in the university environment. Promote discussions on the subject in all spaces where situations of prejudice and discrimination may arise, such as in academic curricula and classroom debates. Take steps to deal with cases in which members of the university community are violent or harass women, including punishments for cases of false witnesses. Finally, it is necessary to create favorable environments for women, in which there is no blaming of the victims and that is permeated by solidarity, support and respect, promoting the encouragement of victims and others to report cases of violence and seek assistance, in addition to promoting the intervention of bystander.

Continued research at these and other levels of analysis is necessary, as are studies that address the important relationships among antecedents of violence, to make the fight against violence more effective. The categories of analysis that emerged from our sources of evidence may directly contribute to future research, and we propose the following research questions to combat violence: How can women's strengths generate protective actions and prevent omissions by the institutions to which they belong? How can these same female strengths decrease the perception of self-efficacy and the taste for violence among aggressors? How can the search for more inclusive and representative environments for women at institutions reduce the effects of compromising friendships and the notion of impunity regarding the actions of possible aggressors? How does this type of environment contribute to making women less vulnerable? These issues may guide research in the university environment or in other contexts that are also prone to violence. We also consider relevant studies that examine the relationship of women's strength and vulnerability as antecedents of violence against them. In this scenario, research addressing the phenomenon of counter resistance, which is marked by strong retaliation by men who wish to maintain their male hegemony in the face of women's increasing strength, is opportune. As a last topic, more empirical research is needed on educating young people against gender-based violence. These studies can be based on the theoretical article by Mclean (2023), for whom the fight against gender violence involves developing self-reflection and empathy in young people.

Data availability statement

The datasets presented in this article are not readily available because the data cannot be made available due to confidentiality agreements with the participants and the educational institution. Requests to access the datasets should be directed to aline8barbosa@gmail.com.

Ethics statement

Ethical approval was not required for the studies involving humans because the present study, conducted in the field of administration, did not undergo ethical review by an ethics committee, as it falls outside the scope of research that typically requires such approval. In accordance with established ethical standards, certain areas of study, including administrative research, may not be subject to mandatory ethical committee approval. However, the research adheres to ethical principles, ensuring confidentiality, respect for participants, and responsible data handling throughout the study. If you have any concerns or questions regarding the ethical aspects of this research, please feel free to contact the research team. The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study. Written informed consent was obtained from the individual(s) for the publication of any potentially identifiable images or data included in this article.

Author contributions

AB: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Software, Writing – original draft, Writing – review & editing. MR-D: Conceptualization, Data curation, Investigation, Methodology, Writing – original draft, Writing – review & editing. TV-d-O: Conceptualization, Formal analysis, Resources, Supervision, Writing – review & editing.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Do male and female heads of households have different beliefs about gender equity among young people in Nigeria?

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Introduction: Gender-transformative approaches (GTAs) have been successfully carried out to address harmful gender norms and power imbalances to promote more gender equitability. However, to improve the health and wellbeing of young people, it is necessary to involve household heads by positively transforming their beliefs on gender equity and norms.

Methods: This study was cross-sectional quantitative research undertaken in six local government areas in Ebonyi State, Nigeria. The study population consisted of household heads in households with young people aged 15–24 years. Data were collected for 15 days using paper and electronic copies of the questionnaire. Descriptive, bivariate, and logistic regression analyses were performed using Stata.

Results: The results showed that 46.32% of male and 62.81% of female heads of households disagreed with the statement "a good woman never questions her husband's opinions, even if she is not sure she agrees with them." Female heads of households aged 50years and below with an odds ratio of 0.47 (p-value=0.02) suggest they were 0.47 times more likely to have a positive attitude toward the rights and privileges of young girls. Male heads of households aged 50years and below with an odds ratio of 1.05 (p-value=0.84) suggest that they were 1.05 times more likely to have a positive attitude toward the rights and privileges of young girls.

Conclusion: This paper provides new knowledge on the gender norm attitude of male and female heads of households on the rights, privileges, and equity promotion of young boys and young girls, as well as its associated factors.

KEYWORDS

gender equity, female household heads, male household heads, Nigeria, young people, rights, sexual and reproductive health

Introduction

Gender norms are rules that govern beliefs on how individuals in homes, communities, or institutions should behave (Pearse and Connell, 2015; World Health Organization, 2018; Heise et al., 2019). They shape the life prospects of an individual and have significant implications for both girls and boys. These norms begin in the family by parents and are

reinforced by teachers, faith leaders, peers, and exposure to media (Patel et al., 2021).

Gender norms significantly influence the health of young people, as they face diverse expectations within both their homes and society based on their gender (Buller et al., 2016; Basu et al., 2017). These expectations start early and strongly shape their attitudes, opportunities, experiences, and behaviors with significant health consequences (Closson et al., 2023), such as child marriage, unwanted pregnancy, sexually transmitted infection, exposure to domestic violence, intimate partner violence, and depression (Blum et al., 2017).

Gender-transformative approaches (GTAs), which seek to transform harmful gender norms and power imbalances to promote more gender equitability (World Health Organization, 2011), have been successfully carried out (Stewart et al., 2021) in order to address harmful gender norms and practices (Levy et al., 2020). The benefits of successful GTA programs (Levy et al., 2020) include reductions in gender-based violence (Gupta and Sandhya, 2020) and improvements in sexual and reproductive health (SRH) outcomes such as family planning use and contraceptive use (Dagadu et al., 2022).

In Nigeria, evidence shows that gender inequality and social norms that favor men over women remain a major concern. Women are often portrayed as inherently inferior to men, leading to the establishment of rigid gender roles. This arbitrary social construction places men at the forefront, dominating economic and political spheres, while women are confined to domestic roles, primarily engaged in tasks considered menial and lacking in economic and political empowerment (Ajala, 2016).

In 2018, 13.2% of women aged 15–49 years reported that they had been subjected to physical and/or sexual violence by a current or former sexual partner (Nigeria Demographic Health Survey Report, 2018). Moreover, women of reproductive age (15–49 years) often face barriers to their SRH and rights: despite progress, in 2018, only 35.6% of women had their need for family planning satisfied with modern methods (UN Women, 2021).

To address these gender norm issues, and to improve the health and wellbeing of young people, it is necessary to understand the different beliefs of household heads about gender equity and the rights and privileges of young people.

The household is key in society and a head is usually responsible for the household but this is not necessarily the oldest member of the household and may be a male or a female. However, Nigerian household heads are usually male, with more female household heads seen in urban areas (NPC and ICF, 2019).

In developing nations such as Nigeria, there is a widely held belief that the gender of the household head exerts a significant influence on the decision-making processes within the household, including preferences for certain individuals and behaviors. This influence extends to favoring sons over daughters (Morakinyo et al., 2015; Sandström and Vikström, 2015).

Hence, household heads need to be actively engaged in interventions that positively transform negative beliefs on gender equity to improve overall SRH outcomes of adults and young people.

Gender norms are strongly internalized by young people as they grow up within their households and society at large to become men and women (Blum et al., 2017) and this represents a gap of opportunity to promote gender-equitable attitudes before such attitudes solidify, in turn contributing to adverse gender inequality in society. Most studies on household heads focus mainly on female-headed households, household heads' choice of social amenities, and the social and economic challenges of household heads (Nwaka et al., 2016, 2020; Aryal et al., 2019).

However, there is a paucity of knowledge on the attitude of household heads toward young boys and young girls on the issue of gender norms since the household heads ultimately are responsible for the upbringing of young boys and girls.

This study aimed to assess the gender norm attitudes of male and female heads of households regarding the rights, privileges, and equity promotion of young boys and young girls and also identify factors associated with the gender norm attitudes of household heads toward young people within the household.

The study hypothesis is that socio-demographic characteristics influence the attitudes of male and female heads of households toward the rights, privileges, and equity promotion of young boys and girls, with factors such as age, education level, religious affiliation, and wealth index playing significant roles.

Method

Study population

The study population consisted of household heads in households with young people aged 15–24 years, with a mean age of 45.50 years and a standard deviation of 11.14. The household heads were selected from six communities using a modified cluster sampling procedure. Our definition of a cluster was a community governed by a traditional ruler. A sample size of 605 households, 285 male individuals, and 320 female individuals was computed using the guidelines outlined in the Demographic and Health Survey (DHS) Listing Manual 2012 (ICF International, 2012).

To obtain the 605 households, 101 households were systematically drawn on a cluster basis from each of the six purposively selected LGAs with PHCs that provide youth-friendly sexual reproductive services serving as clusters. The participants were recruited until the desired sample size was reached.

Study design and study area

This study was cross-sectional quantitative research undertaken in six local government areas (LGAs) of Ebonyi State, Nigeria. With an annual growth rate of 2.8%, Ebonyi State has an estimated total population of 4,339,136 and over 355,000 are young people aged 15–24 years (Ebonyi-National Youth Baseline Survey, 2014; Ebonyi State Government, 2023). The six LGAs with the poorest SRH outcomes among young people were purposively selected from the three senatorial zones. These LGAs have a total of 84 primary healthcare centers (PHCs) that provide youth-friendly SRH services and have been prioritized by the state government and partners for scaling up SRH interventions. A community was selected from each LGA based on the stakeholders' recommendations.

Study tool and data collection

The data collection instrument was adapted from an annual publication on gender, chapter 5, page 17, which consists of gender

norm attitude scales (Nanda, 2011). It was pre-tested in a contiguous state. Research assistants were recruited and trained for 4 days to assist with the data collection. The data were collected for 15 days using paper and electronic copies of the questionnaire. Individual matching of information in the paper and electronic copies of each questionnaire was carried out before the data were uploaded to the server.

Ethical approval

The protocol for the project leading to the result presented in this study was submitted to the Research and Ethics Committee of Ebonyi State Ministry of Health, with reference number: EBSHREC/07/03/2022-06/02/2026 and, the Health Research Ethics Committee of the University of Nigeria Teaching Hospital Enugu, with reference number: NHREC/05/01/2008B-FWA00002458-IRB00002323. Ethical approval was secured from both committees before community entry and mobilization. Written informed consent was obtained from respondents. Participation was voluntary, and confidentiality was assured.

Data analysis

In order to examine gender norms and attitudes toward the rights and privileges of men and women and promote girl equity across male and female heads of households, we performed descriptive, bivariate, and logistic regression analyses using Stata.

The regression model allowed us to further the analysis by isolating determinants of gender norms and attitudes on the rights and privileges of young men and women and promoting girl equity across male and female heads of household. Considering variations in individual demographic factors under a regression framework. However, the multivariate regression model can be specified parsimoniously in equation 1 as:

$$Y_i = \beta_0 + \beta_1 X_i + \mu_i \quad (1)$$

To generate an attitude score for maintaining the rights and privileges of men and women and promoting girl equity across male and female heads of households, responses were given weighted scores; "1" for a correct response and "0" for incorrect responses.

Thus, we assigned the value of '1' if an individual answered, 'do not agree' to a negative statement or 'agree' to a positive statement. Also, the value of '0'if an individual answered, 'agree' to a negative statement or 'disagree' to a positive statement. Those who agree to a positive statement (or do not agree with the negative statements) on the rights and privileges of men and women and promoting girl equity across male and female heads of households were judged to have positive attitudes, while respondents who agreed to a negative statement (or do not agree to a positive statement) were judged to have negative attitudes. The total score was converted to a percentage score and used to categorize attitude; scores ≥50% were considered positive, whereas scores below 50% were considered negative.

Based on percentage scores, the outcome variable for individual Y_i is a dummy variable that takes the value of "1" if an individual score is ≥50% and a value of "0" if an individual score is below 50%. The attitude toward the rights and privileges of men was assessed using six variables. A total of two variables were used to assess the attitude toward the rights and privileges of women and four variables were used to assess the attitude toward promoting girl equity across male and female heads of household.

The X_i is a vector of control variables for individual i, which includes (i) gender, (ii) age group, (iii) highest level of education, (iv) marital status, (v) religious affiliation, and (vi) wealth index The logistic regression equation was equated to "1" if gender is female or "0" if gender is male. The error term, μ_i, is taken to be normally distributed. The level of statistical significance was determined by a p-value of <0.05.

The household wealth index was calculated using *per capita* household characteristics and asset ownership. The *per capita* household characteristics and asset ownership were used to classify households into socioeconomic quintiles, Q1 to Q4, where Q1 refers to the poorest households and Q4 refers to the richest households.

Results

The findings showed that the respondents were 52.89% women and 47.11% men (Table 1). The heads of households with an age group 50 years and below were 71.24%, while the heads of households with an age group 50 years and above were 28.76%, with a mean and standard deviation of 45.50 years and 11.14, respectively.

TABLE 1 Socio-demographic characteristics of heads of households.

Variable (N = 605)	Frequency (f)	Percent
Gender		
Male	285	47.11
Female	320	52.89
Age-group		
Group 1 (50 years and below)	431	71.24
Group 5 (51 years and above)	174	28.76
Mean (standard deviation) 45.50 years (11.14)		
Highest level of education		
Completed secondary	262	43.31
Completed primary	199	32.89
Completed tertiary	79	13.06
No formal education	65	10.74
Religious affiliation		
Christian–Roman Catholic	284	47.10
Christian–Protestant	282	46.77
Others[a]	37	6.14
Wealth index		
Q1(poorest)	32	5.29
Q2	81	13.39
Q3	274	45.29
Q4 (richest)	218	36.03

[a]African tradition, Muslim.

Approximately 83.51% of male heads of households significantly (p-value = 0.05) disagreed with the statement "the most important reason that sons should be more educated than daughters, is so that they can better look after their parents when they are older" (Table 2).

Approximately 62.81% of female heads of household significantly (p-value = 0.02) disagreed with the statement "A good woman never questions her husband's opinions, even if she is not sure she agrees with them" (Table 3).

Female heads of households aged 50 years and below with an odds ratio of 0.47 (p-value = 0.02), suggest that they were 0.47 times more likely to have a positive attitude toward the rights and privileges of young girls (Table 4). Furthermore, female household heads who completed secondary education with an odds ratio of 0.41 (p-value = 0.01) indicate that they were 0.41 times more likely to have a positive attitude toward promoting girl equity.

The finding shows that male heads of households who are Christian Roman Catholic with an odds ratio (0.20 p-value = 0.04) are 0.20 times more likely to have a positive attitude toward promoting girl equity (Table 5).

Discussion

This study utilized a quantitative research method to assess gender differences in attitudes of heads of households on the rights and privileges of young people and promote girl equity as well. Issues on promoting girl equity, age, and religious affiliation were factors associated with attitudes of male heads of household, while education and wealth index were factors associated with attitudes of female heads of household. Our findings highlight that gender norm attitudes are affected by different factors among male household heads and female ones.

The gender-equitable attitudes seen among female household heads toward the gender norm "that a good woman never questions her husband's opinions, even if she is not sure she agrees with him" could be influenced by their level of education and career aspiration, as a study carried out on adolescent girls (AGs) revealed that AGs who disagreed with their family member's belief "that a wife should always obey her husband" were those who had positive education and career aspirations (Closson et al., 2023). In addition, a previous study found

TABLE 2 Gender norm attitude on rights and privileges of young boys among male and female heads of households.

Variables	Male		Female		p-value
	Agree	Disagree	Agree	Disagree	
	F(%)	F(%)	F(%)	F(%)	
Rights and privileges of young boys					
It is important that sons have more education than daughters.	53(18.60)	232(81.40)	62(19.38)	258(80.63)	0.81
The most important reason that sons should be more educated than daughters is so that they can better look after their parents when they are older.	47(16.49)	238(83.51)	35(10.94)	285(89.06)	0.05
If there is a limited amount of money to pay for tuition, it should be spent on the sons first	69(24.21)	216(75.79)	64(20.00)	256(80.00)	0.21
The only thing a woman can really rely on in her old age is her sons.	40(14.04)	245(85.96)	33(10.31)	287(89.69)	0.16
When it is a question of children's health, it is best to do whatever the father wants.	95(33.33)	190(66.67)	93(29.06)	227(70.94)	0.26

Statistical significance: $^{**}p < 0.01$, $^{*}p < 0.05$.

TABLE 3 Gender norm attitude on rights and privileges of young girls and promotion of equity for girls among male and female heads of households.

Variables	Male		Female		p-value
	Agree	Disagree	Agree	Disagree	
	F(%)	F(%)	F(%)	F(%)	
Rights and privileges of young women					
Daughters should be sent to school only if they are not needed to help at home.	22(7.72)	263(92.28)	25(7.81)	295(92.19)	0.97
A good woman never questions her husband's opinions, even if she is not sure she agrees with them	132(46.32)	132(46.32)	119(37.19)	201(62.81)	0.02*
Promoting equity for girls and women					
Daughters should be able to work outside the home after they have children if they want to.	249(87.37)	36(12.63)	276(86.25)	44(13.75)	0.68
Daughters should have just the same chance to work outside the homes as sons.	240(84.21)	45(15.79)	270(84.38)	50(15.63)	0.96
Daughters should be told that an important reason not to have too many children is so they can work outside the home and earn money.	183(64.21)	102(35.79)	226(70.63)	94(26.38)	0.09
I would like my daughter to be able to work outside the home so she can support herself if necessary.	248(87.02)	37(12.98)	288(90.00)	32(10.00)	1.33(0.25)

Statistical significance: $^{**}p < 0.01$, $^{*}p < 0.05$.

TABLE 4 Logistic regression of attitudes of female heads of household on rights and privileges of young people and promoting girl equity.

Variables	Promoting girl equity			Rights and privileges of young girls			Rights and privileges for young men		
	OR	*p*-value	95% CI	OR	*p*-value	95% CI	OR	*p*-value	95% CI
Age category (50 years and below)	1.06	0.87	0.54–2.08	0.47	**0.02***	0.24–0.90	0.66	0.21	0.35–1.26
Level of education complete (primary)									
1. Completed secondary	0.41	**0.01***	0.22–0.77	0.92	0.76	0.53–1.59	1.11	0.70	0.64–1.93
2. Completed tertiary	0.55	0.17	0.23–1.30	0.87	0.73	0.40–1.91	1.90	0.15	0.80–4.43
3. No formal education	0.31	**0.01***	0.13–0.73	0.44	**0.04***	0.20–1.00	0.88	0.75	0.39–1.96
Religious affiliation									
1. Christian Protestant	0.58	0.42	0.15–2.20	0.27	0.05	0.07–1.00	0.24	**0.03***	0.06–0.88
2. Christian Roman Catholic	0.41	0.19	0.11–1.57	0.41	0.18	0.11–1.50	0.53	0.34	0.14–1.98
Wealth index (poorest)									
1. Q2	0.27	**0.03***	0.08–0.87	1.22	0.69	0.44–3.34	1.51	0.42	0.56–4.12
2. Q3	0.96	0.94	0.33–2.80	1.02	0.96	0.42–2.48	1.22	0.66	0.51–2.94
3. Q4 (richest)	0.60	0.37	0.20–1.83	1.09	0.85	0.43–2.76	1.85	0.19	0.73–4.70

Statistical significance: $^{**}p < 0.01$, $^{*}p < 0.05$; OR, odds ratio; CL, confidence interval. Variables in the bracket are the groups of interest.

TABLE 5 Logistic regression of attitudes of male heads of household on rights and privileges of young people and promoting girl equity.

Variables	Promoting girl equity			Rights and privileges of young girls			Rights and privileges for young boys		
	OR	*p*-value	95% CI	OR	*p*-value	95% CI	OR	*p*-value	95% CI
Age category (50 years and below)	1.94	**0.02***	1.14–3.32	1.05	0.84	0.63–1.76	0.87	0.59	0.52–1.45
Level of education complete (primary)									
1. Completed secondary	0.71	0.26	0.38–1.30	0.77	0.38	0.43–1.38	0.95	0.86	0.53–1.68
2. Completed tertiary	0.51	0.12	0.22–1.22	0.82	0.65	0.36–1.89	1.19	0.68	0.52–2.77
3. No formal education	1.54	0.48	0.47–5.05	1.54	0.42	0.54–4.39	1.02	0.97	0.37–2.85
Religious affiliation									
1. Christian Protestant	0.16	**0.02***	0.04–0.65	0.71	0.50	0.26–1.92	0.86	0.77	0.32–2.34
2. Christian Roman Catholic	0.20	**0.04***	0.05–0.86	0.72	0.52	0.27–1.94	0.62	0.35	0.23–1.67
Wealth index (poorest)									
1. Q2	2.88	0.30	0.39–21.30	2.51	0.44	0.24–26.10	4.60	0.20	0.45–47.45
2. Q3	3.45	0.19	0.53–22.30	3.85	0.24	0.41–36.27	4.25	0.21	0.45–40.08
3. Q4 (richest)	2.72	0.30	0.41–18.09	10.46	**0.04***	1.08–101.64	8.64	0.06	0.89–83.69

Statistical significance: $^{**}p < 0.01$, $^{*}p < 0.05$. OR, odds ratio; CL, confidence interval. Variables in the bracket are the groups of interest.

protective effects on young people's health outcomes when a woman can make decisions alone or jointly with her partner (Singh et al., 2015). The reason is that mothers, especially those who give close attention to their children, are typically the first to identify their health outcomes/challenges (Ellis et al., 2013; Dougherty et al., 2020).

Household heads (female and male) disagreed that the most important reason that sons should be more educated than daughters is so that they can better look after their parents when they are older. However, further analysis (regression) showed that gender inequity persists among female and male household heads. Heads of households (female and male) who had formal education and those who had no formal education were more likely to have negative attitudes toward promoting girl equity.

In the context of traditional patriarchal and patriarchal systems, sons are considered to have unique value, as they inherit the family name and property and represent an economic value premium to the family and parents (Sandström and Vikström, 2015; Tilt et al., 2019). This gender norm influences the negative attitude of both educated and uneducated parents toward promoting girl equity. Studies show that parental behavior changes toward a baby as soon as their sex is known or assigned (Mesman and Groeneveld, 2018). Furthermore, boys are consistently encouraged to be strong and independent, whereas girls are seen as vulnerable, ones that should be subordinate, in need of protection, and not be exposed to society (Mesman and Groeneveld, 2018). These gender norms are internalized by parents and they act on it.

A previous study on female heads of households revealed that younger female household heads complained about the challenge of playing multiple roles (head of household and mother role), which put enormous pressure on them and threatened their physical and mental health, causing them to face physical and mental depreciation (Yoosefi Lebni et al., 2020). This physical and mental depreciation could cause one to be aggressive and display harmful gender norms toward young people. This is similar to our findings, which show that female heads of households aged 50 and below have a negative attitude about the rights and privileges of young girls compared to male household heads. Across the world, women juggle work with family and household care responsibilities, and this has a great effect on the attitude of the female head of household toward young people.

Significantly, male heads of households with the highest wealth index (richest) were 10.46 times more likely to have a positive attitude toward the rights and privileges of young girls than female household heads. In developing countries, it is believed that female-headed households are poorer with lower socioeconomic status and are more vulnerable to income shortages than male-headed households (World Bank, 2018; Nwaka et al., 2020). The reasons for this include women's disadvantaged positions in terms of limited economic opportunities for asset ownership, the family burden associated with unpaid household work, and gender discrimination in the labor market (Nwaka et al., 2016, 2020; World Bank, 2018; Aryal et al., 2019). These reasons contribute greatly to the gender norm attitude of heads of households, in that the one with the greatest economic benefits, is also expected to have greater opportunity/exposure to positive education which in turn reports in the attitude of the individual. The common issue with gender norms is that ideologies/attitudes are passed down from parents to children, and young people growing up in these environments internalize and act on these norms (Kagesten et al., 2016; Dhar et al., 2020; Patel et al., 2021), which then adversely affect their health behaviors and SRH outcomes.

This study is not without some limitations, as there could be information bias attributable to the sensitive nature of the study. However, research assistants were trained to ensure that a conducive environment and neutral attitude with respondents were maintained. Respondents were assured of the confidentiality of the information they provided. The collection of data from a large population would enable the generalizability of the findings. Researchers could utilize a qualitative research method for an in-depth understanding of these gender norms and attitudes seen among male and female household heads.

Conclusion

Individual and household level characteristics were adversely associated with heads of household attitudes on rights, privileges, and equity promotion for young boys and young girls. The majority of male and female household heads disagreed with the statement "sons need to have a better education than daughters however, female heads of households who have completed tertiary education were less likely tto have a negative attitude toward promoting girl equity."

There is a need for strategic gender-equitable intervention to address the attitudes of household heads on rights, privileges, and equity promotion for young people across different intersections. To determine similarities and peculiarities, researchers could undertake similar studies in other settings.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Ethics statement

The studies involving humans were approved by Research and Ethics Committee of Ebonyi State Ministry of Health, with reference number: EBSHREC/07/03/2022-06/02/2026 and, the Health Research Ethics Committee of University of Nigeria Teaching Hospital Enugu, with reference number: NHREC/05/01/2008B-FWA00002458-IRB00002323. The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study.

Author contributions

OPN: Writing – original draft. CNE: Writing – review & editing. IA:Writing – review & editing. COM: Writing – review & editing. OO: Writing – review & editing.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Chinese women's years of education and subjective well-being: an empirical analysis based on ordered Logit model and coupling coordination model

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In modern society, the improvement of women's education level has become one of the important indicators of national development and social progress. Although there are many useful explorations on the relationship between education and subjective well-being, the research on women's years of education and subjective well-being is very limited. The article focuses on women's years of education to determine whether and how to affect subjective well-being. This study is based on the China general social survey in 2021. The ordered Logit model was used to analyze the impact of women's years of education on subjective well-being, and a binary coupling coordination model was constructed to test the above two variables. The results show that the longer the education years of women, the stronger the subjective well-being. The benchmark regression results show that women's years of education have positive and negative effects on subjective well-being through economic status, physical and mental health, ecological environment, social cognition and personal cognition. The analysis of coupling coordination degree shows that the coupling between the years of education and subjective well-being of women in coastal areas and economically developed areas is the strongest, and the subjective well-being is better realized by increasing the years of education. Based on the above research results, this paper provides some practical suggestions for improving women's subjective well-being, and provides some valuable references for women to effectively balance husband-wife relationship, family relationship and work relationship, improve women's years of education and better obtain happiness.

KEYWORDS

subjective well-being, years of education, sex differences, Logit model, coupling coordination model, CGSS, authentic proof analysis

1 Introduction

The pursuit of free and comprehensive development and the realization of a happy life are the eternal goals of mankind. Are the people satisfied? Is the people happy? As an important indicator of government work, governments at all levels in the world regard improving people's well-being and enhancing people's subjective well-being as the fundamental goal of

development. The "World Happiness Index Report, 2022" released by the United Nations points out that China's happiness ranks 72nd in the world, and the overall happiness of the country has improved, but there is still much room for improvement. There are many factors affecting happiness, and the improvement of Chinese residents' happiness has a long way to go. With the expansion of college enrollment in mainland China, in order to better and effectively reduce the burden of heavy homework and off-campus training for students in compulsory education, the Chinese government promulgated the "Opinions on Further Reducing the Burden of Students Homework and Off-campus Training in Compulsory Education" (referred to as the "Double Reduction" policy) in July 2021. With the popularization of higher education and the impact of the compulsory education market economy, the voice of "useless education" has occasionally occurred, and people have questioned the improvement of academic qualifications to enhance subjective well-being. With the progress of society and the continuous development of economy, the academic community has conducted in-depth research on the "happiness paradox." The effect of education level on happiness experience through income has gradually weakened (Tang, 2019; Li T. et al., 2023; Li X. et al., 2023), and once again questioned that the improvement of academic qualifications does not necessarily lead to a stronger sense of happiness. To this end, we need to clarify whether and how years of education affect subjective well-being.

China has a vast geographical area and a large population, and there is a large gap in happiness perception between regions and different groups of people. The "People's Happiness Index Research Report, 2022" released by Tsinghua University points out that although China's national happiness index has continued to improve since the reform and opening up, regional differences are very obvious. Scholars believe that education level (Huang et al., 2017, 2024), wage income (Zhou and Huang, 2018), gender, age, marital status (Wei et al., 2020), material and non-material acquisition (Qu and Liu, 2022) are the main factors affecting subjective well-being. The above research mainly takes a single factor as the research object, or the final conclusion does not involve the influence of years of education between gender differences on subjective well-being. There is still a lack of systematic quantitative research on the complex relationship between women's years of education and subjective well-being. Under the specific cultural background of China, the mechanism of what factors interweave to affect women's subjective well-being still needs to be further explored. The purpose of this study is to fill this research gap by systematically investigating and analyzing the relationship between women's years of education and subjective well-being.

2 Literature review and research hypothesis

2.1 Subjective well-being

Social progress includes both economic and social well-being (Easterlin, 1974). It shows that both economic well-being and social well-being are sources of subjective well-being. Subjective well-being is the personal perception and experience of positive and negative emotions, as well as the specific cognition and evaluation of life satisfaction (Diener et al., 2002). This is a more comprehensive definition of subjective well-being, which is not only a response to emotions, but also a response to life, and then discusses its evaluation basis and influencing factors. There are many factors affecting subjective well-being. The scholars mainly discuss: income level (Luo, 2006), health status (Cattaneo et al., 2009), environmental status (Levinson, 2012), gender difference (Wei et al., 2020), sports diet (Yildizhan and Yazici, 2020), housing status (Liu et al., 2022), marital status (Hu et al., 2022), income gap (Liu and Zhou, 2023), education level (Chen and Zhang, 2023; Yang and Du, 2023), immigration (Zunino, 2021), digital literacy effect (Wang et al., 2022). On this basis, this study deeply studies the influence of women's years of education on subjective well-being.

2.2 Years of education and subjective well-being

Hadjar et al. (2008) proved that education is robust to life satisfaction. Xu et al. (2022) proved that education will affect the trust of rural women and encourage women to receive a higher level of education. Bien and Bien-Barkowska (2016), demonstrated that higher levels of education improve self-rated health, while reducing loneliness and depression. Zhao and Dai (2022) proved that the higher the level of education received, the more it can inhibit excessive utilitarianism. Hou and Wang (2023) proved that the higher the degree of education, the stronger the subjective well-being, but it will reduce the individual well-being through the education mismatch effect and health damage effect. Wei (2023) proved that receiving higher education significantly improved the subjective well-being of individuals. Cheng et al. (2023) proved that the longer the years of education, the stronger the sense of happiness. Chen and Zhang (2023) proved that both education level and education return have a significant positive impact on the overall subjective well-being of residents. These views have proved that the longer the years of education, the stronger the subjective view of happiness. However, we also know that gender differences, age differences, urban and rural differences, marital differences, health differences, occupational differences, educational differences and so on all affect subjective well-being.

2.3 Women and subjective well-being

Donaghue (2009), proved that gender affects physical satisfaction and positive emotions and life satisfaction. van der Meer (2014) proved that work affects the subjective well-being of men and women. Women benefit from their partners' work, while men do not. Wang et al. (2019) proved that subjective well-being can partially regulate the impact of marital relationship on women's quality of life. Shenaar-Golan and Lans (2023) proved that women who did not have children were more satisfied with life and subjective well-being and had lower levels of emotional response. Ji and Zhao (2020) proved that family-based social capital indirectly improves women's subjective well-being by reducing women's psychological burden and reducing women's depression. Wu (2020) proved that both absolute income and relative income have a positive impact on women's subjective well-being. Huang and Zhang (2022) proved that the higher the frequency of physical exercise participation of female residents, the stronger the subjective well-being. Wang et al. (2023) proved that college brings

higher returns to women than men, encourages parents to increase investment in their daughters' education, and improves subjective well-being. Yu (2023) proved that subjective class identity has a significant positive impact on the well-being of female migrant workers, but there are intergenerational differences and regional differences. This shows that women's health, women's marriage and childbearing, women's income, women's physical exercise, women's education, women's subjective class identity and so on affect their subjective well-being.

We found that based on Mindsponge Theory, through a series of processing (Vuong, 2023), the existing literature focuses on the level of education, education promotion, years of education, higher education and other factors that affect subjective well-being, and also proposes that individuals and governments focus on improving the level of education. There are also literatures that focus on gender differences affecting subjective well-being. Women's perception of happiness is more sensitive, and they pay attention to women's development. However, there is a lack of special research on women's years of education and subjective well-being. Whether it affects and how it affects provides the possibility for in-depth research. Based on this, this study proposes the following hypothesis:

> *Hypothesis 1*. The longer the education years of women, the stronger the subjective well-being.
>
> *Hypothesis 2*. Women receiving different years of education can have an impact on subjective well-being through economic status, physical and mental health, ecological environment, social cognition, and personal cognition.

3 Method

3.1 Data source

The data used in this study are from China general social survey (hereinafter referred to as CGSS). The CGSS project began in 2003 and is the earliest national, comprehensive and continuous academic survey project in China. CGSS survey data include economic, political, social, cultural and other aspects, and the research results are universal and authoritative. This study uses the latest 2021 CGSS data for analysis [hereinafter referred to as CGSS (2021)]. There are 8,148 original samples of CGSS (2021). According to the needs of this study, the samples in the original sample data that the respondents did not answer or answered invalid were removed and cleaned, and finally 4,469 research sample data were obtained. The final sample is universal and can reflect the relationship between women's years of education and subjective well-being in China. The sample is representative.

3.2 Variable declaration

3.2.1 Main variable

This study selects the degree of recognition of subjective well-being in CGSS (2021) to reflect the situation of subjective well-being, and selects subjective well-being as the main variable of this study. According to the question in CGSS (2021), "In general, do you feel happy in your life." According to their own actual situation, the investigators choose "very unhappy," relatively unhappy, "not happy," "relatively happy," "very happy," and the corresponding values are: 1, 2, 3, 4, 5, 6. The larger the value, the stronger the subjective well-being.

3.2.2 Explanatory variables

In this study, the years of education received by women are selected as the core explanatory variables. Based on CGSS (2021), "What is your current highest education level?" The results of the survey. In this study, the relevant parameters are assigned, as shown in Table 1. The larger the parameter assignment, the longer the years of education, the longer the years of education, the higher the level of education received.

3.2.3 Control variable

In this study, age, nationality, religious belief, marital status, fertility, rural household registration and housing situation were selected as the control variables of this study. For the "nation," the

TABLE 1 Explanatory variable related parameter assignment table.

Level of education	Time division of receiving education	Assignment
Did not receive any education	6 years or less	1
Home school, literacy class		
Primary school	6 years and 6 to 12 years	2
Junior high		
Vocational high school	12 years and 12 to 16 years	3
Ordinary high school		
Secondary technical school		
Technical school		
Junior college (adult higher education)		
College (formal higher education)		
Undergraduate (adult higher education)	16 years and 16 to 19 years	4
Undergraduate (formal higher education)		
Postgraduate and above	19 years and over 19 years	5

Han nationality is assigned to 1, and the other nationalities are assigned to 2; for "religious belief," the non-belief religion is assigned to 1, and the belief religion is assigned to 2; for "marital status," the married is assigned a value of 1 and the unmarried is assigned a value of 2; for "fertility situation," the fertility situation is assigned to 1, and the non-fertility situation is assigned to 2; for the "rural household registration situation," the rural household registration is assigned to 1, and the non-rural household registration is assigned to 2; for the "housing situation," the self-owned housing is assigned to 1, and the non-self-owned housing is assigned to 2.

3.2.4 Mechanism variables

Based on Hypothesis 2, this study proposes that women receiving different degrees of education can affect subjective well-being through economic status, physical and mental health, ecological environment, social cognition, and personal cognition. Among them, according to the "economic situation" according to CGSS (2021), "In general, what is the income and expenditure of your family in the past year?"; aiming at the problem of "physical and mental health" according to the subjective well-being view in CGSS (2021), "I am very distressed about my health"; according to the "ecological environment in CGSS (2021), on the whole, do you think the environmental problems facing China are serious?"; aiming at the problem of "social cognition" according to the subjective well-being point of view in CGSS (2021), "I feel very confident in the development of society"; in view of the "personal cognition" according to the subjective well-being point of view in CGSS (2021), I am happy that my views have become more and more mature in recent years.

3.3 Rationale

3.3.1 Ordered Logit model theory

Chen and Zhang (2023) used Probit model to study the influence of education level and return on education on residents' subjective well-being. Wei (2023) used mixed regression method to study the effect and mechanism of higher education on individual subjective well-being. Cheng et al. (2023) constructed the model of education effort and happiness utility according to the principle of principal-agent general model, and used ordered Logit and OLS models to empirically analyze whether and how education plays a role in happiness. Wu (2023) conducted a quantitative regression analysis on the relationship between education level, subjective well-being and income of Chinese residents. For the study of such problems, scholars tend to use Logit model as the theoretical basis and method. For the Logit model, the function of the standard cumulative Logistic distribution is:

$$F(x)=\frac{1}{1+e^{-x}} \tag{1}$$

Then, according to the relationship between Logit model and linear regression:

$$L_i=\ln\left(\frac{P_i}{1-P_i}\right)=Z_i=\beta_1+\beta_2 x_i \tag{2}$$

Finally, the above relationship is transformed into:

$$\text{Logit}(P_i)=\frac{1}{1+e^{-(\beta_1+\beta_2 x_i)}} \tag{3}$$

Then the linear probability problem can be solved and estimated by adjusting and modifying according to the specific situation of the research. However, for the analysis of normal distribution function, the Probit model is better selected to establish the regression model. The Probit transformation and Probit regression model are as follows:

$$\text{Probit}(P)=\Phi^{-1}(P)=\beta_0+\beta_1 x_1+\ldots+\beta_n x_n \tag{4}$$

The corresponding cumulative probability function, that is, the cumulative probability function of the standard normal distribution is:

$$P=\Phi(\beta_0+\beta_1 x_1+\ldots+\beta_n x_n)=\int_{-\infty}^{\beta_0+\beta_1 x_1+\cdots+\beta_n x_n}\varnothing(z)\,\mathrm{d}z \tag{5}$$

Therefore, after combining the above model theory, in order to explore the influence of education years on subjective well-being through economic status, physical and mental health, ecological environment, social cognition and personal cognition, the following models are established for analysis:

$$\text{happy}_i=\mu+\alpha\times\text{educatyear}_i+\sum_{i=0}^{5}\beta_i x_1+\delta_i \tag{6}$$

Among them, happy_i represents subjective well-being, and the larger the value, the stronger the subjective well-being; educatyear_i represents the years of education of female individuals. The higher the education level, the longer the years of education; $\sum_{i=0}^{5}\beta_i x_1$ represents the influence set of the five mechanism variables of economic status, physical and mental health, ecological environment, social cognition and personal cognition on subjective well-being; δ_i represents the error term.

3.3.2 Coupling coordination degree model theory

The coupling coordination degree model is used to analyze the coordinated development level of things. The coupling degree refers to the correlation between two or more systems, which realizes the dynamic correlation of coordinated development, and can reflect the degree of interdependence and mutual restriction between systems. The degree of coordination refers to the degree of benign coupling in the coupling interaction relationship, which can reflect the quality of coordination.

In previous studies, few scholars have explored the factors between geographical regions in the study of women's subjective well-being. However, there are great differences among different regions in China. In order to explore the relationship between women's years of education and subjective well-being among different regions in China, this study uses the coupling coordination degree model to select Chongqing, Beijing, Hubei, Shandong, Zhejiang, Hunan, Fujian, Guangxi Zhuang Autonomous Region, Shaanxi and Gansu provinces and cities for analysis. Through the research and analysis of the coupling coordination degree model, we can further explore the deep

relationship between the years of education and subjective well-being of women in different regions of China. This relationship will help policy makers to formulate different policies according to different regions to improve the subjective well-being of women in the region.

The model theory is as follows:

Coupling refers to the phenomenon that two or more systems or motion forms interact with each other through various interconnections. The coupling degree model of multiple systems is expressed as:

$$C_n = \left\{ \frac{u_1 \cdot u_2 \cdots u_n}{\prod (u_1 + u_2)} \right\}^{1/n} \tag{7}$$

In Equation 7, C_n is the coupling degree of n-element system; $u_1 \ldots u_n$ is the contribution of the first subsystem to the nth subsystem to the order degree of the total system, respectively. The calculation method is as follows:

$$u_i = \sum_{i=1}^{m} w_{ij} u_{ij} \tag{8}$$

$$\sum_{j=1}^{m} w_{ij} = 1 \tag{9}$$

In Equations 8, 9, u_i are the contribution of the ith subsystem to the order degree of the total system; u_{ij} is the normalized value of the jth index in the ith subsystem; w_{ij} is the weight of the jth index in the ith subsystem, and the weight calculation of the index in each subsystem is calculated by the entropy weight method.

In some cases, the coupling degree index is difficult to reflect the "efficacy" and "synergy" effect of the subsystem as a whole. The upper and lower limits of the coupling degree of each subsystem index are taken from the extreme values of each index, and the extreme values are dynamic and unbalanced. It may be misleading to rely solely on the coupling degree discrimination. Therefore, the coupling coordination degree is proposed. Therefore, this study constructs a binary coupling coordination model based on women's years of education and subjective well-being. The model is as follows:

$$C = 2 \left\{ \frac{(\omega_1 \cdot \omega_2)}{(\omega_1 + \omega_2)^2} \right\}^{1/2} \tag{10}$$

$$D = (C \cdot T)^{1/2} \tag{11}$$

$$T = (m\omega_1 + m\omega_2) \tag{12}$$

where C is the coupling degree, D is the coupling coordination degree, ω_1 and ω_2 represent the years of education and subjective well-being index of women respectively, m and n refer to the weight of years of education and subjective well-being index respectively, T is the coordination index value.

4 Results

4.1 Descriptive results analysis

As shown in Table 2, the descriptive results of each variable comprehensively reflect the universality and comprehensiveness of the data samples in this study. As shown in Figure 1, we can find that with the increase of years of education, the proportion of women who feel very unhappy among the female group is gradually decreasing, which indicates that there is a corresponding correlation between years of education and women's subjective well-being. As shown in Figure 2, we find that the proportion of

TABLE 2 Variables descriptive statistics.

Variable	Observed value	Minimum value	Maximum value	Mean value	Standard deviation
Subjective well-being	4,469	1	5	3.18	1.322
Years of education	4,469	1	5	2.33	0.908
State of economy	4,469	1	2	1.08	0.268
Sound in body and mind	4,469	1	2	1.36	0.479
Ecological environment	4,469	1	2	1.08	0.264
Social cognition	4,469	1	2	1.08	0.268
Person cognition	4,469	1	2	1.13	0.332
Age	4,469	18	90	51.15	17.248
Nation	4,469	1	2	1.08	0.265
Religious belief	4,469	1	2	1.09	0.283
Marital status	4,469	1	2	1.29	0.453
Fertility condition	4,469	1	2	1.13	0.340
Rural Hukou	4,469	1	2	1.39	0.488
Housing conditions	4,469	1	2	1.50	0.500

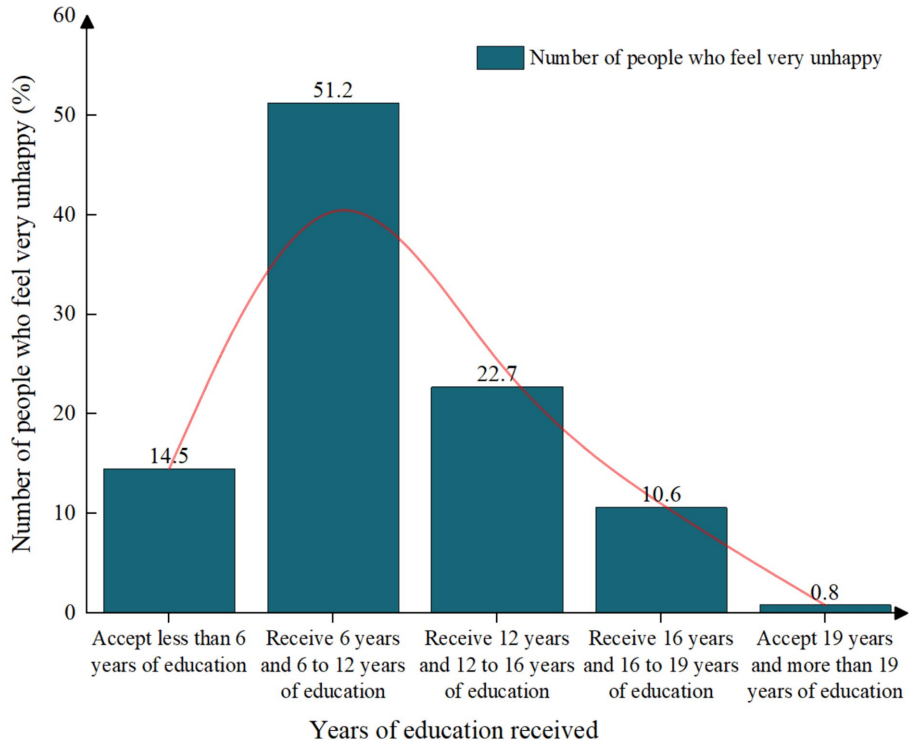

FIGURE 1
Distribution of women's years of education and subjective unhappiness.

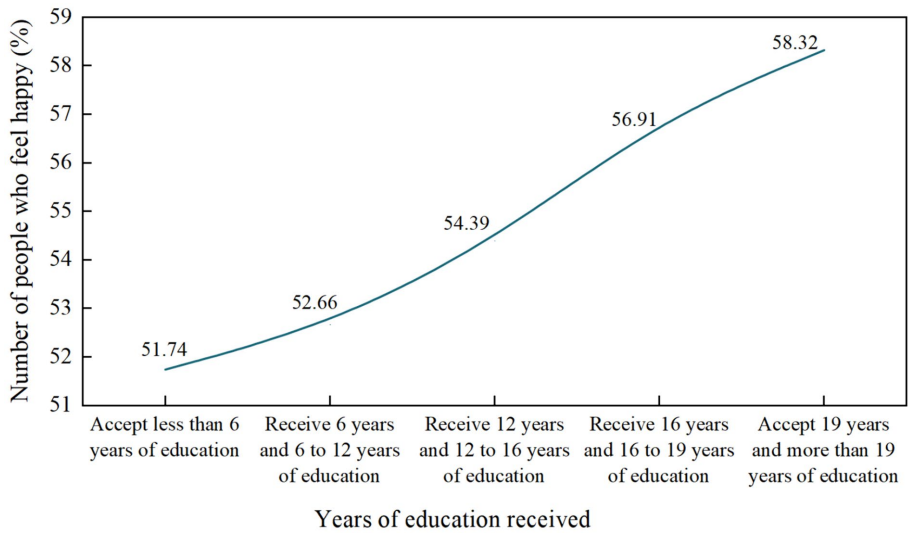

FIGURE 2
Trend chart of women's years of education and feeling of happiness.

women who feel happy is gradually increasing with the increase of years of education, which reflects that by receiving more education, women's subjective well-being may be improved to a certain extent, which is completely consistent with the Hypothesis 1 of this study. At the same time, it also shows that the "women's incompetence is virtue" in the traditional Chinese social concept is a wrong conceptual cognition. Education can not only improve women's knowledge level, but also improve women's subjective well-being. However, we should be concerned that some highly educated women may feel more pressure due to occupational stress, family conflicts or increased social expectations, resulting in decreased happiness.

4.2 Benchmark regression analysis

Based on the CGSS (2021) survey data, this study uses the ordered Logit model to perform regression analysis on Equation 6. Before the ordered Logit regression, the parallel line test is carried out on the research data, and the parallel line test is shown in Table 3.

In the parallel line test table, the significance is 0.677, which is greater than 0.05, so the null hypothesis can be accepted. It is considered that the slope of each category of dependent variables is the same, and the parallel line test passes. Then, the overall fitting of the model is shown in Tables 4–6. As shown in Table 4, the significance in the model fitting information table is 0.000, so it can be considered that the overall fitting degree of the model is high.

Finally, the relationship between the variables and subjective well-being is shown in Figure 3. At the same time, in the original Hypothesis 2, economic status, physical and mental health, ecological environment, social cognition, and personal cognition will have an impact on subjective well-being. After substitution into the model test, the ordered Logit regression results are shown in Table 7.

According to the regression results, based on the economic status, physical and mental health, ecological environment, social cognition and personal cognition, the significant *p*-values are 0.049***, 0.001***, 0.003***, 0.000*** and 0.016** respectively, which are significant at the level, and the test results are in line with the research conclusions. Therefore, the above variables will have a significant impact on subjective well-being. We know that education, work, finance and health have a positive effect on individual subjective well-being (Ilies et al., 2019). In addition, our study shows in Table 7 that for every unit increase in economic status, the probability of subjective well-being increasing by one or more levels increases by 44.9%; for every unit increase in physical and mental health, the probability of subjective well-being increasing by one or more grades increased by 15.6%. For every unit increase in the ecological environment, the probability of subjective well-being increasing by one or more grades increased by 23.7%. For every unit increase in social cognition, the probability of subjective well-being increasing by one or more grades increased by 31.2%. For every unit increase in personal cognition, the probability of subjective well-being increasing by one or more grades increased by 16.2%.

Therefore, it can be proved that economic status, physical and mental health, ecological environment, social cognition and personal cognition will have an impact on subjective well-being, and will have a positive impact on improving subjective well-being, Hypothesis 2 is established.

4.3 Robustness test

To test the robustness of the results of this study. Firstly, some control variables are reduced. In the main regression, the control variables of age, nationality and religious belief are reduced and then regressed. If the results are significant, the robustness is proved. Secondly, this study re-adjusted the index assignment of subjective well-being, an main variable, to test the impact of different subjective well-being standards.

4.3.1 Test for reducing control variables

The robustness of this study is shown in Table 8. Column (1) of Table 8 shows the significance of the effect of years of education and subjective well-being before the reduction of control variables. Table 8 (2) shows the significance of the effect of years of education and subjective well-being after the reduction of control variables. It can be observed that the significance has not changed before and after the reduction, so the results are robust.

TABLE 3 Parallel line test results.

Model	−2 log likelihood	Chi-square	Degree of freedom	Significance
Null hypothesis	442.765			
Routine	430.738	12.027	15	0.677

TABLE 4 Model fitting information table.

Model	−2 log likelihood	Chi-square	Degree of freedom	Significance
Intercept	469.690			
Result	442.765	26.926	5	0.000

TABLE 5 Model goodness of fit table.

	Chi-square	Degree of freedom	Significance
Pearson	114.354	119	0.603
Deviation	119.405	119	0.472

TABLE 6 Pseudo R square table.

Cox-Snell	Negorko	McFadden
0.006	0.006	0.002

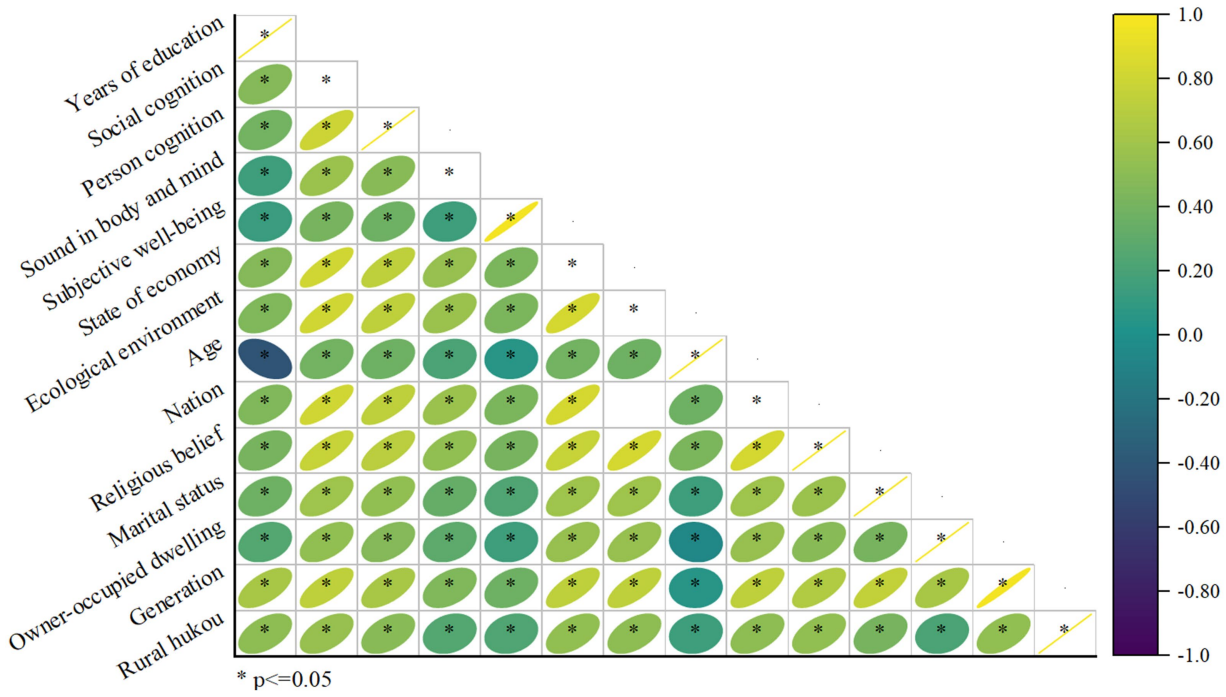

FIGURE 3
The influence of female education years on subjective well-being.

TABLE 7 Ordered Logit regression results.

	Regression coefficient	Standard error	Significant *p*-value	OR Value
State of economy	0.371	0.101	0.049**	1.449
Sound in body and mind	0.131	0.057	0.001***	1.156
Ecological environment	0.206	1.428	0.003***	1.237
Social cognition	0.272	0.103	0.000***	1.312
Person cognition	0.152	0.083	0.016**	1.162

***, **, * represents the significance level of 1, 5, 10% respectively.

TABLE 8 Robustness test results table.

	Subjective well-being	Subjective well-being	Subjective well-being	Subjective well-being
	(1)	(2)	(3)	(4)
Years of education	0.002*** (0.095)	0.006*** (0.088)	0.001*** (0.081)	0.000*** (0.028)
Constant term t	14.302	18.756	21.522	30.944
Regional fixed	Yes	Yes	Yes	Yes
Observed value	4,469	4,469	4,469	4,469
Goodness-of-fit	0.016	0.017	0.025	0.027
R^2	0.008	0.008	0.005	0.004

***, **, * represents the significance level of 1, 5, 10% respectively.

4.3.2 Adjustment of the main variable

The way in which this study adjusts subjective well-being is to adjust the original "very unhappy" and "relatively unhappy" results to an assignment of 1, and to adjust "unhappy," "relatively happy" and "very happy" to an assignment of 2. As shown in Table 8 (3), the results show that there is a significant impact on subjective well-being before adjustment. As shown in Table 8 (4), the results show that there is a significant impact on subjective well-being after adjustment. The results are significant, so the results are again proved to be robust.

4.4 Endogeneity test

This study mainly discusses the relationship between women's years of education and subjective well-being. Combined with previous studies, it has been proved that higher education is associated with better mental health and personal subjective well-being (Lai et al., 2020; Li T. et al., 2023; Li X. et al., 2023). In this study, according to the study of the possible two-way causal relationship between women's years of education and subjective well-being, the main variable years of education affect the main variable subjective well-being. At the same time, the explanatory variable subjective well-being also affects the explanatory variable years of education. Specifically, by increasing their years of education, women have a positive impact on subjective well-being from economic status, physical and mental health, ecological environment, social cognition and personal cognition; at the same time, women's subjective well-being will also react to the years of education. In order to pursue their own subjective well-being, women will take the initiative to improve their years of education, so as to strengthen their acquisition of happiness.

To this end, this study selects the level of development in the region and the nature of female household registration as instrumental variables. First of all, the number of years of education has a certain relationship with the level of development and the nature of household registration in the region (Jin et al., 2020; Fang and Ye, 2022). The more developed the region, the longer the years of education; at the same time, women with urban household registration will generally receive more education than women with rural household registration, thus increasing the number of years of education. Secondly, this study uses the two-stage least squares (2SLS) method to estimate, separates the exogenous part, and conducts a new regression test. The results of endogenous test are shown in Table 9.

Table 9 shows the results of one-stage and two-stage regression. The results of the first stage show that the level of development in the region and the nature of female household registration have positively affected the number of years of education for women, and the Wald *F* statistic value is 299.209 greater than 10, so there is no weak instrumental variable problem. The results of the second stage show that women's years of education can significantly improve subjective well-being at the 1% significance level, indicating that women's years of education are related to subjective well-being. The results are consistent with the findings of Qiu and Zhang's (2021) research, indicating that the education level of women's subjective happiness has a greater impact, and women's education level should be continuously improved to achieve gender equality in education. In summary, the endogenous test results prove that the benchmark regression results of this study are effective.

4.5 Coupling coordination degree analysis

The above part uses the ordered Logit model to explore the relationship between women's years of education and subjective well-being. After completing the above analysis, this study finds that the relationship between women's years of education and subjective well-being in different regions of China is not consistent. In some areas, the increase in the number of years of education of female groups will actively promote their subjective well-being, but in other areas, the increase in the number of years of education of female groups will not significantly promote their subjective well-being. Therefore, by using the coupling coordination model, this study explores the coupling relationship between the years of education and subjective well-being of women in different regions of China, and explores the differences in the degree of influence of female groups in different regions, which is helpful for us to formulate different policies for the improvement of women's subjective well-being in different regions of China.

This study selected Chongqing, Beijing, Hubei Province, Shandong Province, Zhejiang Province, Hunan Province, Fujian Province, Guangxi Zhuang Autonomous Region, Shaanxi Province, Gansu Province, the 10 provinces and cities for analysis. There are three reasons for the selection of these 10 provinces and cities: first, the geographical areas of these 10 provinces and cities are scattered, geographically distributed in the East, Central and West, and are representative; second, the economic development of these 10 provinces and cities has a hierarchy, both economically developed areas, such as Beijing, Zhejiang, etc., but also economically backward areas, such as Guangxi, with a hierarchy; the third is the distribution of population types. There are more female groups in these 10 provinces and cities, and the samples are in line with the theme of this study.

According to the analysis of the coupling coordination model, the results of the coupling coordination model are shown in Table 10.

It can be seen from Table 10 that the degree of influence of women's years of education and subjective well-being in different regions is different. Specifically, the degree of coupling coordination between women's years of education and subjective well-being in Guangxi Zhuang Autonomous Region is the lowest, reaching the degree of serious imbalance, while the degree of coupling coordination between women's years of education and subjective well-being in Beijing and Zhejiang Province is the highest, reaching the degree of quality coordination. This shows that in coastal areas and economically developed areas, the coupling between women's years of education and subjective well-being is the strongest, and women can better achieve subjective well-being by improving their education level. In areas

TABLE 9 Endogenous test results.

Variable	Years of education	Subjective well-being
Years of education		0.043*** (0.02)
The developed level of the region	0.020*** (0.005)	
Nature of household registration	0.041*** (0.009)	
Control variable	Yes	Yes
Observed value	4,469	4,469
Wald *F* statistic	299.209	—
R^2	0.653	0.186

***, **, * represents the significance level of 1, 5, 10% respectively.

TABLE 10 Coupling coordination degree results table.

Provinces, municipalities	Coordination index *T* value	Coupling coordination degree *D* value	Rank of harmony degree	Coupling coordination degree
Chongqing	0.598	0.7733045971672	8	Intermediate coordination
Beijing	0.892	0.9444575162494	10	Good coordination
Hubei province	0.304	0.5513619500836	6	Reluctant coordination
Shandong province	0.5	0.7071067811865	8	Intermediate coordination
Zhejiang province	0.794	0.8910667763978	9	Good coordination
Hu nan province	0.402	0.634034699365	7	Primary coordination
Fujian province	0.696	0.8342661445845	9	Good coordination
Gansu province	0.108	0.3286335345030	4	Mild disorders
Shaanxi province	0.206	0.4538722287164	5	On the verge of disorder
Guangxi Zhuang autonomous region	0.01	0.1	2	Serious imbalance

deviating from coastal areas and economically backward areas, the coupling relationship between women's education level and subjective well-being is weak, and the degree of enhancing women's subjective well-being by improving their education level is weak. Therefore, there are different differences between different regions. Policy makers in different regions need to formulate their own policies and regulations according to the actual situation of their own regions, so as to better improve the subjective well-being of women in the region.

5 Discussions

5.1 Women's years of education have an impact on subjective well-being through different dimensions

The benchmark regression results show that women receiving different years of education can have an impact on subjective well-being through different dimensions such as economic status, physical and mental health, ecological environment, social cognition, and personal cognition. This reflects that women with longer years of education usually have higher incomes or better employment opportunities, are more likely to be guaranteed in physical and mental health, have more active actions on the ecological environment, and show criticality and independence in social participation and personal cognition, which has a positive effect on improving happiness. Among them, education level is related to subjective well-being, and the results are consistent with Cappa and Patton's (2017). Health behavior has a beneficial effect on subjective well-being, and the results are consistent with the research of Stenlund et al. (2021). The impact of education on health and subjective well-being is consistent with the findings of Sheikh et al. (2017). However, it should be noted that different dimensions will not only have a positive impact on subjective well-being, but also have a negative impact. For example, some highly educated women may feel more pressure due to occupational stress, family conflict or increased social expectations, resulting in a decline in happiness. Secondly, highly educated women may face more social pressure and competition, which can lead to anxiety and social problems; finally, some highly educated women may bear greater psychological pressure in life. They have to pay more time in their careers and careers. Naturally, they spend less time in family business, and are more likely to feel the dual pressure of career and family.

5.2 The relationship between years of education and subjective well-being of women in different regions

The analysis of coupling coordination degree shows that the coordination degree of women's years of education and subjective well-being in coastal areas, economically developed areas and urban areas is higher than that in inland areas, economically underdeveloped areas and rural areas. Education level and residence are related to subjective well-being, and the results are consistent with the research of Sun et al. (2018). Women in coastal areas, economically developed areas, and urban areas have economic conditions, rich educational resources, and abundant time. They can better achieve subjective well-being by improving their educational level. Women in inland areas, economically underdeveloped areas and rural areas are influenced by traditional concepts, have no family economic conditions to support them or lag behind in education level, and do not realize their subjective well-being by improving education level.

5.3 Limitations and future studies

5.3.1 Limitations

First, our research focuses on the relationship and influencing factors between the years of education and subjective well-being of Chinese women. Whether the results are universal and whether they are applicable in other countries in the world need further verification. Second, our data come from the 2021 China General Social Survey. Although China's comprehensive social survey data system is comprehensive and authoritative, the questionnaire design and research are not first-hand information. The research process needs to cooperate with and find source data. The initiative is not high, the in-depth research is not enough, and there are defects to a certain extent. Third, in our study, the measurement criteria for variables are relatively simple, mainly relying on a single question to assess the

relationship between years of education and subjective well-being and its influencing factors. A single measurement method may not fully capture the complex relationship between years of education and subjective well-being, as well as the possible multi-dimensional influencing factors.

5.3.2 Future studies

First, research methods and model construction can be innovated. For example, the system dynamics model is used to explore the synergistic relationship between women's years of education and subjective well-being. Second, we can deeply study the influencing factors of marital relationship, family relationship and work relationship which are closely related to women's living status, and how to achieve effective balance in these three complex relationships, so as to improve women's years of education and better obtain happiness. Third, a more comprehensive and multi-dimensional scale can be used to measure the concept of subjective well-being. By designing a scale containing multiple related issues, we can more accurately reveal the internal relationship between years of education and subjective well-being, and provide richer and deeper data support. This approach will help to improve the accuracy and effectiveness of research and provide a more reliable basis for research in the field of women's subjective well-being.

6 Conclusion

In summary, the relationship between women's years of education and subjective well-being is complex and diverse, including both positive and negative aspects. Education can improve women's happiness, but it may also be accompanied by some negative effects, especially in a highly competitive and stressful environment. Based on the above research results, this study puts forward the following three suggestions:

First, government departments should pay more attention to the formulation and implementation of education policies. Let women, ethnic minority residents, disabled people get more educational opportunities, cognitive social skills, in order to face the comprehensive pressure of individual, family and social development, so as to obtain subjective well-being.

Second, vigorously develop the social economy and improve the living standards of residents. Let the society be more dynamic, let the culture be pluralistic and inclusive, and make life colorful. In an equal social environment, women get longer education years, more social interaction, less anxiety and more relaxation, so as to improve their subjective well-being.

Third, balance the family relationship between husband and wife, children and mother-in-law. Husbands need to be more responsible for children's education and housework. Mother-in-law need to rationally look at the difference between the concept of "parenting" and the traditional concept of "filial piety." Give more support and understanding to each other to improve personal subjective well-being.

Data availability statement

Publicly available datasets were analyzed in this study. This data can be found at: Chinese General Social Survey: http://cgss.ruc.edu.cn/.

Ethics statement

Ethical review and approval was not required for the study on human participants in accordance with the local legislation and institutional requirements. Written informed consent from the patients/participants or patients/participants legal guardian/next of kin was not required to participate in this study in accordance with the national legislation and the institutional requirements.

Author contributions

TQ: Conceptualization, Methodology, Writing – original draft. PW: Data curation, Resources, Supervision, Validation, Writing – review & editing. CZ: Formal analysis, Software, Writing – review & editing.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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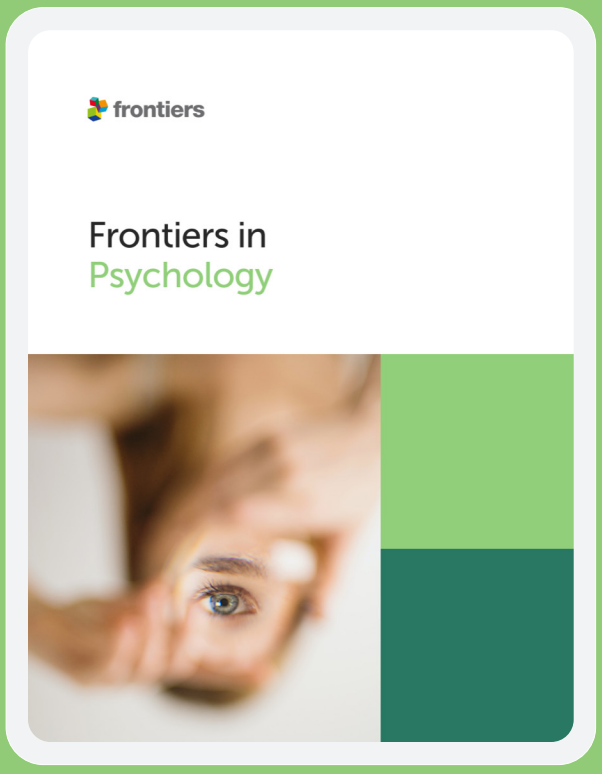

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