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RESEARCH ARTICLE



Sexual-specific disgust sensitivity mechanisms in homonegativity and transnegativity; the mediating role of right-wing authoritarianism (RWA)

Ana Maria Chamorro Coneo ^a, Maria Camila Navarro^b and Nathalia Quiroz Molinares^c

^aDepartment of Psychology, Universidad Del Norte, Barranquilla, Colombia; ^bSchool of Psychology, Universidad Del Sinú, Cartagena, Colombia; ^cDepartment of Social Sciences, Universidad de la Costa, Barranquilla, Colombia

ABSTRACT

Disgust specific to sexual stimuli has been thought to be an adaptation that serves purposes of pathogen-avoidance, partner selection and social dominance. While the link between disgust responses and homonegative and transnegative attitudes has been relatively established, it is not yet clear why. Literature using evolutionary psychology perspectives of these phenomena is scarce in areas with substantial LGBT-related violence like Colombia. This research aimed to study the interplay of predispositional (e.g. sociodemographic, reported contact), affective (e.g. disgust sensitivity) and cognitive (e.g. Right-Wing Authoritarian) variables in homonegative and transnegative attitudes of Colombian adults. Participants (N = 272) had a mean age of 26.38 (SD = 9.47), women comprised 72% of the sample and men 28%. Hierarchical regression analyses showed that increased sexual specific disgust sensitivity and greater RWA predicted stronger homonegativity and transnegativity. The relationship between sexual disgust and prejudice was partially mediated by RWA. Findings suggest that sexual disgust sensitivity adaptations in homonegativity and transnegativity may respond to selection pressures that differ from pathogen-avoidance perspectives, and that are associated with maintaining social hierarchy and social dominance. Anti-prejudice initiatives would benefit from targeting emotional responses of sexual disgust, especially within communities and institutions that have historically endorsed conservative and traditional values.

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1. Introduction

Violence motivated by homonegativity and transnegativity (e.g. torture, kidnapping, murder, physical, sexual and psychological aggression) is a social issue reported in most regions of the world (Free & Equal. United Nations for LGBT Equality, 2017). In 2020, the International Lesbian, Gay, Bisexual, Trans, and Intersex Association (World et al.,) found that 69 out of 193 states that are UN members still criminalised consensual sexual acts between same-sex adults, and currently same-sex marriage remains illegal in 70 regions worldwide (EQUALDEX, 2022). For transgender people discrimination is also significant across various regions of the world, they are the most frequent target of hate crimes. Indeed, between 2008 and 2020 over 3000 trans people were murdered worldwide in the context of hate crime (i.e. crimes committed based on race, religion, nationality of origin, sexual orientation, gender identity, etc.), with Latin America reporting the largest rate of violence against trans people (Transgender Europe, 2020).

CONTACT Ana Maria Chamorro Coneo  chamorroa@uninorte.edu.co  Universidad Del Norte, Barranquilla, Colombia
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Ensuring that the civil and human rights of gay, lesbian, bisexual, and transgender (LGBT) people are protected is a shared interest among Latin American nations (Martínez-Guzmán & Íñiguez-Rueda, 2017). Compared to other South American countries like Paraguay or Venezuela, Colombia has shown a perceivably progressive position regarding the introduction of LGBT inclusive legislation. Since homosexuality was decriminalised in 1981, the rights of Colombian LGBT people have rapidly advanced in terms of adoption, marriage, and corporal transformation, to name a few (Barrientos, 2016; Oettler, 2019). Nevertheless, systematic negative prejudice and explicit discrimination towards LGBT people remain unchanged within the general population (Navarro et al., 2019). According to the observatory 'No Violence LGBTI' (Sin Violencia LGBTI, 2019), within the period 2014–2019, 1,300 LGBT people were murdered in Latin America and the Caribbean; prejudice was the main motive in 30% of the total of registered cases. Close to 43% ($n = 542$) of these homicides were committed in Colombia, with gay men and trans women appearing to be the most affected individuals amongst the LGBT groups. Despite the alarming prevalence of violence towards gay and trans people in Colombia, the literature offers little empirical research aimed at understanding and reducing discrimination in this context (Choi et al., 2019).

To develop effective explicative models about homonegativity and transnegativity, it is necessary to incorporate evolutionary considerations that are common to the human species as living organisms. Because all organisms strive to survive and reproduce using a finite amount of energy and resources, a notable surviving strategy utilised by humans and other species has been organising in communities (Cosmides & Tooby, 2015). Although cooperation with peers solves many problems associated with protection (e.g. from predators), acquisition of resources and ultimately increasing offspring survival rate, socialising is in itself an energy consuming task with potential risk to the integrity of the organism (e.g. peer violence, contamination with pathogens). Deciding which peers were a better fit for social exchange (and excluding those who were not), was likely a problem occurring throughout the history of the human species since community living started. Thus, certain adaptations may have been shaped through natural selection to facilitate contact with some individuals and exclusion of others (Kurzban & Neuberg, 2015).

Emotions help humans solve problems associated with survival and reproduction, including in scenarios of social exchange. To illustrate, fear motivates behaviours that would safeguard an individual from threats to their physical safety (e.g. hiding from predators, avoiding heights). Conversely, anger may lead the individual to disregard threats and engage in risk-taking behaviours such as interpersonal physical conflict (Inbar & Pizarro, 2016; Tooby & Cosmides, 2015). Prejudice conveys a diverse and complex profile of emotions that are specific to each prejudiced group. For instance, in Cottrell and Neuberg (2005), a sample of European American students reported higher disgust towards gay men than towards any other prejudiced group out of a list that included African Americans and Mexican Americans. Furthermore, compared to other negative emotions (e.g. resentment, pity), disgust was the most reported emotion towards gay men.

In humans and some non-human species, disgust functions as a key emotional response in the avoidance or rejection of contact with potentially contaminating and harmful stimuli (e.g. body fluids, faeces, or decomposed food; Curtis, 2014; Tybur & Lieberman, 2016). However, disgusting or repulsive responses may also be evoked by stimuli that do not pose a direct contamination threat, such as moral violations (Inbar & Pizarro, 2016), sexual partners and sexual acts (Hodson et al., 2013; Tybur et al., 2009). Disgust is a universal emotion that comprises a series of domains, which are specific to the types of triggering stimuli. Haidt et al. (1994) and Tybur et al. (2009) have identified disgust domains specific to animal-reminder, moral offences, pathogen or contamination and sexual behaviours. Though evidence reports the distinctive role of disgust as a predictor of homonegativity (Kiss et al., 2020; Vanaman & Chapman, 2020), it is not yet clear what specific domain of disgust relates to prejudice towards other LGBT groups such as transnegativity, or in what way this adaptation contributes towards survival and reproduction of the species.

From an evolutionary psychology standpoint, stigmatising and excluding certain individuals serves a purpose in (i) maximising chances of survival by reducing exposure to potential pathogen contamination (Kurzban & Leary, 2001; Schaller & Park, 2011; Van Leeuwen & Petersen, 2018); (ii) increasing chances of reproduction by focusing energy and resources on social exchange that leads to mating (Haidt et al., 1994); and (iii) potentiating the exploitation of marginalised groups to secure privilege over resources and social dominance (Ray & Parkhill, 2021). Individuals of groups that are common targets of prejudice activate in observers a content-specific system that triggers certain emotional, cognitive, and behavioural responses when faced with people that have different attributes (e.g. ethnic minorities, trans and gay people).

Disgust in homonegativity and transnegativity may be an adaptation that evolved to increase avoidance of potential sources of pathogens, also known as the Behavioural Immune System (BIS; Schaller, 2006). The relationship between disgust and prejudice towards gay and trans people has been suggested to be based on beliefs about anal intercourse, which may involve contamination through contact with body fluids or faecal matter (Filip-Crawford & Neuberg, 2016; Kiss et al., 2020; Vanaman & Chapman, 2020). Indeed, the anti-gay and anti-trans discourse in the media appears to rely heavily on the use of a 'rhetoric of disgust' to elicit emotions that would discourage the introduction of pro-diversity legislation (McAwan, 2011; Morrison et al., 2019). If homonegativity and transnegativity are linked to fear of pathogen contamination or BIS, results would likely highlight a pathogen disgust domain as a significant predictor. However, recent findings challenge the hypothesis of a BIS mechanism in responses towards gay and trans people, as reports indicate a greater influence of a sexual specific disgust sensitivity domain operating in homonegativity (Ray & Parkhill, 2021) and disgust-driven moral concerns in transnegativity (Vanaman & Chapman, 2020).

On the other hand, sexual disgust has been suggested as part of an adaptation that increases the chances of achieving reproductive success and it responds to a selection problem that is different from that of pathogen-avoidance (Tybur et al., 2009). Selecting a sexual partner is central in producing healthy and multiple offspring. Thus, an added selection pressure in social exchange includes assessing potential partners in terms of their relevance for reproductive success (e.g. intrinsic quality, genetic compatibility; Jennions & Petrie, 2000; Neff & Pitcher, 2005). Natural selection may have shaped systems that motivate the pursuit of sexual partners (e.g. lust, sexual arousal), but also adaptations such as sexual disgust that discourage contact with partners that have low prospects of producing quality offspring. If this disgust system is triggered by sexual stimuli, it makes sense that responses of disgust towards LGBT people also are sensitive to the individual's social attitudes that determine views around sexuality and gender (Morrison et al., 2019).

The endorsement of traditional values regarding gender roles, religious fundamentalism and support for established authorities, also known as Right-Wing Authoritarianism (RWA), has been identified as a significant predictor of prejudiced attitudes and discriminatory behaviour towards gay and trans people (Nagoshi et al., 2008; Sibley & Duckitt, 2008). Right-wing Authoritarianism appears to play a key role in relation to disgust responses towards gay and trans people (Terrizzi et al., 2013). In Miller et al. (2017) both disgust sensitivity and RWA predicted opposition to transgender rights and body-centric transgender rights policies. In the case of homonegativity, a recent meta-analysis found a moderate to large effect size ($d = .41$) when examining disgust sensitivity as a predictor of heterosexual participants' homonegativity, specifically towards gay men (Kiss et al., 2020).

A few studies have suggested a mediating role of RWA in the interplay of variables that predict prejudiced attitudes towards outgroups and behaviours that defy traditional ideologies about family and sexuality (Hoffarth & Hodson, 2018). In Patev et al. (2019), RWA mediated the relationship between sexual disgust and stigmatising attitudes about abortion. In the specific relationship between disgust and attitudes towards gay people, Olatunji (2008) found that core disgust sensitivity predicted homonegativity, but this relationship was partially mediated by conservative sexual ideology. Similarly, more recent studies (e.g. Wang et al., 2019) showed that the endorsement of traditional moral views (e.g. sanctity of marriage) operated as a mediator in the relationship between disgust sensitivity and negative attitudes towards homosexuality. However, to date, the mediating

role of RWA in the relationship between sexual disgust sensitivity and negative attitudes towards trans people remains largely unexplored, especially in samples from societies of the global south (Gomes da Costa Santos & Waites, 2022).

This known interaction of disgust sensitivity and RWA indicates that the psychological mechanisms activating responses towards gay and trans people are sensitive to sociocultural influence (Terrizzi et al., 2013). Thus, considering current societal dynamics of group dominance is key for comprehending manifestations of homonegativity and transnegativity (Morrison et al., 2019). According to Social Dominance Theory, social hierarchies can be arbitrarily formed within group living structures to systematically privilege some members of the group and discriminate against others based on attributes such as ethnicity, religious affiliation, or sexual orientation (Pratto et al., 2006). Because survival and reproductive success of any given individual depends partly on their position within a social hierarchy, it is pivotal for dominant groups to introduce ideologies that can justify and legitimise disproportionately favouring one group over another (Eldridge & Johnson, 2011). Aligned with this social dominance perspective, it may be that gay men and other LGBT individuals threaten the heteronormative ideology and heterocentric norms (i.e. the idea that being cis and heterosexual is normal; Habarth, 2014; Kitzinger, 2005) that justify the group-based social hierarchy favouring heterosexual masculinity. According to Ray and Parkhill (2021), gay men may elicit sexual disgust because they are seen as transgressors of heteronormative ideals and somehow jeopardise the stability of dominant group members. Disgust may have evolved as an adaptation that motivates responses oriented to protect established social hierarchies (Hodson & Costello, 2007; Kiss et al., 2020; Morrison et al., 2019).

The emerging field of evolutionary psychology aims to map out the principles of human behaviour, which requires researching psychological phenomena within different cultures. This is also true in the study of prejudice towards gay and trans people. It is imperative to gain insights from various cultural contexts in order to test hypotheses about the whole human species. Understanding the role of disgust and social attitudes like RWA in homonegativity and transnegativity is paramount to help build anti-discrimination initiatives that effectively reduce prejudice and facilitate inclusion (Filip-Crawford & Neuberg, 2016). This is particularly urgent in countries of the global south that present high prevalence of discrimination and violence towards LGBT people (Choi et al., 2019).

2. The present study

This research aimed to investigate psychosocial predictors of homonegativity and transnegativity in Colombian participants. Conceptually, homonegative, and transnegative responses could be based upon evolved systems that were shaped by natural selection to solve problems associated with social exchange. Interacting with certain individuals within the group may risk survival and reproduction, but subjugating others also helps towards maintaining dominance of certain groups within a societal hierarchy. Thus, the first hypothesis of this study anticipated that increased levels of disgust sensitivity would predict greater homonegativity and transnegativity (H1). Previous research has suggested that different domains of pathogen-related disgust are significantly associated with prejudice towards gay people (Filip-Crawford & Neuberg, 2016; Hudiyanan et al., 2021; Kiss et al., 2020). Nevertheless, other reports indicate that it is a sexual disgust sensitivity domain that influences homonegativity (Morrison et al., 2019; Ray & Parkhill, 2021). On the other hand, transnegative attitudes are comparatively less understood than homonegativity, but studies like that of Vanaman and Chapman (2020) report a moral disgust sensitivity domain predicting attitudes towards gender diversity. Since there is no record to date of a study examining these specific variables in a context like the Colombian one, hypothesis one (H1) did not specify which disgust sensitivity domain would be the predictor of homonegativity and transnegativity in this sample.

The study's second hypothesis expected that stronger homonegative and transnegative attitudes would be predicted by greater RWA (H2). Moreover, to expand on the current research about the interaction of these predictor variables, this study also hypothesised a significant mediating role of RWA in the relationship between disgust sensitivity and both homonegativity and transnegativity (H3).

3. Methods

3.1 Design and procedure

This study used a cross-sectional design with convenient sampling. All measures were built into an online questionnaire using the survey distribution platform SoSci, which was available to respondents via www.soscisurvey.de. The questionnaire consisted of eight pages and all items were programmed to require an answer before allowing participants to continue to the next page. Colombian residents aged 18 years or over were invited to take part in the study via social media posts (e.g. Instagram, Facebook) and other outlets (email lists). By clicking on the study's link participants were led to an information sheet with further details about their participation and the study. After granting consent, respondents were asked to provide socio-demographic information such as age, gender, religious affiliation, and relationship status. Then, participants completed a series of Likert-type questionnaires about disgust sensitivity, RWA, contact with gay and transexual people and dependant measures of homonegativity and transnegativity. The last page of the questionnaire offered a debrief of the study and thanked participants for their time.

While participation in the survey was voluntary, respondents had the opportunity to take part in a raffle prize of two 100,000 COP (26 USD) supermarket vouchers in exchange for their time. The study received 988 clicks (including clicks by mistake or by search engines), but only 318 responses were recorded on the SoSci platform. Forty-six participants started the questionnaire but did not finish all eight pages, thus invalidating their responses. Overall, a total of 272 responses were included in the analysis. The time that each participant used completing the questionnaire and the responses recorded were reviewed in all 272 individual records. No 'straight lining' nor unrealistic completion times were identified, as participants spent at least 5 minutes completing the questionnaire. Prior to any data collection activities, an institutional review board (IRB) reviewed and approved the study (Ref. 239) to ensure it complied with research standards of anonymity, confidentiality and data handling for research using human participants.

3.2 Participants

Participants' age ranged from 18 to 57 years and the sample had a mean age of 26.38 ($SD = 9.47$). Respondents were mainly women ($n = 197$) and from the northern region of Colombia ($n = 262$). The sample comprised people with different occupations, including students ($n = 150$), in employment or freelance activities ($n = 91$) and retired ($n = 2$). Most participants reported following Christian (i.e. either Catholic or Protestant) faiths ($n = 197$), and the remaining 27.5% ($n = 75$) did not follow any religious affiliation. A heterosexual orientation was reported by 86% ($n = 234$) of participants, but the sample also included gay, lesbian, bisexual, pansexual and asexual respondents ($n = 27$). See, [Table 1](#) for full sociodemographic details.

3.3 Measures

3.3.1 Predispositional variables

Demographic data. Participants provided information about age in years, gender (coded 0 = woman, 1 = man), socioeconomic status (SS; groups from 0 to 6, according to the Colombian social stratification system see www.dane.gov.co), place of residence, occupation, marital status, sexual

Table 1. Demographic characteristics (N = 272).

Variable	Count	%
Gender		
Woman	197	72.2
Man	75	27.5
Sexual orientation		
Heterosexual	234	86
Gay, lesbian, or bisexual	24	8.8
Pansexual	2	.7
Asexual	1	.4
Other/prefer not to say	11	4.4
Social stratification		
Low (1–2)	135	49.5
Medium (3–4)	105	38.5
High (5–6)	32	11.7
Religious affiliation		
Christian-Catholic	159	58.2
Christian-Protestant	38	13.9
Without religious affiliation	75	27.5
Occupation		
With employment	66	24.3
Unemployed	29	10.6
Freelance	25	9.2
Student	150	54.9
Retired	2	.7

orientation, and religious affiliation. Response options for the religious affiliation item captured people without religious affiliation and two different Christian denominations (i.e. Protestant and Catholic). However, this variable was dichotomised for the regression analysis as with (coded = 1) and without religious affiliation (coded = 0).

Reported contact with gay and trans individuals. The contact with out-group scale by Salazar and Saiz (2015) contains an initial item that asks whether the respondent has had contact with a specific group (Yes or No question). If the answer is 'yes', the participant is instructed to respond to six more items using a 7 point-likert scale; 3 items query about frequency (e.g. 1 = 'No contact', 7 = 'Frequent contact') and 3 items concern quality of social contact (e.g. 1 = 'Very superficial' and 7 = 'Very deep'). The original scale measured contact with Chilean indigenous ethnic minorities (i.e. Mapuche ethnicity), but in this study, this scale was adapted to measure contact with gay and trans people separately. Totals in terms of frequency and quality of contact were obtained by computing the mean value of each subscale. The scores of the overall scale were calculated by adding up responses from all six items (frequency and quality). Total scores ranged between 1 and 41 for contact with gay and lesbian people and between 1 and 39 for contact with trans individuals. Higher scores represented higher frequency and quality of contact. The alpha coefficients indicated good scale score reliability for the subscales of frequency $\alpha = .92$ (95% confidence interval (CI) .91–.94) and quality $\alpha = .88$ (95% CI .80 – .88) of contact with gay individuals, as well as the subscale of contact with trans people (quantity $\alpha = .86$; 95% CI .82 – .90), quality $\alpha = .88$; 95% CI .83 – .91). The scale showed good scale score reliability $\alpha = .87$ (95% CI .84 – .90) as a whole.

3.3.2 Predictor variables

Sensitivity to disgust or disgust. The three-domain disgust scale (TDDS; Tybur et al., 2009) measures respondents' level of disgust by using items with sexual, pathogen-related, and moral statements. This study used the Spanish adaptation proposed by Sandín et al. (2013), which uses 21 items with

a 7-point Likert scale, where 0 is 'Not gross at all' and 6 is 'Extremely gross'. Totals for each sub-scale were calculated by adding up the items composing sexual, moral and pathogen domains of disgust. Total scores range from 0 to 126 and higher scores indicate greater disgust sensitivity. The alpha coefficients for each disgust sensitivity subscale suggested a sound scale score reliability of this instrument and its subscale; sexual subscale $\alpha = .82$ (95% CI .78 – .85), moral subscale $\alpha = .88$ (95% CI .86 – .90), pathogen subscale $\alpha = .76$ (95% CI .72 – .80) and for the overall instrument $\alpha = .86$ (95% CI .83 – .88).

Right-wing authoritarianism. The Right-Wing Authoritarianism scale (RWA; Dunwoody & Funke, 2016) measures people's level of endorsement to traditional values and society's established authorities. It consists of three sub-constructs of 4 items each (aggression, submission, and conservatism) that must be rated with a 7-point Likert-type scale. Following Dunwoody and Funke (2016), the sub-construct totals were calculated by reverse coding selected items and summing up those belonging to each subscale. The total of the overall scale was computed by obtaining the mean score of all 12 items (Cohrs & Asbrock, 2009). The possible range of total score ranges from 12 to 84. Higher scores indicate greater right-wing authoritarianism. The psychometric characteristics of the Spanish adaptation of this scale were acceptable in a Spanish sample (Tapia Valladares et al., 2013), but in this study, the scale score reliability appeared to be within the questionable range in all subscales, namely; aggression $\alpha = .43$ (95% CI .31 – .53), submission $\alpha = .55$ (95% CI .45 – .62), and conservatism .49 (95% CI .37 – .57). However, the overall instrument showed acceptable scale score reliability $\alpha = .72$ (95% CI .67 – .77).

3.3.3 Outcome variables: prejudice

Attitudes towards gay and lesbian persons. The Homophobia Scale (Wright et al., 1999) is a 25-item scale that measures prejudiced attitudes towards gay and lesbian individuals. Responses are recorded on a scale of 1 (strongly disagree) to 5 (strongly agree) with higher values indicating greater homophobia (homonegativity). After reverse scoring selected items, totals for each subscale and for the overall scale were computed by adding up the subscale's items and subtracting the number of items composing each scale (see detailed scoring method in Ciocca et al., 2015). Total scores ranged from 0 to 100. Higher scores indicate greater homophobia (homonegativity). In this study the alpha coefficients suggested adequate scale score reliability for each subscale; negative cognitions towards homosexuality: $\alpha = .73$ (95% CI .68 – .78), behaviour-negative affect $\alpha = .78$ (95% CI .74 – .82), affect-behavioural aggression $\alpha = .84$ (95% CI .81 – .87), and for the overall instrument $\alpha = .89$ (95% CI .88 – .91).

Attitudes towards trans people or trans persons: This 9-item scale by Páez et al. (2015) measures negative attitudes towards trans people. Most items use a neutral wording that does not specify whether it refers to trans men, women, or non-binary individuals (e.g. '*Trans people should not be able to teach in schools*'). Only the wording of one item made an explicit reference to trans women (i.e. '*trans women are men disguised as women*'). Answers range from 1 (Strongly agree) to 5 (Strongly disagree) and higher values indicate more negative attitudes towards trans individuals. Totals were calculated by reverse coding one item and summing all of the items (total scores range from 9 to 45). The scale had good levels of scale score reliability in this study $\alpha = .86$ (95% CI .83 – .88).

3.4 Pre-testing procedures

Pilot testing and adaptation of instruments. The homophobia scale by Wright et al. (1999) underwent translation using the quality assurance technique Back-Translation (BT). Two independent interpreters conducted the translation of the scale, first from the original English version into Colombian Spanish, and then back into English. The translated versions of the scale were then compared, and differences discussed amongst the interpreters. After achieving a reconciliation of these differences, the end result of the questionnaire in Colombian Spanish was pilot tested, along with all the

measures of this study. Twenty-one ($N = 21$) volunteers ($M = 34.85$, $SD = 13.89$, 61.9% Women) completed an online questionnaire, which was available to participants through a link distributed via email lists and social media. Results indicated a good overall understanding of the instruments amongst participants and there was an adequate distribution of the instrument's scores. However, certain items of the transnegative attitudes' questionnaire (Páez et al., 2015) were identified as ambiguous regarding the way transgender people were portrayed. Thus, items including the term 'travesti' were expanded to cover trans women as well as travesties.

Sample size calculation. In anticipation of the full study, a power analysis was conducted with the software G*Power 3.1 (Faul et al., 2009). A medium effect size ($d = .54$) such as those reported in previous studies measuring RWA and disgust sensitivity as predictors of prejudicial attitudes (e.g. Maftei & Holman, 2020; Terrizzi et al., 2010) was used as a reference in the calculation. Results indicated that to conduct a linear multiple regression with 8 predictors, an alpha of .05, and a power of .95, at least 160 participants would be required to detect a medium effect size 95% of the times.

3.5 Data analysis

Initially, descriptive analyses and mean comparisons were performed with data from 272 participants. Then, correlation analyses (i.e. Point-biserial for dichotomous and Pearson correlation for continuous variables) were calculated. No indication of collinearity was explicit amongst predictor variables as all correlation coefficients were well below the acceptable limit of .70 (see, Table 2). Further tests to ensure that assumptions for multivariate regression analyses were met included independence of residuals (Durbin–Watson homonegativity = 1.58/ transnegativity = 1.87) and examining that the residual and scatter plots satisfied homoscedasticity and normality. All analyses were performed on SPSS version 26 (IBM Corp, 2019).

Following the analysis strategy reported in previous prejudice studies (e.g. Hodson & Costello, 2007; Terrizzi et al., 2010), hypotheses one (H1) and two (H2) were addressed by conducting two hierarchical regression analyses, one for each of the outcome variables of prejudice; homonegativity and transnegativity. The variables were entered in the analysis following the dual process of stigma model by Reeder and Pryor (2008), which proposes that stigma responses encompass two distinctive processes: initially, a reflexive or associative process manifests automatic reactions (e.g. fear or disgust) in the presence of a stigmatised target. Subsequently, a rule-based process performs conscious deliberations to adapt the initial

Table 2. Means, standard deviations, point-biserial and Pearson correlation matrix for main variables.

Variable	M	SD	1	2	3	4	5	6	7	8	9	10
1. Gender (†)	.28	.45										
2. Age	26.38	9.48	.12*									
3. Religion (‡)	.72	.45	-.14*	.21**								
4. Reported contact with trans people	26.18	9.98	-.14*	-.25**	-.22**							
5. Reported contact with gay people	17.51	7.02	-.13*	-.11	-.01	.39**						
6. DS-Pathogen	25.62	8.29	-.18**	-.03	.07	.05	.00					
7. DS-Moral	27.51	9.96	-.10	.05	.01	.01	.06	.23**				
8. DS-Sexual	22.00	9.92	-.49**	.01	.15**	-.19**	-.05	.37**	.34**			
9. Authoritarianism	3.86	.94	-.02	.24**	.28**	-.44**	-.15*	.05	.08	.29**		
10. Homonegativity	21.60	16.17	.08	.20**	.20**	-.53**	-.15*	.06	-.03	.29**	.48**	
11. Transnegativity	19.79	8.04	.06	.21**	.24**	-.52**	-.19**	.06	.03	.30**	.54**	.78**

* $p < .05$, ** $p < .01$; (†) Man = 1; Woman = 0; (‡) Christian affiliation = 1, without affiliation = 0

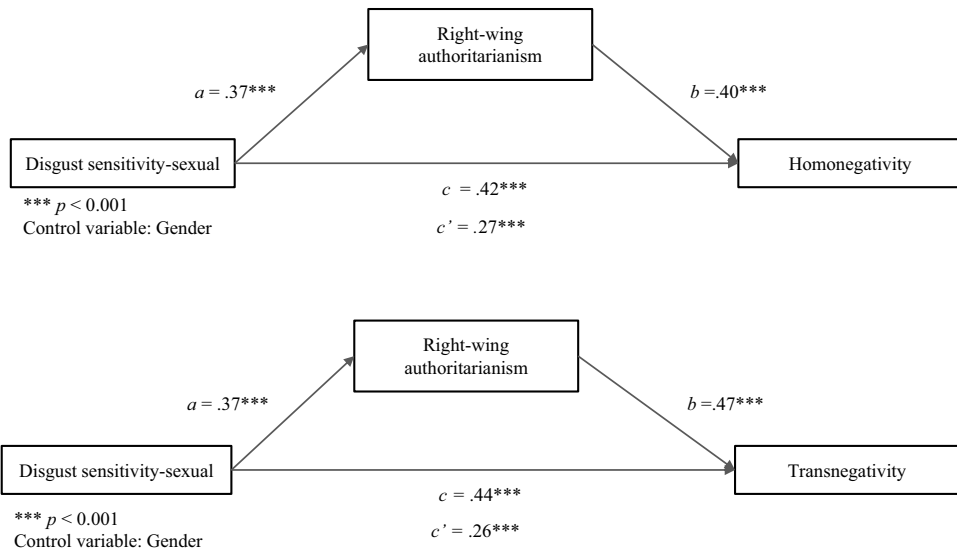


Figure 1. Path regression standardized coefficients for each model

response in congruence with sociocultural influences such as social norms, belief systems and social attitudes. The variables were entered in the model in three blocks; the first one consisted of predispositional variables such as sociodemographic information (i.e. age, gender, and religious affiliation) and reported contact with gay and trans people. Next, following Reeder and Pryor (2008), affective variables of disgust sensitivity (i.e. moral, sexual and pathogen domains) were included as the second block of the regression. The final block comprised social attitudes in the form of RWA. As a result of the questionable scale score reliability observed in the three sub-constructs of the RWA scale, the regression analyses were performed using the composite totals of this measure.

The SPSS extension PROCESS macro version 3.3 was used to test hypothesis 3. Two separate simple mediations were conducted with predictor variables that showed p-values below .05. The bootstrap sampling was set at 5,000 replications and confidence interval (CI) at 95%. Following the conceptual diagrams by Hayes (2013), a mediation model with one mediator was used to test the hypotheses. An indirect effect was significant when the CI did not include zero. Following Long and Ervin (2000), heteroscedasticity Consistent Standard Errors (HCSE) for small samples ($N < 250$) version HSC3, were used in the regression model.

4. Results

Descriptive statistics of predictor variables. The point-biserial and Pearson correlation matrix can be found in Table 2.

Results from two hierarchical regression analyses showed that two predispositional variables were statistically significant. Firstly, compared to women, men reported greater homonegativity, $B = 5.26$, $\beta = .14$, $t(8, 271) = 2.49$, $p = .01$, and transnegativity, $B = 3.61$, $\beta = .20$, $t(8, 271) = 3.44$, $p = .001$. Secondly, those that reported greater previous contact with gay people also reported less homonegativity, $B = -.54$, $\beta = -.33$, $t(8, 271) = -5.87$, $p < .001$, but this relationship was non-significant for transnegativity ($p > .05$). See Table 3 and Table 4 for summary of hierarchical regression outcomes for homonegativity and transnegativity. Congruently with hypothesis one, disgust sensitivity towards sexual stimuli was a predictor of homonegativity, $B = .40$, $\beta = .25$, $t(8, 271) = 3.77$, $p < .001$, and transnegativity, $B = .23$, $\beta = .29$,

Table 3. Summary of hierarchical regression coefficients for homonegativity (N = 272).

Variable	Model 1			Model 2			Model 3		
	B	SE B	<i>B</i>	B	SE B	<i>B</i>	B	SE B	<i>B</i>
1. Gender (†)	.22	1.92	.01	5.74	2.18	.15*	5.26	2.11	.14*
2. Age	.10	0.09	.05	.11	.09	.07	.07	.09	.04
3. Religion (‡)	3.06	.08	.08	2.62	1.90	.07	1.17	1.86	.03
4. Reported-contact (§)	-.80	.08	-.50**	-.67	.09	-.41**	-.54	.09	-.33**
5. DS-Pathogen				.04	.11	.02	.05	.10	.03
6. DS-Moral				-.20	.09	-.12*	-.20	.08	-.12*
7. DS-Sexual				.50	.11	.30**	.41	.11	.24**
8. RWA							4.30	.97	.25**
R ²		.29**			.35**			.40**	
F for change in R ²		27.38**			8.33**			19.61**	

^a $p < .05$, ** $p < .01$; (†) Man = 1; Woman = 0; (‡) Christian affiliation = 1, without affiliation = 0; (§) Reported contact with gay people.

Table 4. Summary of hierarchical regression coefficients for transnegativity (N = 272).

Variable	Model 1			Model 2			Model 3		
	B	SE B	<i>B</i>	B	SE B	<i>B</i>	B	SE B	<i>B</i>
1. Gender (†)	.97	1.06	.05	4.61	1.14	.25**	3.61	1.05	.20**
2. Age	.12	.05	.13*	.11	.05	.12*	.05	.04	.06
3. Religion (‡)	3.92	1.07	.21**	3.30	1.01	.18**	1.68	.94	.09
4. Reported-contact (§)	-.19	.07	-.17*	-.14	.06	-.12*	-.09	.06	-.08
5. DS-Pathogen				-.04	.06	-.04	-.02	.05	-.02
6. DS-Moral				-.07	.05	-.09	-.06	.04	-.08
7. DS-Sexual				.36	.06	.43**	.24	.05	.29**
8. RWA							3.55	.47	.41**
R ²		.12**			.24**			.37**	
F for change in R ²		8.94**			13.87**			57.71**	

* $p < .05$, ** $p < .01$; (†) Man = 1; Woman = 0; (‡) Christian affiliation = 1, without affiliation = 0; (§) Reported contact with trans people

$t(8, 271) = 4.49$, $p < .001$. Furthermore, the variable of disgust sensitivity towards pathogen-related cues did not predict greater homonegativity nor transnegativity ($p > .05$). With regards to the moral disgust sensitivity domain, results unexpectedly showed a small, but statistically significant association of this disgust domain with homonegativity, $B = -.20$, $\beta = -.12$, $t(8, 271) = -2.77$, $p = .006$. Moral disgust sensitivity was not a statistically significant predictor of transnegativity ($p > .05$).

As anticipated in hypothesis two, greater right-wing authoritarianism predicted increased homonegativity, $B = 4.30$, $\beta = .25$, $t(8, 271) = 4.42$, $p < .001$, and transnegativity, $B = 3.55$, $\beta = .41$, $t(8, 271) = 7.59$, $p < .001$.

Further mediation analyses conducted to test hypothesis three indicated that right-wing authoritarianism indirectly mediated the relationship between sexual disgust sensitivity and stigmatising attitudes towards gay, (c') $B = .45$, $\beta = .27$, $CI = .23, .66$, and trans people (c') $B = .21$, $\beta = .26$, $CI = .10, .32$ (See [Figure 1](#)). The proposed model explained 29% of the variance in homonegativity, $F(3, 268) = 51.09$, $p < .001$, $R^2 = .26$ and 35% of the variance in transnegativity, $F(3, 268) = 62.51$, $p < .001$, $R^2 = .35$.

5. Discussion

This is the first study to date using the principles of evolutionary psychology to understand homonegativity and transnegativity in Colombia, a country known for its high prevalence of violence towards LGBT people (Barrientos, 2016; Choi et al., 2019; Oettler, 2019; Sin Violencia LGBTI, 2019). Findings showed that higher disgust sensitivity and stronger RWA views predicted more homonegativity and transnegativity (H1 and H2). The dimension of disgust sensitivity that best predicted homonegative and transnegative attitudes was sexual specific disgust sensitivity, and this relationship was partially mediated by RWA (H3). This partial mediation model implies that sexual disgust sensitivity is directly and indirectly related to homonegativity and transnegativity, via social attitudes of RWA.

Disgust is evoked by a heterogeneous group of stimuli that anticipate tangible threats to the organism (e.g. contamination, pathogens). However, disgust responses are also elicited in response to social cues that anticipate whether a given social exchange will increase chances of reproduction or help boost social status and access to resources. Though the relationship between disgust sensitivity and prejudice towards gay people is well established (Filip-Crawford & Neuberg, 2016; Kiss et al., 2020), the reason why gay and trans people elicit disgust is less understood. It is unclear if disgust responses in homonegativity and transnegativity serve a function of pathogen-avoidance as suggested by the BIS approach (Filip-Crawford & Neuberg, 2016; Hudiyanana et al., 2021; Schaller, 2006), or whether sexual-specific domains of disgust respond to a different selection pressure, for instance, increasing mating chances with reproductive purposes (Tybur et al., 2009) or maintaining social hierarchies and social dominance (Ray & Parkhill, 2021). Furthermore, considerably less attention has been directed at exploring the role of disgust sensitivity in responses of transnegativity, especially in contexts of the global south.

The BIS perspective suggest that disgust is evoked in homonegative responses because gay people are a reminder of certain sexual practices that involve the exchange of fluids, potential contact with faeces (i.e. through anal sex) and ultimately contamination, which risks survival of the organism (Haidt et al., 1994; Kiss et al., 2020). However, if disgust were to be associated with homonegativity to serve a purpose of pathogen-avoidance, it would make more sense that the pathogen-specific disgust sensitivity domain predicted prejudice towards gay and trans people (Morrison et al., 2019; Ray & Parkhill, 2021; Van Leeuwen & Petersen, 2018). This study's findings challenge this pathogen-avoidance framework in support of alternative interpretations of the role of sexual specific disgust sensitivity and RWA in homonegativity and transnegativity.

Sexual specific disgust sensitivity has also been thought of as an adaptation that was shaped by selection problems that are different to that of contamination avoidance. Tybur et al. (2009) proposes that sexual disgust helps to resolve problems associated with social exchange, particularly, boosting chances of long-term reproductive success by avoiding unsuitable sexual partners and practices. Recent interpretations of what the sexual disgust domain entails, propose that systems that trigger sexual disgust could be sensitive to sociocultural representations of the sexual stimuli. Thus, greater homonegative and transnegative attitudes would also depend on the observers' representations and values about sexuality. Indeed, it is well documented that higher disgust sensitivity predicts stronger authoritarian or conservative attitudes that favour exclusion of people based on attributes that transgress ideals about gender and sexuality (Terrizzi et al., 2013).

In congruence with the literature, in this study greater RWA was a significant predictor of both homonegativity and transnegativity. Findings also suggested that greater sexual disgust sensitivity increased homonegative and transnegative responses via socially conservative belief systems or RWA. These results may indicate that the adaptations that elicit sexual disgust also incorporate the observers' sociocultural representations about sexuality when responding to sexual stimuli (Morrison et al., 2019; Ray & Parkhill, 2021). Cottrell and Neuberg (2005) have shown how emotional reactions that are provoked by people from certain groups (e.g. disgust, fear, envy), depend on the type of perceived threat and thus responses are sensitive to different target groups. Since gay and trans

people infringe upon the social order in which heteronormative masculinity is privileged (Habarth, 2014), it makes sense that the relationship between sexual disgust sensitivity and prejudice is mediated by adherence to belief systems that condemn homosexuality and gender diversity.

Although not explicitly addressed in the study, another interesting finding was that compared to women, men showed significantly greater negative attitudes towards gay and trans people, even after introducing disgust sensitivity and RWA measures in the model. It has been suggested that the traditional masculine identity is sustained by a more profound endorsement of gender norms and sexist beliefs that distance masculine from feminine traits (Bosson & Michniewicz, 2013). Thus, it may be that gay and trans people threaten these ideals of masculinity and as a result men report significantly stronger levels of homonegativity and transnegativity compared to their women counterparts (Kiss et al., 2020; Nagoshi et al., 2008). Perhaps these gender differences are also somehow indicative of how sociocultural ideologies about sexuality and gender norms help justify heteronormative social hierarchies that privilege people of specific attributes, in this case, gender and sexual orientation. To test if sexual disgust sensitivity and prejudice respond to variations in sociocultural ideologies, further research would benefit from cross-cultural comparisons between societies with different representations of sexuality and gender (e.g. human groups without exposure to globalisation).

There were some limitations to this research that must be mentioned. First, the study used convenience sampling and thus findings may not be representative of the public. For instance, it was surprising to find that stronger disgust sensitivity to moral transgressions predicted lower levels of homonegativity, since the opposite was anticipated. These findings may reflect issues associated with the sampling strategy and characteristics of participants. It may be that the sample was representative of university students and employees who hold equality values in which homonegativity is the moral breach (not being LGBT), thus linking stronger sensitivity to moral breach to decreased homonegativity. Future research would be enhanced by the introduction of sampling techniques that allow representativeness of the public rather than privileged sectors of society (e.g. stratified random sampling). The second limitation in this study was the use of self-report questionnaires and lack of control over potential self-presentation bias. Because homonegativity and transnegativity are attitudes that contradict western ideals of inclusion and diversity, literature suggests that participants may try to respond in a more socially desirable way, thus hiding their 'real' attitudes. There is a tangible need of developing measures of prejudice that are less prone to self-presentation bias, such as physiological responses or implicit attitude tests. Alternatively, the introduction of social desirability scales could help control for these biases in future analyses. Another limitation was that the homonegativity scale utilised in the study was not formally validated into Spanish, it was only adapted through 'back translation' for this study. Further, psychometric analysis and more sophisticated quality assurance techniques would preferably be used in forthcoming research to ensure the internal and external reliability of the instruments. Finally, this study was cross-sectional; therefore, these relationships do not infer causation.

Despite the aforementioned limitations, these findings offer valuable insights to the ongoing research of prejudice towards LGBT people. Disgust in prejudice and discrimination responses has been linked to a BIS that was shaped through natural selection to avoid contamination with pathogens and promote survival of the organism. However, in this study homonegativity and transnegativity was better predicted by sexual disgust sensitivity, not by a pathogen-related domain. This may indicate that different evolutionary pressures associated with social exchange operate in homonegativity and transnegativity. Furthermore, the relationship between sexual disgust sensitivity and prejudice was mediated by social attitudes (RWA), suggesting that evolved adaptations such as disgust sensitivity may also partake in the maintenance of social dominance that benefit attributions of masculinity and heteronormativity. Understanding what activates disgust in homonegativity and transnegativity may help develop interventions aimed at reducing negative attitudes in the public, for instance, by introducing emotion-regulation strategies within anti-prejudice programmes or using media campaign strategies that normalise gay and trans sexuality and reduce elicitation of disgust. Anti-discrimination efforts at the governmental level would benefit from increasing positive representation and greater familiarisation of the public with gay and lesbian people, but especially with trans people.

For instance, Hoffarth and Hodson (2018) showed that increasing contact with LGBT people (e.g. increasing media representations of transgender people) may decrease anti-transgender bias.

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No potential conflict of interest was reported by the author(s).

Notes on contributors

Ana M Chamorro Coneo BSc, MSc, PhD. Following her undergraduate course in psychology (Colombia), Ana continued her training in England (UK), where she obtained an MSc in psychological research methods, and a PhD in psychology at the University of Sheffield. Ana's postgraduate studies were funded by Santander bank (MSc) and Colciencias (PhD). Since 2010 She has worked in various research positions, initially as RA at Universidad del Norte, and later on in the UK and Northern Uganda. Ana's research interests include the study of underlying psychological factors involved in the adjustment to health conditions and public's attitudes towards commonly stigmatised health conditions and out-groups. Since 2019 Ana has held the position of full time assistant lecturer at Universidad del Norte (Barranquilla-Colombia).

María Camila Navarro, BSc, PhD. Psychologist, Lecturer-researcher at the Universidad del Sinú (Cartagena-Colombia). She has participated in research related to the human rights of LGBT+ people in Colombia. She has also co-authored articles published in indexed journals on attitudes towards homosexuality in South American countries, minority stress, internalized homonegativity, among others. She is co-founder of a Colombian non-profit organization of lesbian, bisexual and trans women, where she has coordinated social advocacy projects sponsored by national and international funds.

Nathalia Quiroz Molinares, Ph. D. Psychologist , Master in Neurocriminology from Universidad de Valencia, Spain and Doctor in Psychology from Universidad del Norte. Researcher in forensic psychology and neuropsychology, in topics related to neuropsychological sequelae in women victims of IPV, and head trauma in women victims of IPV. She is currently the Coordinator of the Specialization and Master's programs in Sexuality and Contemporary Relations at the Universidad de la Costa in Barranquilla, Colombia.

ORCID

Ana Maria Chamorro Coneo  <http://orcid.org/0000-0001-7712-9927>

Data availability statement

Data is not available for online access, however access can be granted subject to the Institutional Review Board (IRB) and following research collaborative agreement guidelines. This is a requirement mandated by our IRB body. To request access contact principal investigator chamorroa@uninorte.edu.co.

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