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Gender stereotypes across nations relate to the social position of women and men: Evidence from cross-cultural public opinion polls

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Gender stereotypes, defined as widely shared beliefs about the typical attributes of women and men, have far-reaching consequences for both stereotyped groups. This preregistered research examined cross-cultural variation in gender stereotypes based on public opinion poll data from 1995 (22 nations with 22,000 respondents) and 2023 (40 nations with 4,800 respondents). Results revealed that men were perceived as more agentic than women and women as more communal than men in all studied nations at both time points. Yet, substantial cross-cultural variation existed in the strength of these stereotypes whereby the communion stereotype in particular related to the distribution of women and men into social roles. The female advantage in communion was stronger the larger women's share in the labor force and the greater the occupational sex segregation, both reflecting women's employment primarily in communal domains. The male advantage in agency likely reflects that women's considerable inroads into leader roles put them in versions of the role entailing lesser status and power and therefore conveying lesser agency. For competence, most respondents believed that women and men are equally competent in 17 of the 23 nations surveyed in 1995 and in all 40 nations surveyed in 2023. These beliefs in competence equality were stronger in nations with greater female educational attainment and labor force participation (in 2023 but not in 1995). By identifying cross-cultural patterns and socioeconomic indicators associated with variation in gender stereotyping, this research advances understanding of how the locations of women and men in nations' social structures inform gender stereotypes.

gender stereotypes | cross-cultural | communion | agency | competence

Significance

This project addressed the content of gender stereotypes and its relation to the distribution of women and men into social roles in society. The data derived from worldwide public opinion poll data with samples from 1995 and 2023 that represented the majority of the world's population and all continents as well as the full spectrum of societal gender equality. The findings revealed substantial variation in the magnitude of communion, competence, and agency stereotypes, which reflected the varying social position of women and men across nations at two time points almost 30 y apart.

Gender stereotypes, defined as consensual beliefs about the typical attributes of women and men, affect how people perceive and react to individual women and men (1). For example, stereotypes that describe women as warm and friendly and men as competitive and aggressive can discourage the aspiration and lower the evaluation of women and men in domains favoring the stereotypical attributes of the other gender (2). As such, gender stereotypes can result in unfair biases and discrimination against individuals based solely on their group membership (1). Moreover, in a vicious cycle, gender stereotypes shape women's and men's career choices and thereby reinforce the unequal distribution of women and men into social roles (3).

According to social role theory, gender stereotypes form as people observe women and men in daily life where they typically occupy differing types of family and occupational social roles (3, 4). More specifically, the behaviors that women and men enact within their roles influence the traits that people assume are characteristic of women and men in their society. For example, when women more often than men are observed in roles that involve caring for children and the elderly (both at home and in the service sector of the labor force), people assume that women possess communal traits (e.g., social sensitivity, warmth) that would enable the behaviors required within these roles. In essence, people's correspondent inferences from group members' behaviors in their typical roles generalize to the entire group, and group stereotypes are born. Enabling the present research is the considerable variation across cultures and historical time in the social roles typically occupied by women and men. This research thereby addresses whether these cross-cultural role differences, reflecting nations' social structures, account for the variation of gender stereotypes across cultures.

In addressing this question, this work describes gender stereotype content across all continents and reveals the sources of its variation by examining the relations of these stereotypes to socioeconomic and cultural indicators reflective of the social position of women and men in society. This research thereby provides a comprehensive test of social psychological theory, in particular, social role theory (4). To this end, our research relies on two sources of empirical data: The nationally representative public opinion polls

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conducted by the Gallup Organization in 22 nations in 1995 and our similar poll conducted in 40 nations in 2023. By comparing stereotypes across nations and historical time, this research advances understanding of the causes of gender stereotype content, essential for revealing how these stereotypes acquire their particular content and yield biases and discrimination against individuals based on their gender. The project's recognition of how gender stereotypes are rooted in women's and men's position in the social structure of a society suggests the types of social changes that could alter these stereotypes.

Research on gender stereotypes has consistently found two main themes, labeled *communion* and *agency* (5). Communion (e.g., compassionate, warm) orients people to others and their well-being. Agency (e.g., assertive, competitive) orients people to the self and one's own mastery and goal attainment. Williams and Best's seminal cross-cultural studies conducted in the 1980s found these two stereotypes to be "pancultural," with agency consistently associated more with men and communion more with women in all nations surveyed (6). Yet, recent research has found variation over time. For example, public opinion polls from the United States showed historical change in communion and competence stereotypes over the last seven decades (2). Also, research examining the implicit associations of men with science/career and of women with arts/family found a weakening over time (7).

To reveal the sources of variation in gender stereotypes across cultures, we also distinguish the themes of agency and competence, a distinction that often has been missing in past research. For example, the early seminal research combined competence (i.e., logical, inventive) and agency in a dimension named *male stereotype* (6). Departing from this earlier merging of competence and agency, newer data call for more nuanced conceptualization revealing distinctive trends in agency and competence. For example, public opinion polls have found that the percentage of respondents who viewed women and men as equally competent has increased over time in the United States, from 26% in 1940 to 69% in 2018 (2), whereas the stereotype that portrayed men as more agentic than women has endured since the first polls in the 1940s.

Gender Stereotypes Embedded in the Social Location of Women and Men

Predictions about variability in gender stereotypes across cultures follow from social psychological theories that identify groups' position in the social structure as critical to the content of their stereotypes. The most prominent theory is social role theory (4), according to which the requirements of the typical social roles of women and men shape the content of gender stereotypes. As people observe women and men in their typical roles, they infer that they generally possess the qualities required to fulfill these roles. To the extent that gender stereotypes reflect the location of women and men in societies' social structures, cross-cultural variation should follow to the extent that this location differs across societies.

The distribution of women and men into social roles that convey gender stereotype content varies widely across nations. Shaping the communion stereotype is the clustering of women in roles affording social contribution and rewarding social skills and in the family role of child caretaker. For example, the percentage of women employed in the service sector (relative to women's total employment) ranges from only 25% in India and 28% in Malawi to 92% in both Sweden and the United Kingdom (8). Shaping the agency stereotype is the clustering of men in jobs favoring assertiveness, initiative, and goal-directed action, which typically have high status. For example, men make up 85% of legislators, senior officials, and managers in Senegal and 87% in Japan although only 53% in the Philippines and 57% in Sweden (9). Shaping the competence stereotype is the distribution of women and men into roles favoring intelligence and high skill. For example, women are 72% of those attaining tertiary degrees in Estonia and 67% in Sweden although only 42% in Tanzania (10). Because the positioning of women and men in the social structure informs gender stereotypes, their cross-cultural variation should relate to various national socioeconomic and educational indicators.

Despite moderating conditions that vary across nations, the normative gender division of labor has endured, whereby women perform more domestic work and men more paid work (9). In addition to women's lesser labor force participation, occupational gender segregation is considerable, with women and men unevenly divided in most occupations. In general, *vertical segregation* concentrates men in positions with higher status and authority (fostering the male agency stereotype), whereas *horizontal segregation* concentrates women and men in occupations that differ in their psychological and physical demands and facilitate different personal goals (11). Specifically, women are overrepresented in occupations affording social contribution (i.e., helping others) and allowing workplace flexibility (e.g., part-time work), likely fostering the female communion stereotype. Specifically, when women are overrepresented in service-oriented jobs, which typically have lower status, their labor force participation should reinforce the traditional stereotype of women's greater communion. Men, however, are overrepresented in occupations with greater requirements for physical strength, competition with and authority over others, and interaction with things (12), likely fostering male agency due to these occupations' requirement for assertiveness and competitiveness. Yet, the extremity of this segregation varies across nations (13).

Communion Stereotype across Nations. Although it might seem counterintuitive, with increasing national gender equality and economic development, the occupational roles of women and men become more, not less, segregated (14). In fact, the nations considered highest in gender equality (e.g., Finland, Sweden) are among those with the strongest occupational sex segregation (11, 13). This phenomenon is rooted in two main trends that accompany increasing gender equality: a) a larger service sector, which provides many communally demanding jobs that tend to attract women (15), and b) more progressive national gender policies (e.g., long maternity leaves, provision of part-time jobs), which facilitate women's dual roles as workers and mothers and foster their entry into communally demanding occupations (e.g., teaching, nursing), which typically accommodate discontinuous employment (16). Reflecting these changes, U.S. public opinion polls have shown that the female communal stereotype increased as more women entered the labor force from the 1940s to the 2010s (2). Moreover, cross-cultural research found that implicit and explicit associations of women with family and of men with career were stronger in more gender-equal and economically developed nations (17). Also, people's gender-stereotypical associations were stronger to the extent that nations' service sectors were larger and more sex-segregated, which is the case in more gender-equal nations (17). As such, research has provided evidence for our assumption that occupational gender segregation informs stereotypes. Yet, going beyond earlier research focusing on stereotypic associations of specific domains (e.g., family) with men or women, our research addresses the content of gender stereotypes itself and its variation across nations.

To this end, one focus of this research is on how the roles of women and men and the structure of the labor force inform the communion gender stereotype. Grounded in the assumption that women's increasing participation in the labor force has concentrated them mainly in communally demanding roles, we hypothesized that greater participation and occupational gender segregation relate to the strength of the female communion stereotype.

Hypothesis 1: The greater women's share of the labor force in a nation, the stronger is the tendency to ascribe communion more to women than men.

Hypothesis 2a: The greater the occupational gender segregation in a nation, the stronger is the tendency to ascribe communion more to women than men.

Hypothesis 2b: The larger the size of the service sector in a nation, the stronger is the tendency to ascribe communion more to women than men.

Agency Stereotype across Nations. Research has found that the stronger agency stereotype of men than women follows from both a) vertical occupational gender segregation that overrepresents men in high-status roles and b) horizontal segregation that overrepresents men in occupations requiring assertiveness and competitiveness plus physical prowess as well as in the family role of main provider (18, 19).

Experimental research found that people projected that women would become as agentic as men in the future due to increasing similarity in women's and men's social roles (20). Yet, public opinion poll data have not found such a trend. The male agency stereotype has prevailed in the United States ever since the 1940s, despite women entering formerly male-dominated roles in large numbers (2). A likely reason for this continuity is that, for the most part, women have not entered the exact same roles as men because many occupations have resegregated internally, reflecting gender-stereotypical themes. Women, for example, have entered management roles in different sectors of the economy than men, for example, occupying 44% of these roles in education and 43% in healthcare and care services, yet only 22% in technology, information, and media, and 16% in infrastructure (21). Moreover, the women who enter male-dominated occupations such as medicine often occupy more communally and less agentically demanding versions of the role (e.g., pediatrics, geriatrics).

In concert, occupational gender segregation in high-status masculine-typed leader roles has endured, albeit in a diminished form as women have entered leader roles but more often in more communally oriented versions of the role and sectors of the economy (12). Given these complexities, the following exploratory analyses examined whether the male agency stereotype relates to men's greater presence in agentically demanding roles. This prediction was not preregistered.

Exploratory Prediction: The greater women's share in leadership roles in a nation, the weaker is the tendency to ascribe agency more to men than women.

Competence Stereotype across Nations. Social role theory (4) predicts that when people observe more women occupying competence-demanding social roles (i.e., participating in the workforce, obtaining higher education), they ascribe competence to women. We thus tested whether women's attainment in higher education and their labor force participation relate to a stronger competence stereotype for women than men and to greater belief in competence equality.

Hypothesis 3: The greater women's share of the labor force in a nation, the stronger are the tendencies to ascribe competence more to women than men (3a) and to believe that the genders are equal (3b).

Hypothesis 4: The greater women's share of attainment in higher education, the stronger are the tendencies to ascribe competence more to women than men (4a) and to believe that the genders are equal (4b).

Stereotypes Associated with Broader Nation-Level Indicators

The project also examined the relations between gender stereotypes and the broader societal and cultural variables of individualism-collectivism, economic development, and gender equality. These variables do not follow directly from our social structural theory but serve as proxies for the extent to which gender roles are differentiated. *SI Appendix*, Tables A1 and B1 provide evidence that these variables related to the distribution of men and women in social roles emphasizing communion or agency. For example, correlations for 2023 confirmed that the more economically developed a nation, the greater were the following variables: women's labor force participation, occupational gender segregation, the size of the service sector, and women's educational attainment (see *SI Appendix*, Table B1 for 2023). Notably, these analyses provide only less rigorous tests of our hypotheses pertaining to the differing locations of women and men in society.

Individualism-Collectivism. Collectivistic cultures should relate to stronger stereotypes of male communion. This association follows from culturally valued traits typically being ascribed to dominant groups (22). Consistent with communion having greater cultural value in collectivistic than individualistic nations, research has found a stronger communal stereotype for men in Asian than Western cultures, both for descriptive stereotypes (23, 24) and prescriptive stereotypes, which indicate how women and men *should* be (25). Yet, this research has often used proxy measures of stereotypes such as perceived collectivistic and individualistic traits in women and men (23) or personality traits not expressed in everyday language [e.g., openness, neuroticism, extraversion (24)]. Our research instead provided direct measures of descriptive gender stereotypes to test whether the female communion stereotype is weaker in more collectivist nations.

Hypothesis 5: The more collectivistic a nation, the weaker is the tendency to ascribe communion more to women than men.

Economic Development. Greater economic wealth should relate to stronger female communion and competence stereotypes for several reasons. For communion, more economically developed nations typically have postindustrial labor structures (14), which feature a high share of women participating in the labor force, a large service sector dominated by women, and a high level of horizontal gender occupational segregation. Because of people's consequent observation of women's concentration in communally demanding roles, greater economic development should relate to stronger female communion stereotypes. Supporting these assumptions, people's cognitive associations of men with career and women with family were more pronounced in more economically developed nations (17).

Hypothesis 6: The more economically developed a nation, the stronger is the tendency to ascribe communion more to women than men.

In addition, relevant for the competence stereotype, more economically developed nations provide women with greater access to education (19). In fact, currently women obtain even more tertiary degrees than men in some of the wealthiest nations (10).

Hypothesis 7: The more economically developed a nation, the stronger is the tendency to ascribe competence more to women than men.

Gender Equality. More gender equality should relate to stronger female communion and competence stereotypes. Gender equality refers to equal rights, responsibilities, and opportunities for women and men (26). Widely used composite measures of gender equality have aggregated domain-specific indicators such as labor force participation and educational attainment (27). Research relating such gender equality measures to gender stereotypes has not been entirely consistent. Specifically, some research found no relation between achieved gender equality and the agency and communion stereotypes about women and men who work in female- or male-dominated occupations (28). In contrast, other research found that in more egalitarian and developed nations, which are typically also more gender equal, people showed stronger stereotypes that "math is not for girls" (29). Similarly, a large cross-cultural study found that implicit and explicit associations of women with family and of men with career were stronger in nations that scored higher on gender equality indexes (17).

Consistent with this research on family and career associations (17) and following our reasoning that women's relative labor force participation and educational attainment inform communion and competence stereotypes, female communion and competence stereotypes should be stronger in nations that score higher on gender equality indexes.

Hypothesis 8: The greater the gender equality in a nation, the stronger is the tendency to ascribe communion more to women than men.

Hypothesis 9: The greater the gender equality in a nation, the stronger is the tendency to ascribe competence more to women than men.

Gender Stereotypes Arising from the Asymmetrical Role Changes That Uniquely Pressure Men

Our exposition so far has emphasized how gender stereotypes arise from the social location of women and men in society, as predicted by social role theory (4). Yet, gender stereotypes are also affected by the asymmetry in changes in women's and men's social roles, particularly in more gender-equal nations. That is, whereas women have made inroads into traditionally male-dominated roles and occupations (therefore competing with men), men have eschewed entering female-dominated roles and occupations, leaving women overrepresented in these roles (30, 31). Consistent with this asymmetrical development, women are commonly encouraged to be more agentic (e.g., assertive, decisive) like men, whereas men are not encouraged to be more communal (e.g., submissive, caring) like women (25).

For men, the novel situation with women increasing their occupancy of male-dominated roles, particularly in more gender-equal nations, threatens men's ability to attain positive in-group differentiation and pressures them to find other ways to positively differentiate themselves from women (32) as they risk losing their traditional distinction of "being the breadwinner." Relevant to gender stereotypes, a simple way for men to differentiate themselves from women is by doubling down on masculinity and agency as defining their group and by eschewing communion. Evidence for these assumptions stems from cross-cultural research on prescriptive gender stereotypes: Although it might seem paradoxical at first sight, men face stronger—not weaker—pressure to show agentic behavior that upholds their groups' higher social status in more (compared to less) gender-equal nations (33). Women, in contrast, face pressure to show communal behavior, but this behavior was not related to specific status norms. In fact, women face little opposition for serving as breadwinners as well as nurturers, which provides them both a new and the traditional source of positive identity. As such, status threats likely foster stronger male agency stereotypes.

Further considering how gender-equality threats may fuel stereotypes, assigning communion more to women than men might reflect a benevolently sexist response (34) that serves to encourage women to "stay in their lane" and continue to be the nurturers who care for children and the elderly. Evidence for this idea stems from cross-cultural research showing that in more gender-equal nations, the men (but not the women) associated the concept "family" with women (17), presumably reflecting their desire to positively differentiate their group. The present research takes these considerations into account along with the social role theory assumption that the social location of women and men in society is critical to gender stereotypes.

Overview of the Present Research

This project examined how stereotypes follow from features of nations that reflect the social position of women and men in society. The hypothesis tests relied on two cross-national opinion polls that spanned all continents and were collected almost 30 y apart. Gallup conducted the 1995 poll by telephone in 22 nations, with samples nationally representative for gender, age, and education. Our own poll provided the 2023 survey, conducted online in 40 nations that encompassed all continents and the full continuum of gender equality, with samples stratified for gender and age. Fig. 1 displays the nations sampled.

The data and analysis code are available at OSF (https://osf.io/e5vxa) (35). For our 2023 survey, we preregistered the hypotheses, data collection procedure, and analysis plan (https://osf.io/8q4gb).

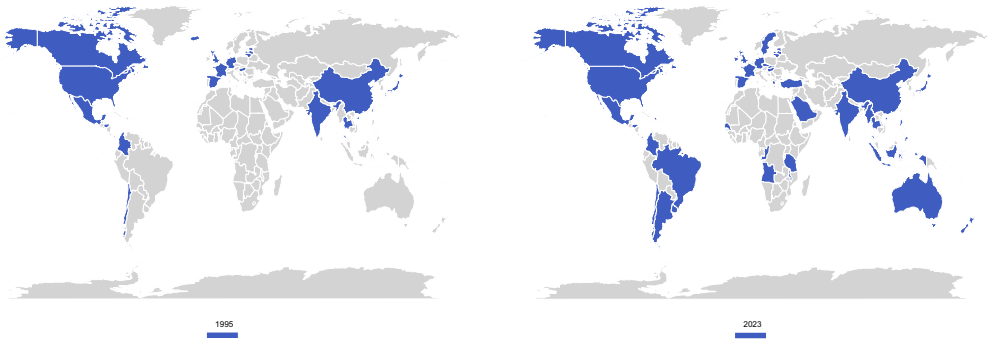

Fig. 1. Map of nations included in the Gallup 1995 poll (*Left*) and our 2023 survey (*Right*).

Results

The analyses addressed two main questions: a) How do gender stereotypes vary across nations? and b) How does variation in gender stereotypes relate to nation-level variables?

Analyses for Responding That Traits Are More True of One Gender. As preregistered and following past research (2), the main outcome variable was the percentage of respondents indicating that a trait is "more true of women" rather than "more true of men," excluding responses indicating that a trait is "equally true of both."

For competence, majority of the respondents believed in competence equality in 17 of the 23 nations in 1995 and in all 40 nations in 2023. Given that therefore only a minority of the respondents differentiated between women and men (by indicating "more true of women" or "more true of men"), the tests of the hypotheses for this outcome variable are reported only in *SI Appendix*, *Appendix E*.

Meta-analytic means. Table 1 presents the mean percentages of respondents ascribing communion, agency, or competence stereotypes more to women than men, along with distributional statistics. These percentages varied considerably across the dimensions. In both datasets, respondents ascribed communion substantially more to women than men (86% in 1995, 84% in 2023) and agency less to women than men (25% in 1995, 30% in 2023). For competence, among the minority of participants that differentiated between women and men, there was no advantage for either group, and only a trend in the direction of women (55% in 1995, 60% in 2023). Variability in observed effect sizes could be attributed mainly to between-poll heterogeneity rather than chance ($I^2 \geq 88.75$ for all stereotypes).

Heterogeneity in the observed means. Notable cross-cultural variation emerged for all stereotype dimensions in both polls (Table 1). The range of observed mean effect sizes was smallest for the communion stereotype. Specifically, participants in all nations indicated that every communal trait was more true of women in 1995 and did so except for four traits in 2023 (*SI Appendix*, Tables A2 and B2). For agency, relatively wide prediction intervals indicated cross-cultural variation even though respondents ascribed agency more to men in all nations in 1995 and in all but one nation in 2023 (*SI Appendix*, Tables A3 and B3).

In summary, gender stereotypes conveyed greater agency in men and greater communion in women (see *SI Appendix*, *Supplementary Information B1* for empirical Bayes estimates yielding the same conclusion). For all three stereotypes, the substantial heterogeneity suggests that nation-level features reflecting social structure potentially explain cross-cultural differences.

Simple regression analyses examining nation-level correlates. Mixed-effects meta-regression models with robust variance estimation (RVE) corrections included each nation-level correlate to predict the log odds of respondents indicating that a trait is more true of women than men. All correlates were standardized by the between-nation correlate SD across nations, resulting in each scale point representing a one SD increase for each predictor. Table 2 displays the results for the cross-cultural correlates of respondents choosing more true of women in polls of communion, agency, and competence. Fig. 2 illustrates the results for communion and the specific nation-level indicators, *SI Appendix*, *SI Figure* the results for the broader proxy indicators.

Communion stereotype. *Supporting Hypothesis 1*, women's relative labor force participation related to the tendency to ascribe communion to women more than men in both 1995 ($b = 0.51$, $P < 0.001$) and 2023 ($b = 0.20$, $P = 0.010$). For instance, among respondents stating a gender difference in 1995, 94% indicated that women are more communal than men in Iceland (where women's share among the labor force was highest), and 74% did so in Honduras (where women's share was smallest).

Supporting Hypothesis 2a, greater nation-level occupational gender segregation related to the tendency to ascribe communion to women more than men in 1995 ($b = 0.45$, $P = 0.039$) and 2023 ($b = 0.21$, $P = 0.049$).

Testing Hypothesis 2b, the larger size of nations' service sector showed a near-significant relation to women's greater communion in 1995 ($b = 0.39$, $P = 0.051$) but a weaker and nonsignificant relation in 2023 ($b = 0.17$, $P = 0.071$).

Testing broader nation-level characteristics, *supporting Hypothesis 5*: The more individualistic a nation's culture, the greater the tendency to ascribe communion to women more than men in 2023 ($b = 0.30$, $P < 0.001$), with a near-significant relation in 1995 ($b = 0.29$, $P = 0.057$). For instance, in 1995, only 71% indicated that women are more communal in Panama (the most collectivistic nation), but 91% did so in the United States (the most individualistic nation).

Contrary to Hypothesis 6, economic development (i.e., GDP) was not related to the tendency to ascribe communion to women more than men in 1995 ($b = 0.22$, $P = 0.183$) or 2023 ($b = 0.17$, $P = 0.083$).

Supporting Hypothesis 8, the more gender-equal a nation, the more participants ascribed communion to women than men in both 1995 ($b = 0.43$, $P = 0.006$) and 2023 ($b = 0.25$, $P = 0.002$). For instance, among those stating a gender difference in 1995, 70% indicated that women are more communal in India (the least

Table 1. Mean effect sizes for percentages of respondents choosing women in polls of communion, agency, and competence stereotypes in 1995 and 2023

Stereotype measure		*k*	*n*	Mean*	90% prediction interval	*df*	*t*	τ^2	I^2
Communion	1995	22	66	86	[59, 96]	20.99	12.43***	0.80	99.08
	2023	40	200	84	[61, 95]	38.48	19.97***	0.55	88.75
Agency	1995	22	66	25	[8, 57]	21.00	−8.45***	0.71	99.18
	2023	40	200	30	[12, 56]	38.79	−10.62***	0.46	89.45
Competence	1995	22	44	55	[21, 85]	21.00	1.12	0.88	99.17
	2023	40	200	60	[24, 87]	38.84	4.49***	0.86	93.02

Note. These analyses do not include respondents who chose "equally true for both". *k* = number of nations; *n* = number of effect sizes; mean = random-effects weighted mean of the percentage of respondents choosing women as possessing more of the attribute; prediction interval = the middle 90% of the true underlying effects; *df* = small-sample corrected Satterthwaite degrees of freedom; *t* = test statistic for the mean being different from 50%; τ^2 = tau-squared, the estimated between-nation variance of effect sizes on a log odds scale; I^2 = percentage of total variability in effect sizes due to true between-nation heterogeneity rather than chance. Heterogeneity (*Q*, not displayed) was significant for all stereotype measures (all *P*s < 0.001). ***$P < 0.001$.

*A mean of 50% signifies that the percentage of respondents indicating that women have more of the attribute was equal to the percentage indicating that men have more. Higher numbers indicate more ascription of the attribute to women, and lower numbers indicate more ascription to men.

Table 2. Results for cross-cultural correlates analyses on respondents choosing women in polls of communion, agency, and competence stereotypes

Stereotype Dimension Correlate	Poll	*k*	*n*	*b*	*SE*	*df*	*P*
Communion							
Relative labor force participation (H1)	1995	21	63	0.51	0.11	9.24	0.001
	2023	40	200	0.20	0.06	10.35	0.010
Occupational gender segregation (H2a)	1995	7	21	0.45	0.08	1.75	0.039
	2023	26	130	0.21	0.09	9.75	0.049
Size of service sector (H2b)	1995	7	21	0.39	0.14	3.75	0.051
	2023	40	200	0.17	0.09	14.06	0.071
Individualism (H5)	1995	21	63	0.25	0.12	9.45	0.057
	2023	31	155	0.30	0.06	12.49	<0.001
Gross domestic product GDP (H6)	1995	21	63	0.22	0.15	8.37	0.183
	2023	40	200	0.17	0.09	10.86	0.083
Gender equality index (H8)	1995	16	48	0.43	0.06	2.89	0.006
	2023	40	200	0.25	0.07	17.74	0.002
Agency							
Relative labor force participation	1995	21	63	−0.11	0.16	9.20	0.530
	2023	40	200	−0.24	0.07	10.96	0.006
Human development index HDI	1995	21	63	0.28	0.17	5.58	0.158
	2023	40	200	−0.18	0.07	14.03	0.026
Share among legislators, senior officials, managers	1995	16	48	0.01	0.01	3.99	0.510
	2023	37	185	0.01	0.08	11.72	0.937
Women's political power index	1995	NA					
	2023	40	200	−0.04	0.09	14.47	0.662
Competence							
Relative labor force participation (H3a)	1995	21	42	−0.04	0.21	9.18	0.862
	2023	40	200	−0.10	0.10	10.49	0.379
Relative educational attainment (H4a)	1995	18	36	0.45	0.28	5.43	0.161
	2023	40	200	0.19	0.06	8.66	0.012
Gross domestic product GDP (H7)	1995	21	42	0.60	0.18	8.42	0.011
	2023	40	200	0.15	0.08	10.59	0.090
Gender equality index (H9)	1995	16	32	0.29	0.11	2.91	0.089
	2023	40	200	0.22	0.07	18.17	0.010

Note. These analyses do not include respondents who chose equally true for both. *k* = number of nations (excluding nations without nation-level statistics for the correlate); *n* = number of effect sizes; *b* = mixed-effects meta-regression coefficient for continuous correlate; *SE* = RVE-corrected SE for difference; *df* = small-sample corrected Satterthwaite degrees of freedom; *P* = RVE-corrected *P*-value for the difference differing from 0. NA indicates that a specific indicator was not available for the respective year.

gender-equal nation) but 91% did so in Canada (the most gender-equal nation studied).

Additional exploratory analyses examined whether other theoretically plausible correlates related to communion. As shown in *SI Appendix*, Tables A4 and B4, the tendency to ascribe communion more to women than men related to women's larger share of household income and of administrative and management positions in 1995; and to women's greater share of professional and technical workers, parliament members, ministerial positions, and board members of listed companies in 2023.

Agency stereotype. Results showed that in 1995, agency was unrelated to all available indicators reflecting women's share in high-status, high-power positions (e.g., share among legislators, senior officials, managers; among corporate board members; parliament members; see Table 2 and *SI Appendix*, Table A4).

In 2023, agency was less often ascribed to women than men in nations with higher female labor force participation and higher human development (Table 2). Yet, again, no relation emerged between agency and women's share in high-status positions (Table 2 and *SI Appendix*, Table B4).

Robustness checks of main hypotheses. Three preregistered sets of multivariable meta-regression models tested whether the bivariate relations to stereotypes remained significant when controlling for covariates. These checks were overly stringent given difficulties due to highly correlated cross-cultural indicators (*SI Appendix*, Tables A1 and B1) as well as multicollinearity and relatively small sample sizes. These difficulties call for cautious interpretation, and results thus appear in *SI Appendix*, *Supplementary Information C* and are summarized here.

The first set of checks, which controlled for labor force participation, education, and individualism, as well as the second set, which additionally controlled for GDP, revealed that many relations became nonsignificant, with the exception of the relation of communion to labor force participation. The third set, which controlled for the log odds of respondents indicating "equally true of both," revealed that most relations were robust to this check. Given that

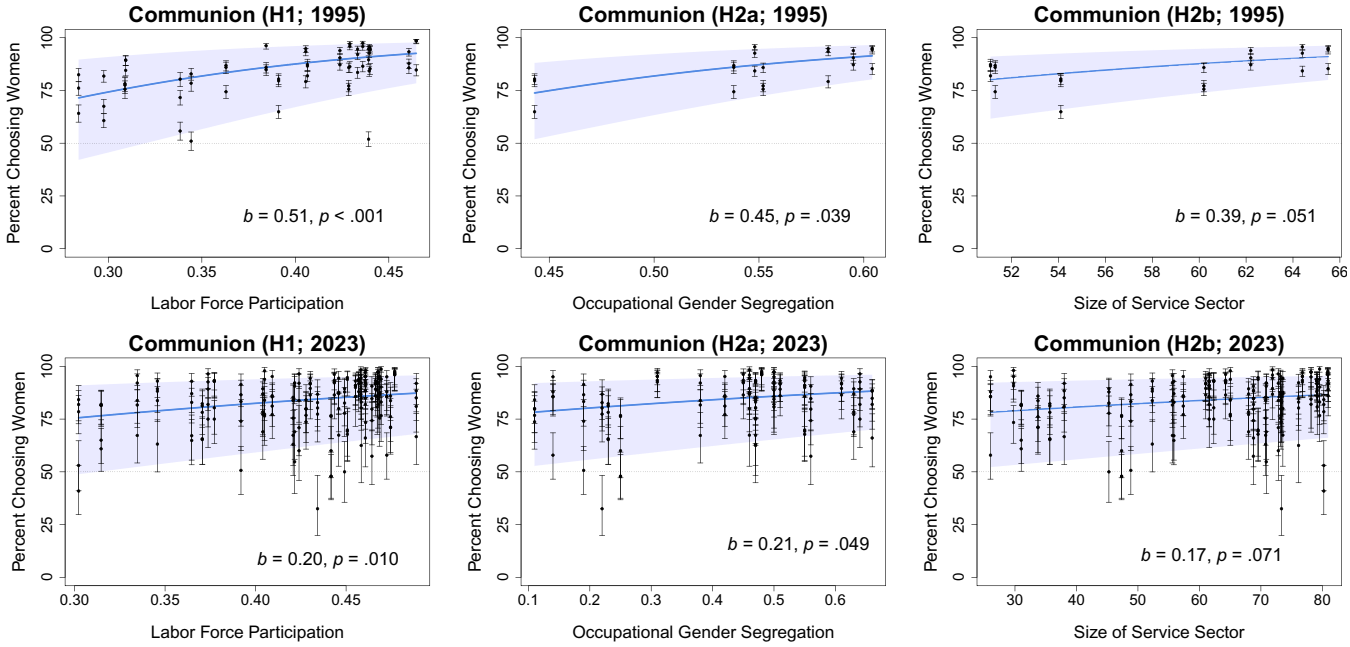

Fig. 2. Variation in item-level communion stereotype and 95% CI of respondents choosing women as more communal than men in 1995 and 2023, with specific nation-level indicators.

participants had to provide this response voluntarily in the Gallup 1995 poll but received it as a response alternative in our 2023 survey, controlling for the presumably more politically correct "equally true of both" responses should have accounted for confounds due to any differences in social desirability across nations.

The additional fourth set of exploratory robustness checks revealed that the inclusion of our specific social role indicators reduced or eliminated the explanatory power of some of the broader macroindicators (see Hypotheses 5 to 9). As shown in *SI Appendix*, *Supporting Information C3*, the associations of communion with gender equality (Hypothesis 8) and GDP (Hypothesis 6) were both reduced when the more specific indicator of labor force participation was added to the model. Also, the association of competence with gender equality (Hypothesis 9) was eliminated when educational attainment was added to the model. Yet, results yielded mixed evidence on whether the association between communion and individualism (Hypothesis 5) was reduced when labor force participation was added to the model, with support in 1995 but not in 2023. Relatedly, the association of competence with GDP (Hypothesis 7) was reduced when educational attainment was added to the model, but only in 2023 and not 1995.

Additional exploratory analyses.

Tests of subgroup differences. As shown in *SI Appendix*, Table D1, the test for an overall mean difference between demographic subgroups found that women showed a stronger tendency than men to ascribe communion and agency (as well as competence) more to women than men in both 1995 and 2023. Also, in 2023, results further showed that college-educated respondents held stronger male agency stereotypes than noncollege-educated respondents, and older respondents held stronger female communion stereotypes than younger respondents.

The second subgroup analyses tested whether the relations between stereotype dimensions and the indicators of social roles in society would be stronger among the female or male respondents. As shown in *SI Appendix*, Table D2, tests at the traditional alpha of .05 showed significant moderation, for 2023, for competence with educational enrollment (H4a) and gender equality (H9). Specifically, these two cross-national relationships were stronger among the female than the male respondents, suggesting that women might be more sensitive to societal change for competence stereotypes than men. For any other bivariate relation between the indicators and stereotypes, no moderation by gender emerged.

Tests of cross-temporal change. This analysis included only the subset of 20 nations with data at both time points and the subset of five items that appeared in both datasets (*Materials and Methods*). For communion, based on the items *affectionate* and *emotional*, the tendency to ascribe communion more to women than men did not increase from 1995 to 2023 ($b = 0.02$, $P = 0.923$). For agency, results for the single item *ambitious* (as the only item included in both polls) found that the tendency to ascribe *ambitious* more to men than women was larger in 2023 than 1995 ($b = -0.44$, $P < 0.001$). For competence, results based on the items *intelligent* and *creative* suggested that—among the minority of respondents who differentiated between women and men on this dimension—the tendency to ascribe competence more to women than men was larger in 2023 than 1995 ($b = 0.56$, $P = 0.005$).

Analyses for Responding That Traits Are Equally True of Women and Men. Given that the proportion of respondents indicating that a trait is "equally true of both" (rather than more true of one gender group) could also vary across nations, all prior analyses were repeated with the odds of responding equal versus different as the effect size metric. This section focuses on competence in particular, given that a majority of respondents selected this "equal" response alternative in 17 of the 23 nations surveyed in 1995 and in all nations surveyed in 2023.

Meta-analytic means. As shown in *SI Appendix*, Table F1, across all nations and the 1995 and 2023 polls, the percentage of respondents indicating "equally true of both" was largest for competence (50% and 61%), moderate for agency (33% and 51%), and smallest for communion (24% and 40%). Most of the variability in observed

effect sizes could be attributed to between-nation heterogeneity rather than chance (all $I^2 \geq 86.04\%$).

For competence, for example, the majority of respondents believed in competence equality in 17 of the 23 nations in 1995 and in all 40 nations in 2023. The relatively smaller percentages of equal responses in 1995 likely reflected that participants had to volunteer this response, whereas the 2023 survey provided this response alternative.

Simple regressions examining confirmatory nation-level correlates for competence equality. As shown in *SI Appendix*, Tables F2 and F3, the hypothesis tests yielded mixed results. Testing Hypothesis 3b, whereby greater belief in competence equality should be associated with women's higher relative labor force participation, results found support in 2023 ($b = 0.17$, $P < 0.001$) but not 1995 ($b = 0.08$, $P = 0.580$). Also, for the prediction of Hypothesis 4b, whereby greater belief in competence equality should be associated with women's higher relative education, results found support in 2023 ($b = 0.11$, $P = 0.050$) but not 1995 ($b = 0.17$, $P = 0.314$). As such, results found support for our competence equality predictions in 2023 but not in the 1995 data.

Discussion

This worldwide investigation examined the content and sources of gender stereotype variation across nations at two time points. This analysis, which features two multination public opinion polls collected almost 30 y apart, advances understanding of how and when beliefs about the typical attributes of women and men relate to the nation-level distribution of women and men into social roles and positions. Informed by social role theory (4), which emphasizes the typical roles of women and men in the social structure as critical to the content of their stereotypes, we expected that the strength of communion and competence ascriptions would relate to women's position in the labor force and educational achievement.

In all studied nations, most participants differentiated women and men on communion and agency, that is, expressed gender stereotypes, but did so less on competence. The overall findings thus documented belief in greater female than male communion and greater male than female agency in both 1995 and 2023. The strongest stereotype was the belief that women are more communal than men, followed by the belief that men are more agentic than women. For competence, however, most participants favored neither group in 1995 (in 17 of the 23 nations studies) as well as in all nations surveyed in 2023. In 2023, among the minority who differentiated between the genders, women were only mildly, although significantly, favored.

Supporting our reasoning about cross-national variation in stereotype magnitude, communion stereotypes differed between nations alongside differences in the social roles of women and men. Respondents showed a greater tendency to ascribe communion more to women than men particularly in nations where women make up a relatively larger share of the labor force. As further predicted, respondents more strongly ascribed more communion to women than men in nations with greater occupational gender segregation and a larger service sector, which offered many communally demanding jobs (although the latter relation was only near-significance in 2023). These findings suggest that women's overrepresentation in communally demanding roles and occupations, which typically are of lower status, foster the traditional gender stereotype of women's greater communion.

Two incidental findings align with our argument that women's placement in the more communal versions of high-status roles and sectors of the industry likely fostered female communion rather than female agency. Specifically, in nations where women had greater political power and occupied greater shares of ministerial positions, people ascribed more communion—but not more agency—to women (*SI Appendix*, Table B4). The gendered placement of women as, for example, ministers of family and children's affairs rather than financial affairs and defense, may account for this pattern.

The communion stereotype further aligned with broader cross-cultural correlates. As expected, the tendency to ascribe communion more to women than men was larger in more economically developed and gender-equal nations. Given that these nations have higher female labor force participation and greater occupational gender segregation (11, 13; but also see *SI Appendix*, Tables A1 and B1), this finding supports our claim that the social structure of societies informs gender stereotypes. Adding robustness to this explanation, the explanatory power of gender equality and economic wealth were both reduced when the more specific predictor, labor force participation, was added to the model.

Another important finding is that the tendency to ascribe communion relatively less to women was stronger in more collectivistic than individualistic nations. Also, consistent with the greater attribution of valued traits more to dominant groups (22), our results suggested that in Japan, for example, the weaker women–communion association derived from men being expected to deliver communally related politeness (e.g., patience). These results thereby add robustness to the generalization that men–communion associations are stronger in more collectivistic nations, as enabled by the inclusion in our research of numerous nations rather than only two (36) and relying on direct rather than proxy measures of stereotypes (23, 24).

Going beyond the key focus of this research in examining how the social location of groups informs stereotypes, incidental findings speak to the consequences that the asymmetrical changes in women's and men's roles likely have for the female communion stereotype. Specifically, greater female economic power (operationalized as women's share of household income) and women's entry into more powerful occupational roles both predicted stronger female communion stereotypes. Speaking to the benevolent system defense or backlash explanation introduced above, these findings are consistent with motives to limit women's power and reinforce their traditional roles—in response to women's societal gains in the job market and in economic independence.

In addition, many of our predictions could potentially be rendered in terms of the related and partially overlapping stereotype content model, which emphasizes the status and interdependence of social groups (37; see ref. 38 for a comparison of the predictions of the two theories). For example, the worldwide dominance of men in high-status leadership roles, despite women's inroads in less agentic and more communal versions of leader roles (e.g., principal of elementary school, 69% women in the United States; 8), could be described as a continuation of men's greater status and influence, by preserving the superior location of men's (vs. women's) roles in a society's hierarchy of power and prestige.

A male agency stereotype was present in all studied nations at both time points. This stereotype failed to relate to most of the nation-level potential correlates of women's and men's social roles. These findings are conceptually consistent with research showing no change in men's agency advantage in the United States over the last seven decades (2). This consistency in men's greater agency thus precluded the hypothesized tendency for men's agency advantage to increase with their greater presence in a) leadership and high-status roles (vertical segregation) and b) occupations requiring competitiveness, physical prowess, and robustness as well as in the role of main family provider (horizontal segregation).

Reasons for leadership failing to predict the male agency stereotype include women's frequent presence in culturally feminine versions of leader roles (39) and the regulation of political office-holding by gender quotas that insure female representation in the majority of nations examined (40).

More specifically, the persistence of the male-agency stereotype across the world could be fostered by men's persisting overrepresentation in the most agentically demanding and high-status leadership roles. In fact, although women have attained leadership roles, these tend to be in those industries or sectors of the economy that have a more communal mission such as nonprofit and educational organizations (21). In addition, when women have entered male-dominated roles, resegregation created new female ghettos in the less agentic versions of these roles, either by self-selection (e.g., women becoming family doctors rather than surgeons) or by the redesign of jobs to lessen their authority as women entered (e.g., bank branch manager; 31). In support, the incidental finding that the male agency stereotype was stronger in nations with greater relative female labor force participation speaks to this argument by suggesting that women in the labor force disproportionately occupy roles that are high in communion (see argument above).

The cross-temporal findings that compared female communion and male agency in 1995 with 2023 seem contradictory to the overall results of this paper at first sight. Yet, the specific items included in both polls warrant attention. For agency, this analysis was based on the single item *ambitious* and the result that men's advantage in ambition has become larger in 2023 compared to 1995 seems to fit with men's continued overrepresentation in the most powerful high-status leadership roles. It further fits with women's overrepresentation in lower-status communal roles and part-time work, which continues to exist despite women's increased educational attainment over time. For communion, the results of no increase in female communion from 1995 to 2023 is based on the two items *emotional* and *affectionate*. Yet, both items do not reflect the core of the communion stereotype, which typically centers around warmth and care. Moreover, *emotional* in particular seems not relevant for the workplace and thus it is inappropriate to emphasize the change between the two time points not being related to changes in women's and men's positions in the labor force.

Showing the importance of specific indicators, these findings indicate that the higher women's educational attainment, the stronger was the belief in competence equality in 1995 and 2023 and in women's greater relative competence in 2023 (although nonsignificant in 1995). These findings confirm research showing that belief in women's competence and competence equality has strengthened as women increasingly obtained advanced degrees in the United States (2). Replicating this finding, our results documented the growth of women's relative to men's competence stereotype between 1995 and 2023, consistent with their increasing educational attainment in almost all studied nations. Yet, for labor force participation, the results provided no conclusive evidence that women's gains conveyed greater competence.

The findings pertaining to the belief in "women more" or "men more" competence require cautious interpretation, given that a minority of participants differentiated women and men on competence, whereas the majority indicated equality. Nevertheless, the findings among those who differentiated between the genders supported our reasoning by indicating substantial cross-cultural variation in which gender was favored. In both datasets, competence related to some of the broader measures of women's and men's social roles and standing in society. Specifically, as expected, higher gender equality and greater economic wealth enhanced belief in women's competence. Although these two broad indicators correlated with one another and overlapped with our specific nation-level indicators (*SI Appendix*, Tables A1 and B1), both indicators conveyed women's relative standing in a nation, with women in gender-unequal and low-income societies being in the back of the queue for economic resources and education (41).

Future research should examine the importance of competence demands that are specific to different types of occupational roles. Perhaps, for example, respondents were thinking of competence in homemaker roles for women and in wage-earning roles for men and this consideration varied systematically between nations. To resolve this ambiguity, future research should explore competence stereotypes in specific domains, consistent with research indicating that children's ability stereotypes, for example, strongly favored girls for verbal ability and boys for computer science, yet were more gender-neutral for math (42).

Gender stereotypes were generally consensual across respondent gender. Yet, the in-group favoritism among women, who rated women more favorably than men in both 1995 and 2023, is consistent with earlier research finding in-group preferences in the United States (2). Nevertheless, women and men generally agreed about the overall patterns of communion, agency, and competence. This consistency makes sense given that research has shown that stereotypes about women and men are, on the whole, accurate at the level of the female and male social categories and reflect people's direct and indirect observations in their own society (43). Nevertheless, even if descriptive stereotypes are relatively adequate and useful heuristics for everyday life, they can lead to unfair biases to the extent that they obscure the heterogeneity within gender groups such as, for example, the woman who is a superb engineer of space rockets and the man who is an exceptionally caring teacher of young children.

A limitation of this research derives from its correlational data. Although such data disallow causal claims, they likely are among the best tests possible of the sources of gender stereotypes in societies, given the impossibility of experimentally manipulating a nation's social structure (e.g., employment composition). Another limitation is the reduced sample sizes of nations for some indicators for 1995 restricted the power of hypothesis tests. Furthermore, whereas the Gallup 1995 survey consisted of nationally representative samples, the 2023 project used quotas to ensure proportional representation by age and gender, a procedure that is defensible given that most hypotheses pertained to relationships among variables and not to population estimates. Another limitation pertains to the focus on stereotypes only about women and men. Future research may examine intersectional stereotypes based on multiple social categories (e.g., gender combined with race/ethnicity) as well as stereotypes of nonbinary and transgender identities.

Taken together, two polls representing most of the world's population at two time points described gender stereotype content and identified socioeconomic and cultural variables associated with cross-cultural variation in this content. These comprehensive samples revealed that variation in the communion and competence stereotypes across nations and time reflected the positioning of women and men in social roles with differing demands and responsibilities. These findings substantially advance understanding of when and why gender stereotypes vary across nations. For the agency stereotype, its intransigence reflects the consistently greater power and status of men than women across all nations and both timepoints. In concert, the findings indicate that the social structure of a society is crucial to gender stereotypes. Therefore, the frequent demand to eradicate these stereotypes, such as by the #EndGenderStereotypes campaign from the European Union, is likely to achieve success only together with equalization of the position of women and men in a society.

Materials and Methods

Data Collection.

Gallup 1995 data. The U.S. polling organization Gallup conducted a cross-national opinion poll *Gender and Society: Status and Stereotypes* in 1995 with representative samples from 22 nations: Canada, Chile, China, Columbia, El Salvador, Estonia, France, Germany, Honduras, Hungary, Iceland, India, Japan, Latvia, Lithuania, Mexico, Panama, Spain, Taiwan, Thailand, United Kingdom, and the United States. Although these nations are not representative of the entire globe (in particular, Africa and the Middle East were not surveyed), the combined population of the 22 nations was 3.05 billion, which was the majority (53%) of the world's population in 1995.

Following normative practice for polling organizations, the samples were nationally representative in terms of gender, age, and education. In each nation, Gallup conducted 1,000 phone interviews with persons aged 18 and older, producing an associated sampling error of ±3% for each nation.

Our 2023 survey. We contracted the panel provider Bilendi (ISO 26362 certified) for the online data collection with adults aged 18 and older. In each of the 40 nations, a random sample of respondents was drawn from the panel pool, and a quota ensured that participants' gender and age distribution corresponded to the entire population of that nation. Participants took part voluntarily, provided informed consent, and were compensated at the panel's typical national-pay rates. The Ethics Commission of the University of Bern approved this survey prior to data collection.

A preregistered a priori power analysis determined the sample size, based on the effect sizes found in the bivariate moderator analyses for women's labor force participation and communion in the Gallup 1995 data (Hypothesis 1; unstandardized $b = 2.23$). A sample of $k = 40$ nations with $n = 120$ participants per nation (total $N = 4{,}800$ adults) yielded a power of 92% for detecting bivariate relationships (see *SI Appendix, Supporting Information B3*; also see preregistration).

The selection of nations was systematic, with the 40 nations representing all continents and reflecting high variation in gender inequality according to the Global Gender Gap Index of 2023 (GGGI; 12). The GGGI ranks 146 nations. To represent the full range evenly, we created groups of five nations (i.e., group 1 including the nations ranked 1 to 5, group 2 the nations ranked 6 to 10, etc.) to select one or two nations per group (for all but one of the 29 groups, due to the lack of access to a panel for any nation of this group). The selection of nations within each group favored nations with only one official language and panel availability.

This procedure resulted in the following selection (sorted according to their rank on the GGGI): New Zealand (4), Sweden (5), Ireland (9), Germany (10), Lithuania (11), France (15), Spain (17), Philippines (19), United Kingdom (22), Canada (25), Latvia (26), United States (27), Mexico (31), Argentina (33), Panama (40), Australia (43), Chile (47), Estonia (52), El Salvador (59), Tanzania (64), Slovak Republic (67), Uruguay (72), Colombia (75), Czech Republic (76), Thailand (79), Honduras (82), Hungary (88), Indonesia (92), Brazil (94), Greece (100), China (102), Myanmar (106), Senegal (112), Japan (116), Türkiye (124), Angola (125), Saudi Arabia (127), Malawi (132), India (135), and Democratic Republic Congo (144). In sum, the procedure resulted in the inclusion of 16 nations from Europe, 2 from North America, 8 from South America, 8 from Asia, 9 from Africa, and 2 from Oceania. The combined population of the 40 nations was 3.05 billion, which was the majority (53.3%) of the world's population in 2023.

Classification and Selection of Stereotypical Traits.

Gallup 1995 data. The poll asked about the distribution of each trait between women and men: "In general, do you think each of the following characteristics is more true of men or more true of women?". The order of the gender categories was randomized. Although "equally true of both" was not explicitly part of the question, respondents were free during the telephone survey to volunteer this answer, which interviewers recorded. *SI Appendix, Supporting Information A1* contains the survey questions.

Following the classifications in past research using U.S. opinion poll data (2), we classified the traits from the poll to assess three gender stereotypic dimensions, with a) communion including *affectionate*, *emotional*, and *patient*; b) agency including *aggressive*, *ambitious*, and *courageous*, and c) competence including *creative* and *intelligent*.

Our 2023 survey. To ensure comparability, this survey adopted the wording in the Gallup 1995 and other opinion polls on gender stereotypes (2). That is, our survey also asked participants: "In general, do you think each of the following characteristics is "more true of women," "more true of men," or "equally true of both." The inclusion of the last category differs from Gallup's survey, in which participants had to volunteer this answer.

Also different from the Gallup 1995 poll, each stereotype dimension encompassed five traits (instead of two to three traits). To optimally define the concepts of agency, competence, and communion, these traits followed a recent meta-analysis of stereotypes across time (2) and other relevant research (20, 44). The resulting survey assessed a) communion with *caring*, *affectionate*, *warm*, *supportive*, and *emotional*; b) agency with *ambitious*, *assertive*, *self-confident*, *decisive*, and *competitive*; and c) competence with *clever*, *intelligent*, *competent*, *organized*, and *creative*.

Materials were translated from English to the 19 languages spoken in the 40 nations [see OSF for the verbatim surveys (35)]. Bilingual scholars or professional translators translated all items from English to the target language. Where possible, we followed translations of the traits in past cross-cultural research (28, 45) after approval from our bilingual translators. English definitions of each word's meaning given to the translators alerted them to the nuanced meaning of each trait. The backtranslation into English relied on machine-based DeepL software (deepl.com) to ensure the appropriateness of the translation. If necessary, the translation was discussed with the bilingual translators, and modifications followed.

Nation-Level Correlates.

Structure and participation in the labor force. First, women's relative to men's labor force participation derived from the International Labor Organization (ILO) for both the 1995 and the 2023 survey (18). Specifically, we calculated the share of women among all individuals (both women and men) participating in the labor force.

Second, two indicators assessed the overall occupational gender segregation. For the Gallup 1995 data, the Marginal Matching Coefficient (MM_{200}) represented segregation based on census data from the early 2000s (11). This coefficient assessed the overall segregation on a scale of 0 (no segregation) to 1 (complete segregation). Its standardization on 200 occupations yields comparability across nations, regardless of the number of occupations reported in national statistics. This coefficient was available for 7 of the 22 nations surveyed. For our 2023 data, we used the Duncan Index of Dissimilarity that was calculated by World Bank based on ILO data from the 2020s (46) and available for 26 of our 40 nations.

Third, two indicators assessed the size of the service sector of the economy. For the 1995 Gallup data, Charles' analysis (14) of the postindustrial labor market structure provided the percentage of the 1990 labor force in service-industry jobs (i.e., in the commercial, banking, service, transportation, and communication industries), covering 5 of our 22 nations. For the 2023 data, the percentage of the 2023 labor force in the service sector (i.e., in wholesale and retail trade and restaurants and hotels; transport, storage, and communications; financing, insurance, real estate, and business services; and community, social, and personal services) was available from ILO for all 40 nations (8).

Educational attainment. The assessment of women's relative to men's education relied on the share of women among all individuals (both women and men) enrolled in tertiary education in 1995 (uis.unesco.org) and 2023 (10).

Gender equality. The most prominent indicator for nation-level gender equality available for 1995 was the Gender Empowerment Measure (GEM; 47), which was later criticized and discontinued in 2010. The GEM assesses women's relative to men's opportunities in three areas: economic decision-making (by shares among senior professional and technical positions as well as senior officials and managers), power over economic resources (by the share of earned income), and political decision-making (by the share of parliamentary seats). On this index, higher values indicate greater equality.

Our 2023 survey relied on the 2023 Global Gender Gap Index (GGGI; 12). As the most prominently used nation-level gender equality index in recent research on stereotypes (e.g., ref. 29), it captures vertical or traditional gender equality across the four key dimensions of economic participation and opportunity, educational attainment, health and survival, and political empowerment. On this index, higher values indicate greater equality.

Individualism-collectivism. The assessment of the cultural dimension of individualism–collectivism consisted of a composite measure that averaged the three most widely used indices of this dimension (48–50). The three indices were strongly correlated in the predicted direction, with $rs > 0.76$. The resulting composite measure standardized each index across its available countries, averaged the available indices for each country, and standardized the composite.

Economic development. The indicator for economic wealth was the (natural logarithm) gross domestic product (GDP) per capita for 1995 and 2023 (51).

Additional exploratory correlates. In addition to our confirmatory moderator analyses, we preregistered additional correlates that potentially related to the stereotype dimensions (e.g., women's share of earned income to the household income, women's share of hours spent on unpaid domestic work among the man's and woman's hours, women's representation in high-status management positions). *SI Appendix*, Tables A4 and B4 include more details about these indicators.

Meta-Analytic Procedures.

Effect size calculations. In both the 1995 and the 2023 surveys, the main outcome variable was the percentage of respondents ascribing a trait more to women than men among those who indicated a difference (excluding equal responses). For each trait, for example, if 300 of 1,000 respondents indicated that *ambitious* is more true of women and 500 that it is more true of men, that percentage was 37.5% (i.e., 300 of the 800 who chose men or women, among the 1,000 respondents).

A secondary effect size was the percentage of respondents indicating that women and men were equal on a trait, as opposed to more true of one gender. In this example, in which 200 of the 1,000 respondents answered "equally true of both," that percentage was 20% (i.e., 200 among the 1,000). Although this "equal" answer was not provided in the Gallup 1995 poll, interviewers recorded it if respondents provided it. These percentages were converted to log odds for statistical analysis and converted back to the more intuitive percentage metric for reporting descriptive statistics (52).

Tests of robustness. As preregistered, three sets of multivariable meta-regression models tested whether the predicted bivariate relations of cross-cultural correlates to the stereotypes remained significant when controlling for covariates to determine whether our confirmatory correlates were unique (see *SI Appendix, Supplementary Appendix C1* for details).

In the first set of checks, we ran the models for each stereotype dimension including the three domain-specific covariates: labor force participation, educational attainment, and individualism–collectivism (but not broader covariates). The second set of tests included the three specific covariates plus the (natural logarithm) GDP per capita as a fourth covariate. The third set of checks controlled for the log odds of respondents indicating "equally true of both." Given that participants had to voluntarily provide this response in the Gallup 1995 poll but received it as a response alternative in our 2023 survey, controlling for these presumably more politically correct *same* responses should help account for confounds due to presumed differences in stereotypes' social desirability across nations.

An additional fourth set of robustness checks (exploratory) examined whether the inclusion of our specific social role indicators (e.g., labor force participation, educational attainment; as predicted in Hypotheses 1 to 4) reduced or eliminated the explanatory power of the broader macroindicators: Individualism (Hypothesis 5), GDP (Hypothesis 6 and 7), and gender equality (Hypothesis 8 and 9).

Statistical models. Focal analyses modeled the log odds of ascribing traits to women versus men for each stereotype dimension, while ignoring "equal" responses. Analyses conducted separately for each stereotype dimension included effect sizes within nations for each of the three stereotype dimensions (e.g., for the Gallup 1995 competence data, averaging *creative* and *intelligent*). Additional analyses modeled another effect size, the log odds of "equal" responding (see Hypotheses 3b and 4b).

Mixed effects meta-regression models assumed that the observed effect size variation was due to fixed effects of nation-level correlates, random effects of residual between-nations heterogeneity, and within-nation sampling variance (52). Between-nation heterogeneity was quantified by 90% prediction intervals (a measure of the estimated dispersion of true underlying effects) and I^2 statistics (percentage of total variability in effect sizes due to true between-nation heterogeneity rather than chance). All predictor variables were standardized by the between-nation predictor SD across nations so that the coefficient for each model represented a one SD increase in the predictor value.

RVE accounted for effect size dependencies as each nation-level poll generated multiple effect sizes (53). Specifically, the RVE analyses implemented the rma.rv() function in the *metafor* R package and the *clubSandwich* R package. Specifically, the estimation of the mixed effects meta-analysis modeled parameters used the rma.rv() function and then adjusted the SE, degrees of freedom, and *P*-values by implementing RVE using the coef_test() function in the *clubSandwich* R package. These analyses implemented the small sample corrections based on the Satterthwaite approximation suggested by Tipton (54) and the "CR2" bias-reduced linearization adjustment (55). Further, we assumed a correlation of $r = 0.50$ between correlated effects from the same sample.

Exploratory Test of Subgroup Differences. Exploratory analyses of demographic subgroup differences tested for two questions: a) Overall difference, that is, whether stereotypes held by different subgroups of respondents differed, and b) moderation by our key correlate variables, that is, whether differences in stereotypes differed depending on the nation-level correlate.

The two polls differed in the amount of demographic information available. Specifically, the Gallup 1995 data were available for only women and men respondents separately. Our 2023 survey included data for respondent gender (women vs. men), age, and education level (noncollege vs. college graduates) and therefore allowed for more refined subgroup analyses.

Exploratory Test of Cross-Temporal Change. Cross-temporal analyses explored changes from 1995 to 2023 in the communion, agency, and competence stereotypes. As preregistered, our hypotheses indicated an increase over time in women's relative to men's communion and competence stereotypes because women's labor force participation and educational attainment have increased in all but three instances (no increase in China and India for women's relative labor force participation; no increase in Lithuania for women's relative educational attainment).

This analysis included the subset of 20 nations with data at both time points and the subset of five items that appeared in both datasets (i.e., *affectionate* and *emotional* for communion, *intelligent* and *creative* for competence, *ambitious* for agency). For example, the model for communion included four effect sizes per nation (i.e., data on *affectionate*, and *emotional,* from 1995 and those two traits again in 2023). This analysis used the "correlated and hierarchical effects" model (56) to handle effect size dependencies. Specifically, the model treated effect sizes from the same sample as correlated effects with correlations of 0.5 and effect sizes from the same nation but different samples as hierarchical effects. We applied RVE using the nation level as the clustering unit (i.e., the highest level of clustering). The moderator model included a predictor for the data collection year (1995 vs. 2023) to distinguish the two time points.

Data, Materials, and Software Availability. Anonymized survey data have been deposited in OSF (https://osf.io/e5vxa) (35). All other data are included in the manuscript and/or *SI Appendix*.

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