

The Gender Mosaic Questionnaire (GMQ) Cross-Cultural Dataset (GMCCD)

Created to test the gender mosaic hypothesis across cultures, this new dataset of approximately 43 000 participants from 29 countries is now available for collaborative research on a broad range of psychological and behavioural variables.



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The gender binary framework and its costs

Women and men differ, on average, across many domains. These range from levels of sex-related hormones, such as testosterone, to personality traits, cognitive and emotional abilities, preferences, and behaviours (e.g. Archer, 2004; Cross and Madson, 1997; Eagly and Wood, 2011; Su, Rounds and Armstrong, 2009). Within the dominant binary view of sex and gender, these average differences are assumed to combine consistently within individuals, forming 2 kinds of humans. People are therefore treated as belonging to one of 2 gender categories, from which an entire set of traits, roles, and preferences can supposedly be inferred (Saguy, Reifen-Tagar and Joel, 2021). This binary thinking is socially costly. Gender stereotypes channel boys and girls, and women and men, into gender-congruent paths (e.g. Croft, Schmader, and Block, 2015; Ellemers, 2018; Halper, Cowgill, and Rios, 2019; Heilman, Caleo, and Manzi, 2024; Jewell and Brown, 2014; Master et al., 2025; Rudman and Fairchild, 2004; Verdugo-Castro et al., 2022; Xu, Feng, and Rahman, 2024).

Challenges to the gender binary and evidence for the gender mosaic

The binary framework persists even though many findings from neuroscience, psychology, and neuroendocrinology do not support the binary belief that human brains and 'natures' belong to 2 distinct kinds (Hyde et al., 2019; Joel, 2012, 2016).

The first modern study of masculinity and femininity reported low correlations among the subscales of the M-F test (Terman and Miles, 1936). Individuals could be masculine on some subscales and feminine on others. Spence (1993) later reported the same pattern, which is also manifested in low correlations between variables that show gender differences, such as interest in people versus things (Tay et al., 2011) and scores on empathising and systemising scales (Greenberg et al., 2018). Spence (1993, p. 633) concluded that "men and women do

“Most participants possess unique mosaics of feminine and masculine characteristics.”

not exhibit all of the attributes, interests, attitudes, roles and behaviours expected of their sex according to their society's descriptive and prescriptive stereotypes but only some of them. They may also display some of the characteristics and behaviours associated with the other sex.”

In 2015, we analysed gendered attitudes, preferences, and behaviours in 3 samples of young Americans. We found that most participants possess unique 'mosaics' (combinations) of both feminine (more common in women compared to men) and masculine characteristics. 'Internally consistent' individuals—those with only feminine or only masculine characteristics—were extremely rare (Joel et al., 2015; Figure 1).

The gender mosaic across 29 countries

Although these 3 studies span almost a century (Joel et al., 2015; Spence, 1993; Terman and Miles, 1936), all were conducted with American samples. The ERC-funded BeyondGenderBinary project therefore set out to test the binary and mosaic frameworks across additional Western and non-Western cultures.

To this end, we constructed the Gender Mosaic Questionnaire (GMQ) and the Gender Mosaic Cross-Cultural Dataset (GMCCD). The GMQ assesses psychological and behavioural variables reported to show large sex/gender differences in English-speaking samples. These include job and leisure-time preferences, empathising, systemising, aggression-related measures, gender identity as a woman and as a man, self-ascribed femininity and masculinity, sexual preferences and behaviours, and

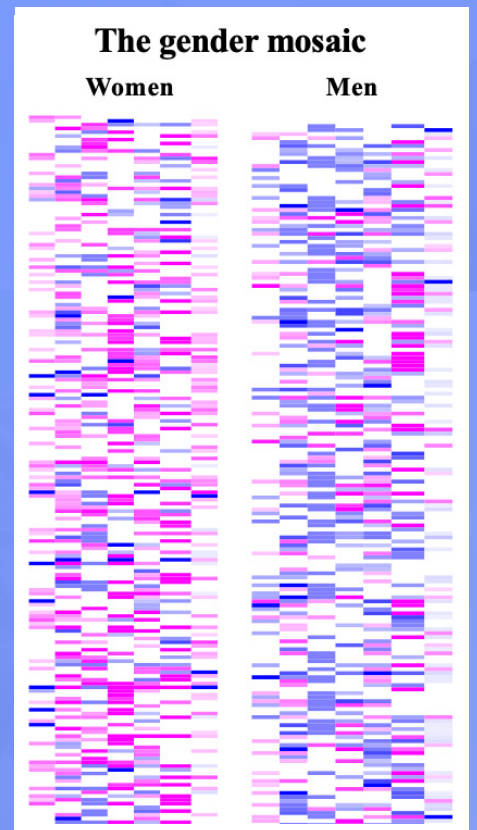


Figure 1: The gender mosaic. Data were obtained from the Maryland Adolescent Development in Context Study (Eccles, 1999) as shown in Figure 1. Of the different measures of behaviour, personality characteristics, and attitudes available in MADICS, we analysed data for 7 variables with the largest sex/gender differences: Expectations for sexual discrimination, Communication with mother, Worries about weight, Masculine self-esteem, Communication with peers, Problem behaviour, and Gender-related attitudes. Using the actual distributions of women and men in the sample, we defined for each variable 'feminine' (pink) and 'masculine' (blue) scores as the scores of the 33% most extreme women and men, respectively. In the diagrams, each row represents a single person; each column, the score on a single psychological characteristic out of 7. Scores range from 'feminine' (darker pink) to 'masculine' (darker blue). White indicates that the score was gender-neutral, that is, in between the feminine and masculine scores. (Recreated with permission on the basis of Figure S2A in Joel et al., 2015).



The psychological and behavioural domains of GMQ

GENDER MOSAIC PROJECT

1 OCCUPATIONAL PREFERENCES
(10 items)

Three factors

- Realistic (3 items)
- Artistic (3 items)
- Social (2 items)

INVARIANCE LEVEL

- Configural – Good
- Thresholds – Good
- T & Loadings – Good

2 SYSTEMISING
(10 items)

One factor

- Detail (4 items)

INVARIANCE LEVEL

- Configural – Good
- Thresholds – Good
- T & Loadings – None

3 EMPATHIZING
(10 items)

One factor (3 items)

INVARIANCE LEVEL

- Configural – Good
- Thresholds – Good
- T & Loadings – None

4 PARTNER PREFERENCES
(6 items)

Two factors

- Status/Resources (3 items)
- Age/Appearance (3 items)

INVARIANCE LEVEL

- Configural – Good
- Thresholds – None
- T & Loadings – None

5 SEXUAL BEHAVIORS AND PREFERENCES
(7 items)

One factor

- Sexual openness (4 items)

INVARIANCE LEVEL

- Configural – Good
- Thresholds – Good
- T & Loadings – None

6 PHYSICAL AGGRESSION
(8 items)

One factor (8 items)

INVARIANCE LEVEL

- Configural – Approximate
- Thresholds – Good
- T & Loadings – Approximate

7 LEISURE INTERESTS
(8 items)

One factor

- Feminine (4 items)

INVARIANCE LEVEL

- Configural – Good
- Thresholds – None
- T & Loadings – None

● Good ● Approximate / Partial ● None

“The GMCCD brings together approximately 43 000 participants from 29 countries.”

Start Questionnaire

 References [click here](#)



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