

Appendix - Reference List - FOI 18/01743

Neuroscience

- Fine, C. (2010) *Delusions of Gender: The Real Science Behind Sex Differences*. An exploration of gender stereotypes. Icon Books.
The author, a cognitive neuroscientist, describes a comprehensive examination and critique of the evidence for hard-wired differences between the male and female brain.
- Fine, C. (2017) Cordelia Fine, *Testosterone Rex: Myths of Sex, Science, and Society*, pp 42.
“Contrary to the view that the brains of men and women are strikingly different, none of these differences were particularly substantial. Even for the very largest, the overlap between the sexes meant that about one in five women were more “male-like” than the average male.”
- Bluhm, R., Jacobson, A. and Maibom, H. (2012). *Neurofeminism*. Basingstoke: Palgrave Macmillan.
- Saini, A. (2018). *Inferior*. London, [United Kingdom]: 4th Estate, pp. 101, 102, 106, 108, 109, 114-9, 122, 100, 69-72, 87-96.
The noted pages provide information on brain chemistry before/at birth and the neuro-capacity of boys vs girls, showing no significant differences.
- Sonnert, G. (2009). *Parents who influence their children to become scientists: effects of gender and parental education*. Soc. Stud. Sci. 39, 927–941. doi: 10.1177/0306312709335843

What is the difference between “sex” and “gender”?

“Gender refers to the socially constructed characteristics of women and men - such as the norms, roles and relationships that exist between them. Gender expectations vary between cultures and can change over time. While most people are born either male or female (biological sex), they are taught appropriate behaviours for males and females (gender norms) - including how they should interact with others of the same or opposite sex within households, communities and workplaces (gender relations) and which functions or responsibilities they should assume in society (gender roles).”

World Health Organisation

<http://www.who.int/en/news-room/fact-sheets/detail/gender>

Gender and Education

- OECD (2015), *The ABC of Gender Equality in Education: Aptitude, Behaviour, Confidence*, PISA, OECD Publishing.
<https://www.oecd.org/pisa/keyfindings/pisa-2012-results-gender-eng.pdf>
This report, aims to give a comprehensive overview of gender differences in education attainment of 15 year olds across OECD countries. In particular it

looks at underperformance among boys, lack of self confidence among girls and family, school and societal influences.

“Over the past century, OECD countries have made significant progress in narrowing or closing long-standing gender gaps in many areas of education and employment, including educational attainment, pay and labour market participation. This one fact implies another: that aptitude knows no gender. Given equal opportunities, boys and girls, men and women have equal chances of achieving at the highest levels.

But new gender gaps in education are opening. Young men are significantly more likely than young women to be less engaged with school and have low skills and poor academic achievement. They are also more likely to leave school early, often with no qualifications. Meanwhile, in higher education and beyond, young women are under-represented in the fields of mathematics, physical science and computing.

As the evidence in the report makes clear, gender disparities in performance do not stem from innate differences in aptitude, but rather from students’ attitudes towards learning and their behaviour in school, from how they choose to spend their leisure time, and from the confidence they have - or do not have - in their own abilities as students.”

- Department for Education, Gender and Education - Mythbusters, (2009) *“Addressing Gender and Achievement: Myths and Realities”*, ref: 00559-2009BKT-EN
“This resource is designed for use by educators from all phases and stages of schooling. Its purpose is to identify and dispel some of the current and unhelpful myths about gender and education and to counter them with an evidence-based rationale. “
- Hattie J 2009 *Visible Learning: A synthesis of over 800 meta-analyses relating to achievement*, Routledge, ISBN13: 978-0415476188
On gender he concludes:
"Overall, the differences between males and females should not be of major concern to educators. There is more variance within groups of boys and within groups of girls."
- Dweck, C. S., Davidson, W., Nelson, S., & Bradley, E. (1978). *Sex differences in learned helplessness: II. The contingencies of evaluative feedback in the classroom and III. An Experimental Analysis*. *Developmental Psychology* 14(3), 268–276.
- Howe, C. (1997) *Gender and classroom interaction*. A research review. SCRE.
- Education Working For All! Commission for Developing Scotland’s Young Workforce Final Report <http://www.gov.scot/resource/0045/00451746.pdf>
“Too many young people continue to make choices which conform to gender stereotypes which in turn limit their longer term career opportunities. We need

to counter the influence of early culture and prejudice to better enable young people to make choices which are right for them in the long term.”

- Wise campaign: “Not for people like me?” (2014)
https://www.wisecampaign.org.uk/uploads/wise/files/not_for_people_like_me.pdf
The report highlights the importance of acknowledging the gap between most young people’s self-identity and their perception of STEM careers. Currently, most girls decide that jobs and careers in STEM are “not for people like me”.
- McGeown, S., Goodwin, H., Henderson, N. & Wright, P. (2012). Gender differences in reading motivation: Does sex or gender identity provide a better account? *Journal of Research in Reading*, 35(3), 328–336.
- McGeown, S. (2012). Sex or gender identity? Understanding children’s reading choices and motivation. *Journal of Research in Reading*, 38(1) 1 - 12
“The extent to which children’s reading choices could be predicted by their motivation and gender identity was examined. Differentiating between sex and gender identity may provide a better understanding of variation in children’s reading motivation and reading choices. Indeed, it offers a useful route towards understanding sex differences commonly found in these areas. The results of this study suggest that children’s book reading choices are not only influenced by their sex, but by the extent to which they identify with masculine and feminine traits. Furthermore, by investigating gender identity, it may be possible to advance current understanding regarding the relationship between reading motivation and reading choices.”
- *Opening Doors: A guide to good practice in countering gender stereotyping in schools* (2015) The Institute of Physics. The project is not specific to physics, or even science, but focuses on developing a whole-school approach to addressing gender imbalance.
- Murphy and Whitelegg (2006), *Girls in the Physics Classroom: A review of the research on the participation of girls in physics*. Institute of Physics.
- Freeman, Nancy. (2007). *Preschoolers’ Perceptions of Gender Appropriate Toys and their Parents’ Beliefs About Genderized Behaviors: Miscommunication, Mixed Messages, or Hidden Truths?* *Early Childhood Education Journal*. 34. 357-366. 10.1007/s 10643-006-0123-x.
- Shutts K., Kenward B., Falk H., Ivegran A., Fawcett C. (2017) *Early preschool environments and gender: Effects of gender pedagogy in Sweden*. *Journal of Experimental Child Psychology* 162 (2017) 1–17.
- Russett, Cynthia Eagle (1989). *Sexual Science: The Victorian Construction of Womanhood*. Harvard University Press, Cambridge MA pp. 192-195.
- Kilvington, J., & Wood, A. (2016). *Gender, Sex and Children’s Play*. Bloomsbury. Chapter 4 explores “theories which try to explain why there may

be differences between the interests and play behaviours of, and within, groups labelled as, boys and girls”.

- Goldin, C. & Rouse, C. (2000). *Orchestrating Impartiality: The Impact of "Blind" Auditions on Female Musicians*. *The American Economic Review*, Vol. 90, No. 4 pp. 715-741.

This is not directly focused on education. The paper examines whether holding 'blind' auditions (i.e. jury unaware of candidate's identity) has contributed to increase in proportion of women in symphony orchestras.

Stereotype threat

- Steele, C. (2011) *Whistling Vivaldi: How Stereotypes Affect Us and What We Can Do*. An introduction to the research and findings on stereotype threat.