COVER PICTURE

Pink and blue: the color of gender

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Assigning color to gender is mostly a twentieth-century trait. It should be noted that it is a practice limited most often to Western Europe and the Americas. It would also seem that the effect of color-coded gender differences (pink for girls, blue for boys) existed oppositely initially [10].

In fact, this reversal of what we consider "normal" was considered conventional, even in the early twentieth century. The debate of when and why pink and blue came into fashion to designate gender rages on, but almost every argument alludes to a passage in the novel *Little Women*, published in 1868: "Amy ties a pink bow and a blue bow on Meg's twins Daisy and Demi, so people will know the difference between the girl and the boy." This is said to be done in the "French style," suggesting that it might have been possible in France that pink and blue were already gender-specific.

However, there is evidence that this practice was not always common or always done throughout much of Europe. In fact, in the nineteenth century, parents dressed infants in white dresses, suggesting that color and dresses were not used to distinguish between girls and boys [3].

At one point, pink was considered more of a boy's color, as a watered-down, bold, dramatic red, which is a fierce color. Instead, blue was considered more for girls. Probably this choice was affected by the fact that blue, especially dark blue, was associated with the Virgin Mary in Christian Europe. In fact, painters often mixed lapis lazuli into paints to depict what was considered the most sacred feminine icon.

P. Frassanito (⊠) · B. Pettorini Pediatric Neurosurgery, Catholic University, Largo A. Gemelli, 8, 00168 Rome, Italy e-mail: paolo.frassanito@gmail.com The Sunday Sentinal, an American newspaper, in 1914 advised mothers: "If you like the color note on the little one's garments, use pink for the boy and blue for the girl, if you are a follower of convention" (March 29, 1914). Similarly, *Ladies Home Journal* informed: "There has been a great diversity of opinion on the subject, but the generally accepted rule is pink for the boy and blue for the girl. The reason is that pink being a more decided and stronger color is more suitable for the boy, while blue, which is more delicate and dainty, is prettier for the girl" (June, 1918).

The current pink for girls and blue for boys was not uniform until the 1950s [11]. It would seem that Nazi Germany had something to do with the association of pink with femininity: catholic traditions in Germany and neighboring countries reverse the current color coding, because of the strong association of blue with the Virgin Mary; the Nazis in their concentration camps use a pink triangle to identify homosexuals. The Nazi's choice of pink suggests that, by the 1930s, it was a color that in Germany had become associate with girls.

Thus, *Dress Maker Magazine* stated: "The preferred color to dress young boys in was pink! Blue was reserved for girls as it was considered the paler, more dainty of the two colors, and pink was thought to be the stronger (akin to red). It was not until WWII that the colors were reversed and pink was used for girls and blue for boys..."

After World War II, blue was used extensively for men's uniforms. Therefore, blue became associated as more of a masculine color. From the 1940s onward, pink was pushed as a woman's color. "Think pink" was the marketing slogan to convince women to embrace their femininity.

The 1950s featured a virtual color explosion, not only in clothing, but also in things like appliances and furniture. Dressing children in pink and blue to specifically denote gender suggested the rising middle class and above. In other words, people who could afford to make the gender assignment did so, since many infants appear somewhat asexual when first born.

Another possible theory links pink and blue gender references to the 1950s film *Funny Face*, which stars Audrey Hepburn. Hepburn was thought an extremely feminine woman, and her outfits in pink may have proven inspiring. This explanation is somewhat unlikely, given that the film was not released until 1957.

Thus, the pink and blue tradition is recent and relatively exclusive to the Western world, but the girls' preference for the color pink seems to have deeper roots. In a recent study, the researchers report a preference for blue color on a yellow–blue scale both in males and in females, but a girl's preference for red on a green–red scale. This sex difference, revealed by a rapid paired-comparison task, is robust and cross-cultural [8]: could it have a biological basis or is it only "social imprinted"?

A recent argument proposes a biological basis, connected to evolved sex differences in specialized visual pathways that allows females to better discriminate red wavelengths. The hunter-gatherer theory proposes that female brains should be specialized for gathering-related tasks and is supported by studies of visual abilities [13]. Tricromacy and the second red-green system (L-M opponent channel) are "modern" adaptations in primate evolution thought to have evolved to facilitate the identification of ripe, yellow fruit or edible red leaves embedded in green foliage [12]. It is therefore plausible that, in specializing for gathering, the female brain honed the trichromatic adaptations (and developed more the P-cell pathway of vision), and these underpin the female preference for objects reddish. Research on foraging in contemporary nonhuman primates [5] supports this hypothesis. Whereas discrimination of red wavelengths appears to facilitate identification of plant food, a preference for red or pink appears to have an advantage for successful female reproduction. This preference for reddish-pink is thought to exist because infant faces compared to adult ones are reddish-pink, and red or pink may signal approach behaviors that enhance infant survival [7].

Similarly, evolutionary theorists have reasoned that selection pressures might have contributed to spatial abilities in men that enhanced the hunt and capture of animals, such as the identification of spatial position, object movement, and a global analysis of visual scenes [6], that are processed by the M-cell pathway, phylogenetically older [1]. Other findings in studies on primates are consistent with androgen-dependent effects on visual processing pathway structure at the level of the cortex, supporting a biological basis of the preference for the color [2].

On the other hand, the segregation of the anatomical and functional properties of the M-cell and P-cell pathways at the cortical level is less pronounced in infants, if compared to adults [4], consistent with the proposal that parcellation and specialization of the visual processing stream is directed by experience in postnatal life and so enhancing the social and cultural influences in addition to the biological basis [9].

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