

Author's Feedback against Editorial Comment:

You can find below my comments about the paper "Population stress, civil unrest and the male to female ratio at birth in Chile, Argentina, Brazil, Australia and Finland"

The manuscript has still two major pitfalls:

Statistical methods should be revised

Some possible explanations of the findings are difficult to justify or inconsistent.

The authors used the chi-square test in order to test trends and to compare the sex ratios. In case of a large sample size (the annual number of births are more than 50,000 in any studied country) the chi-square test tends to provide statistical significant results, even though the population effect size is negligible. E.g. In Chile the maximum annual change in the sex ratio is 1%, the average annual change is 0.4%, however from the results of the chi square test the authors deduce a "significant decline". Statistical significance tells how sure you are that a difference or relationship exists. To say that a significant difference or relationship exists only tells half the story. After finding a significant relationship, it is important to evaluate its strength. Significant relationships can be strong or weak. Significant differences can be large or small. It just depends on your sample size.

I suggest to use more suitable statistical tools such as the ARIMA model, used in one of the cited studies (Bruckner, 2010) or the joinpoint regression analysis (see Kim HJ, Fay MP, Feuer EJ, Midthune DN. Permutation tests for joinpoint regression with applications to cancer rates. Stat Med 2000;19:335-51 for details).

"In conclusion, M/F ratios may have been subtly or not so subtly influenced by political events that fall short of outright warfare. These effects may cause population stress due to socio-economic upheaval or repression or simply due to psychological effects. M/F ratios worldwide thus provide tantalising hints that even transient stress may impinge on M/F, making this a possible indicator of overall population stress since events identified in this paper provide only contextual evidence and may not be causal."

About possible explanations, as one of the referees cited, "the proposal that in Australia one individual (Mr. Vladimir Petrov) single handedly changed the male to female birth ratio seems unlikely, and impossible to support". I did not find any convincing passage in the manuscript in reply to this observation.

These are the relevant paragraphs

In Australia, the 1950s were characterised by four elections, in 1951, 1954, 1955 and 1958 ... Moreover, the 1954 election was tainted by conspiracy theories of communist spy rings in Australia, fuelled by the Petrov Affair, wherein Vladimir Petrov, an attaché to the Soviet embassy in Canberra, defected to the West. He too claimed these spy rings existed. Since the 1951 Australian election had been contested over the issue of whether to make the Communist Party of Australia illegal, this claim appeared prima facie legitimate. This led to the incumbent government (the Liberal Party in coalition with the Country Party) writing to Vyacheslav Molotov, the Soviet Foreign Affairs Commissar, who assured him that no such rings existed, a declaration that was made public and helped win the election with the administration remaining in power, defeating the Labour Party. These events were closely watched and debated in Australia and caused significant furore among the populace.(29)

This defeat led to the "great split" of the Labour Party in 1955, with the Liberal/Country coalition remaining in power for the next seventeen years.(30) It is possible that the ensuing turmoil may have influenced M/F, which spiked significantly in 1956.

I am clearly stating that the elections led to a succession of events that may have caused the fluctuation. The text has now been modified to emphasise this:

This defeat led to the "great split" of the Labour Party in 1955, with the Liberal/Country coalition remaining in power for the next seventeen years.(30) It is possible that the ensuing turmoil may

have influenced M/F, which spiked significantly in 1956. The 1954 election may thus have caused a chain of events that caused a fluctuation in M/F.

Another inconsistent explanation concerns Argentina. The authors made the hypothesis that the high sex ratio observed in 1978 may be due to the victory of Argentina in the 11th soccer World Cup, that was held in June 1978. Timing is inconsistent, the babies conceived after the victory will have been born in 1979, so the effect would have been apparent only in 1979.

Argentina also hosted the event and it is possible that the anticipation of this event may have caused the M/F fluctuation. I apologise if this was unclear and have modified the paragraph thus:

In 1978, the 11th soccer World Cup was held in Argentina (and the Argentina also won). It is known that increased coital rates increase the chances of conception at the beginning and end of the menstrual cycle. It is also known that conceptions that occur at the extremes of the menstrual cycle skew M/F toward male births.(27) It is possible that exuberance in anticipation of the World Cup (with higher coital rates) may have resulted in the observed excess of male conceptions.(23)

Finally, the paper can be reconsidered after major revisions concerning statistical methods and explanations.

Note: Modification was done in this document ONLY to hide some comments, which are against the SDI peer review guidelines.