

This study used the IEA science data for fourteen year old pupils in developed countries to examine sex differences in science achievement. In all the countries considered boys achieved better than girls in science. The gap between girls' and boys' achievement was similar in all countries, and no one developed country stood out from the others as having exceptionally large or exceptionally small sex differences in science achievement. However the sex differences were consistently large in physics and small in biology, with chemistry intermediate. Thus sex differences were far more characteristic of a branch of science than of a country. Girls in some countries achieved better than boys in other countries, and internationally there was no achievement level beyond which girls' performance fell off relative to boys'. Sex differences among ten year old pupils in a country were correlated with sex differences among fourteen year old pupils, and, particularly in physics, the sex difference was already marked among ten year olds.

These results were considered in conjunction with three main explanatory hypotheses, focusing on culture, school and attitudes. The culture hypothesis suggested that girls achieve less well in science because society does not encourage or expect girls to achieve as well as boys in science. If cultural factors are effective, and if they vary between cultures or subcultures, then some concomitant variation in the sex differences in science achievement would be expected. But this was not found. The school hypothesis suggested that science is presented in schools in a way more suited to boys than to girls. However few school factors were found to be related to science achievement for either sex, and such relationships as did exist were generally similar for both sexes. The attitude hypothesis suggested that girls perform less well than boys in science because girls have less favourable attitudes towards science than boys. It was found that girls did have less favourable attitudes towards science than boys, and that pupils with more favourable attitudes achieved better than pupils with less favourable attitudes. However boys with positive attitudes to science achieved better than girls with similar attitudes. Thus none of the explanatory hypotheses were strongly supported by this research, although the data was not such as to allow them to be conclusively rejected.

The results were re-interpreted in terms of Kohlberg's cognitive-developmental theory of the acquisition of sex-role stereotypes. On this theory science is seen as a masculine activity. Girls, who are striving to attain a feminine identity, therefore reject everything scientific, while boys try to adopt scientific ways in their play activities and hobbies. So boys gain an initial lead over girls in science achievement. Feedback loops then operate in the schools to increase this lead between the ages of ten and fourteen.