

# Research grasps in-utero testosterone and behaviour ties

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Exposure to antenatal testosterone was not associated with any increased risk for behavioural problems overall in children aged 2–10 years. Credit: Andy Ciordia

While childhood behavioural difficulties do not appear to be linked to increased testosterone exposure in the womb, a relationship between antenatal testosterone and attention span in boys and withdrawn behaviour in girls has emerged in new research.

Limited studies investigating the impact of increased in-utero testosterone exposure have suggested it can lead to greater aggressive behaviours postnatally.

Led by Dr Monique Robinson from the Telethon Institute for Child Health Research, the study explored this relationship using data from the

WA Pregnancy Cohort (Raine) Study.

"[We explored] whether there was a higher rate of internalising [anxiety, depression and withdrawal] and externalising [aggression, rule-breaking, lying] behaviour problems for children who were exposed to increased or decreased testosterone in-utero measured in the [umbilical cord blood](#) sample collected at birth," Dr Robinson says.

The study analysed umbilical cord [blood samples](#) collected from 429 males and 430 females in the Raine Study; bioavailable testosterone (BioT) levels were calculated from total testosterone concentrations.

Child behaviour was assessed using the Child Behaviour Checklist (CBCL), a 99-item and 118-item survey for parents with two-year-olds and five to 10-year-olds respectively.

"From the CBCL results we can group the responses into the two patterns of internalising and externalising behaviours, [and gather] a total score which indicates the overall level of functioning and other behaviours," Dr Robinson says.

Syndrome scores for attention problems and aggression in boys, and withdrawn and social problems in girls, were regressed against BioT quartiles.

Exposure to antenatal testosterone was not associated with any increased risk for [behavioural problems](#) overall in children aged 2–10 years.

However, the researchers investigated further by analysing specific [behaviours](#) associated with testosterone in previous literature, such as social and attention problems, withdrawal and aggression.

"Here we saw a pattern with [attention problems](#), where boys who had

greater exposure to testosterone in-utero had better scores for attention than those with less exposure," Dr Robinson says.

"For girls, we found that greater exposure to testosterone was linked to increased withdrawn behaviour, but only early in childhood [in five-year-olds]."

"These results are interesting, but really it is too soon to draw major conclusions from this one study alone...despite its large sample size and comprehensiveness."

Dr Robinson recognises that the finding that foetal testosterone levels do not influence behavioural problems in childhood for either boys or girls is significant for those working in the child health field.

A follow-up by Professor Martha Hickey, will investigate whether behavioural differences emerge when the children reach adolescence.

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