

SPOTTED

Acetaminophen risks; imaging failures; autism on TV

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Acetaminophen risks

Women who take acetaminophen during pregnancy are at an increased **risk of having children with symptoms of autism** or attention deficit hyperactivity disorder, according to a study published last week in the *International Journal of Epidemiology*.

Acetaminophen — also known as paracetamol and the active ingredient in Tylenol — is a pain reliever commonly used during pregnancy. Although it is generally considered safe, several studies have suggested that women who use the drug while pregnant raise their risk of having **children with autism** or **hyperactive behaviors**.

The new study, led by a Spanish team, enrolled more than 2,600 pregnant women. Women who reported using acetaminophen during all three trimesters were nearly 30 percent more likely than controls to have children with attention problems. Children who had been prenatally exposed to the drug at any point were about 40 percent more likely than controls to show hyperactivity or impulsivity at age 5.

Boys who had been exposed to the drug throughout gestation scored two points higher, on average, than controls on a standard assessment of autism symptoms.

However, it is notoriously difficult to **establish causal links between prenatal exposures** and autism, and the new study **is far from conclusive**.

“This paper does not provide sufficient evidence to support the claim that there is a strong association between paracetamol use and the presentation of symptoms of autism,” James Cusack, director of science at Autistica, an autism charity in the United Kingdom, **told *The Independent***. “The results presented are preliminary in their nature, and so should not concern families or pregnant women.”

SOURCES:

International Journal of Epidemiology / 28 Jun 2016

Acetaminophen use in pregnancy and neurodevelopment: attention function and autism spectrum symptoms

<http://ije.oxfordjournals.org/content/early/2016/06/27/ije.dyw115.full>

The Independent / 02 Jul 2016

Link between paracetamol and autism dismissed by scientists
<http://www.independent.co.uk/life-style/health-and-families/health-news/paracetamol-autism-link-dismissed-scientists-a7115411.html>

Common changes

Scientists are pushing back against proposed changes to federal regulations — known as the ‘Common Rule’ — for research in people.

In September, the U.S. Department of Health and Human Services **recommended a host of changes** to the laws that govern human research. Among the proposed tweaks is a requirement that researchers get permission from participants before using any of their stored biological samples, such as tissue or blood, for research.

On 29 June, the National Academies of Sciences, Engineering, and Medicine issued a nearly 300-page report **calling the suggested revisions unclear** and an unnecessary burden that would slow research. “They also raised concern that many health institutions wouldn’t have the infrastructure or resources to comply with the proposed changes,” **reports STAT.**

Defenders of the new recommendations point out that it is increasingly possible to identify the source of anonymous tissue samples based on their genetic profiles and that tighter regulations are needed to protect participants’ privacy.

SOURCES:

STAT / 29 Jun 2016

White House under pressure to withdraw changes to human research rules

<https://www.statnews.com/2016/06/29/medical-research-consent-pressure/>

Imaging failures

Flaws in the software commonly used to analyze functional magnetic resonance imaging (fMRI) scans could **invalidate tens of thousands of studies**, according to a paper in the *Proceedings of*

the National Academy of Sciences that took Twitter by storm this week.

The fMRI technique measures blood flow in the brain as a rough proxy for brain activity. To analyze the scans, researchers **use special statistical software** that breaks the brain down into small, individual areas called voxels and then looks for patterns of activity: regions of the brain where many adjacent voxels show changes in blood flow.

For the new study, a team of Swedish researchers re-analyzed 499 fMRI scans that had been used in previous studies. The scans were all of '**resting brains**,' — that is, of people lying quietly in a scanner rather than performing a specific task.

The researchers randomly **divided the scans into multiple groups** and used several different types of software to compare the groups. Because all the scans were of resting brains of neurotypical people, there should have been few significant differences among them. But the software identified differences up to 70 percent of the time. Theoretically, the rate of false positives should be closer to 5 percent, the researchers say.

"These results question the validity of some 40,000 fMRI studies and may have a large impact on the interpretation of neuroimaging results," the researchers write.

SOURCES:

Proceedings of the National Academy of Sciences / 28 Jun 2016

Cluster failure: Why fMRI inferences for spatial extent have inflated false-positive rates

<http://www.pnas.org/content/early/2016/06/27/1602413113.full>**Ars Technica** / 01 Jul 2016

Software faults raise questions about the validity of brain studies

<http://arstechnica.com/science/2016/07/algorithms-used-to-study-brain-activity-may-be-exaggerating-results/>

Revisiting research

Writing a thesis is a major accomplishment for budding scientists: Only 50 percent of Ph.D. students in the United States, and 70 percent in the U.K., **complete their degrees**.

Nature asked geneticist Francis Collins, planetary scientist Sara Seager and developmental psychologist **Uta Frith** to revisit their doctoral theses and "reflect on what they — and the world — gained from them."

Frith, emeritus professor of cognitive development at University College London, is **a pioneer in autism research**. Her thesis, completed in 1968, investigated how children with autism process

patterns. Frith showed the children in her study a box containing green and yellow counters that had been arranged into a specific sequence and then asked each child to recreate the pattern from memory.

The children with autism made a similar number of mistakes as typically developing children did, but they made different types of errors, she found. Whereas the typical children tripped up by following the given pattern too strongly, children with autism tended to create their own novel patterns for the tokens. The finding suggested that children with autism might project their own strict sense of order onto the world.

According to *Nature*, “Frith saw logic in the children’s responses, and felt that they were not necessarily inferior to those of others. ‘It is presumptuous to think that those patterns imposed by autistic children are any worse than the patterns I have imposed on the data,’ the concluding paragraph of her thesis reads.”

SOURCES:

Nature / 06 Jul 2016

Back to the thesis

http://www.nature.com/news/back-to-the-thesis-1.20202?WT.mc_id=TWT_NatureNews

Autism on TV

“The A Word,” a new scripted show set to premiere on SundanceTV on 13 July, **follows the family of a 5-year-old English boy** named Joe after he is diagnosed with autism.

The show was inspired by the Israeli series “Yellow Peppers” and initially aired on the BBC. It “touches on the pressures Joe’s autism places on his family, the social stigmas they face, and their challenges in getting their son proper care,” *New York* magazine’s **Science of Us section reports**.

Peter Bowker, writer and executive producer of the show, spent 14 years teaching children with severe learning disabilities, including those with autism, and asked the U.K.’s Autism Society to review his scripts.

Bowker told *New York* that he was interested in exploring “the kinds of fault lines that [autism] exposes in a family, because it is clearly a disability that is about communication, and yet it is something we can’t talk about. So for a dramatist that is quite a gift.”

SOURCES:

New York / 01 Jul 2016

The challenge of creating a TV series about autism

<http://nymag.com/scienceofus/2016/07/the-challenge-of-creating-a-tv-series-about-autism.html>
