




Comment on ‘effects of acetaminophen on risk taking’

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Abstract

The article by Keaveney *et al.* entitled ‘Effects of acetaminophen on risk taking’ was published in July of 2020 and concluded that using acetaminophen increased risk-taking behaviors, potentially by reducing perceived risk. We believe that there is not enough data to support the generalization of this association and feel that the conclusions were presented without acknowledgement of the limitations of this study. Media articles often further dramatized these findings, presenting the potential correlation between acetaminophen and risk taking as fact. It is unfair to readers to sensationalize the associations seen in controlled experiments in an attempt to generalize the study’s findings. As scientists, we need to assure that the discussions and conclusions presented in publications appropriately highlight the limitations of studies. We must also work to assure that the public does not sensationalize preliminary and limited research results.

Key words: acetaminophen; risk taking

To the Editor

The article entitled ‘Effects of acetaminophen on risk taking’ (Keaveney *et al.*, 2020) concluded that acetaminophen increased risk-taking behaviors, potentially by reducing perceived risk. These conclusions were drawn from experimental computerized tasks designed to simulate risk taking, as well as questionnaires used to evaluate risk perception. A significant section of this publication was devoted to future directions and potential implications of these findings, postulating that an association between acetaminophen and risk taking could have important societal implications. Specifically, the paper gives two examples of when individuals may have acetaminophen in their system and thus altered decision-making: hospitalized patients who make major decisions about their healthcare and automobile drivers who calculate risks. By including these points in the article, readers reach the conclusion that taking acetaminophen prior to performing such tasks could be dangerous and that the millions of people taking this over-the-counter medication are unaware of these risks. This was subsequently picked up by the lay media and sensationalized by numerous publications.

It is difficult to model risk in a simulated situation, as the morality of experiments prevents subjects from truly believing they will come into harm. Thus, the mindsets of participants in experiments will always differ from situations of true perceived danger. The results of the risk simulations utilized in this paper suggest an association between acetaminophen use and the perceived risk of inflating a balloon to win hypothetical money. However, we believe there are not enough data to support the generalization of this association with the others noted previously and recommend that more research is needed prior to concluding that acetaminophen use is an acute danger to tasks of daily living. Asserting to readers that using acetaminophen may impact one’s ability to drive presents acetaminophen in the same light as ethanol use, which is definitively proven to affect one’s ability to react and make decisions. However, the simulated experiments presented in this paper were neither meant to mimic driving nor to assess one’s ability to react or make decisions while operating machinery. Portraying the idea that acetaminophen is a danger to drivers is misconstruing and dramatizing the data from this study.

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It should be noted that the authors did include these statements in the 'Potential implications' section, a part of the paper designated for discussion of areas needing further research. Unfortunately, the media outlets picked up on the more dramatically portrayed potential implications, often without the recognition that these were areas needing future research and in no way conclusive. An article by Science Alert (Dockrill, 2020) stated that increased risk taking occurs 'when under the influence of the common over-the-counter medication', and Pain News Network reported that acetaminophen might make people more likely to rate skydiving or bungee jumping as less risky (Anson, 2020). Even general media sites such as Forbes (Rocheleau, 2020) and the Miami Herald (Camero, 2020) reported on the findings, with the latter stating that acetaminophen 'could strip you of anxiety and fuel you with carefree bravery'. These are only a few examples of the many media outlets that reported on this study and perpetuated the proposed dangers of acetaminophen.

Articles reporting on these findings also took liberties to discuss the possible implications of this study during the current pandemic. While the original publication by Keaveney *et al.* makes no mention of COVID-19, numerous media sites linked this article to the pandemic, stating the potential for risk taking related to contracting or spreading the virus (Camero, 2020; Dockrill, 2020; Rocheleau, 2020). These articles often quoted a statement from Baldwin Way, one of the authors of the original paper, in which he endorses that people with mild COVID-19 symptoms taking acetaminophen might perceive less risk in leaving their houses and meeting with people. However, there are no data from the publication to support this assertion, and this statement appears to go directly against the current CDC (Centers for Disease Control and Prevention) recommendation to take acetaminophen if one suspects they have COVID-19.

The conclusions presented in the article by Keaveney *et al.* were largely overgeneralized and further perpetuated in the media. The limitations of the study were not included in the paper, leading readers to conclude that these findings were relevant and applicable to their everyday lives. Media articles often further dramatized these findings, presenting the potential correlation as fact and generalizable to all situations. Readers reviewing these media articles were likely falsely persuaded

of the definitive risks of acetaminophen use after reading titles such as 'The most common pain relief drug in the world induces risky behavior, study suggests' (Dockrill, 2020) and 'Study finds acetaminophen makes people more likely to take risks' (Anson, 2020). As scientists, we need to assure that the discussions and conclusions highlight such limitations of studies and work to assure that the public does not sensationalize preliminary and limited research results.

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Conflict of interest

The authors declare no conflict of interest.

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