Risky bicycling behavior among youth with and without attention-deficit hyperactivity disorder.


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Background
Injury risk from car–bicycle collisions is particularly high among youth with attention-deficit hyperactivity disorder (ADHD). Here, we capitalized on advances in virtual environment technology to safely and systematically examine road-crossing behavior among child cyclists with and without ADHD.

Methods
Sixty-three youth (26 with ADHD, 37 non-ADHD controls) ages 10–14 years crossed 12 intersections with continuous cross-traffic while riding a high-fidelity bicycling simulator. Traffic density (i.e., temporal gaps between vehicles) was manipulated to examine the impact of varying traffic density on behavioral indices of road crossing, including gap selection, timing of entry into the roadway, time to spare when exiting the roadway, and close calls with oncoming cars. In addition, parents filled out questionnaires assessing their child's ADHD symptomatology, temperamental characteristics, bicycling experience, and injury history.

Results
ADHD youth largely chose the same size gaps as non-ADHD youth, although ADHD youth were more likely to select smaller gap sizes following exposure to high-density traffic. In addition, youth with ADHD demonstrated poorer movement timing when entering the intersection, resulting in less time to spare when exiting the roadway. Hyperactivity–impulsivity symptoms were specifically associated with selection of smaller gaps, whereas timing deficits were specifically associated with inattention and inhibitory control.

Conclusion
Findings highlight two related yet potentially dissociable mechanisms that may influence injury risk among youth with ADHD and provide a foundation for development of injury prevention strategies.