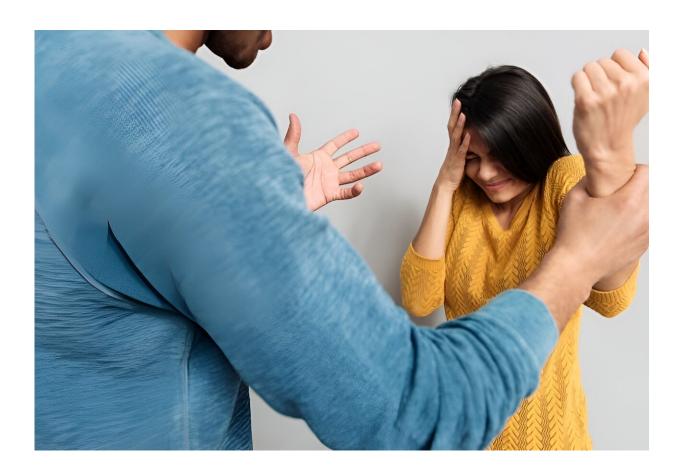


Machine learning can predict aggressive behaviors in youth with autism

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For inpatient youths with autism, machine learning analyses of preceding changes in peripheral physiology can predict imminent aggressive behaviors before they occur, according to a study published online Dec.



21 in JAMA Network Open.

Tales Imbiriba, Ph.D., from Northeastern University in Boston, and colleagues conducted a noninterventional prognostic study using data obtained from March 2019 to March 2020 from 70 psychiatric inpatients with confirmed diagnoses of autism exhibiting operationally defined self-injurious behavior, emotion dysregulation, or aggression toward others from four <u>primary care</u> psychiatric inpatient hospitals.

Overall, 32 individuals were minimally verbal and 30 had an intellectual disability. Study participants wore a commercially available biosensor that recorded peripheral physiological signals. Time-series features extracted from biosensor data were analyzed.

The researchers recorded 429 naturalistic observational coding sessions, totaling 497 hours, wherein 6,665 <u>aggressive behaviors</u> were documented, including self-injury, emotion dysregulation, and aggression toward others (59.8, 31.0, and 9.3 percent, respectively).

Across all experiments, <u>logistic regression</u> was the best performing overall classifier (e.g., predicting aggressive behavior three minutes before onset; mean area under the receiver operating characteristic curve, 0.80).

"Our findings may lay the groundwork for developing just-in-time adaptive intervention mobile health systems that may enable new opportunities for preemptive intervention," the authors write. "By focusing on reducing the unpredictability of aggressive behavior, we anticipate that this ongoing research program may enable inpatient youths with autism to more fully participate in their homes, schools, and communities."

More information: Tales Imbiriba et al, Wearable Biosensing to



Predict Imminent Aggressive Behavior in Psychiatric Inpatient Youths With Autism, *JAMA Network Open* (2023). DOI: 10.1001/jamanetworkopen.2023.48898

Margaret R. Gifford et al, Wearable Technology—Another Tool in the Assessment and Treatment of Challenging Behavior Toolbox, *JAMA Network Open* (2023). DOI: 10.1001/jamanetworkopen.2023.48911

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