

## Research In Focus: A Weekly Digest of New Research from the NIDILRR Community

### A New Tablet-Based System Shows Promise in Helping Teens with Autism Spectrum Disorder Stay on Task at School

*A study funded by the National Institute on Disability, Independent Living, and Rehabilitation Research (NIDILRR).*

Autism Spectrum Disorder (ASD) is a developmental disability that affects how people communicate and process information. Teens with ASD may have trouble staying focused on tasks that are not inherently interesting to them, such as schoolwork. They may also make sounds or movements that can unintentionally distract other students in the classroom. Self-monitoring may be an effective way for teens with ASD to stay on-task and work independently at school. Typically, self-monitoring involves a student noting whether or not they are on-task when prompted by an automatic timer, buzzer, or other cue. In a recent NIDILRR-funded study, researchers tested a new tablet-based self-monitoring system with four students with ASD. The researchers wanted to find out whether the students stayed on-task more often, showed less disruptive behaviors, or completed more of their schoolwork when they used the self-monitoring system.

Researchers enrolled four teen and pre-teen boys with ASD in a study of the [I-CONNECT PLUS](#) system. The participants were 10-17 years old and attended a private day school for students with developmental and behavioral disabilities including ASD. All of the participants showed difficulty completing classwork independently, and two of them displayed frequent “disruptive behaviors” such as humming or rocking during class.

For baseline data, the researchers video recorded the participants completing independent in-class work during several 10-minute work periods. Participants were recorded for between five and seven work periods. The researchers observed the video recordings and measured the percentage of time in each work period when each participant was on-task (working on their class assignment) and off-task (e.g., staring out the window, or putting their head down on their desk). The researchers also measured how often each participant engaged in disruptive behaviors, and the percentage of their assignment that each participant completed during the 10-minute work period.

After taking these baseline measurements, the researchers trained the participants to use the self-monitoring system. During the training, the participants learned to distinguish between on-task and off-task behavior. Then, they practiced using the I-Connect system, which consisted of a tablet that was programmed to chime every 30 seconds with an alert that asked the participant “Are you on-task?” The participant then tapped either “yes” if they were on-task or “no” if they were off-task.

Next, the participants were given the I-Connect system to use during their independent work sessions, which were also video recorded. The researchers observed

the video recordings and measured the participants' on-task behavior, disruptive behavior, and assignment completion while they were using the system. After 5-7 sessions, the I-Connect was removed and the participants' behavior was again measured during independent work sessions without the system. Finally, the I-Connect was returned to the participants and their behavior was measured again while they used the system to self-monitor.

The researchers found that, while using the I-Connect system, the participants showed:

- More on-task behavior: The participants were on-task only about 20% of the time, on average, before they started using the I-Connect. Their on-task behavior increased to about 85%, on average, with the I-Connect. Their on-task behavior decreased to near baseline levels when the I-Connect was removed and then returned to 85-90% when it was reintroduced.
- Less disruptive behavior: Two of the participants showed disruptive verbalizations or movements, on average, 42% and 47% of the time during their 10-minute work periods before receiving the I-Connect. After receiving and using the system, disruptive verbalizations decreased to an average of 18% for one participant and 21% for the other participant, while disruptive movements decreased to 7% and 6%. These participants' disruptive behavior increased when the I-Connect was removed and decreased again when it was re-introduced.
- Task completion: Before starting the I-Connect, the participants completed only about 15% of their assigned work, on average, during a 10-minute session. While using the I-Connect, however, all four participants completed 100% of their assigned work during each session.

Additionally, at the very end of the study, the participants and their teachers answered questions about the I-Connect system. Both the participants and their teachers rated the I-Connect as being very helpful in encouraging the participants to stay on-task.

The authors noted that the I-Connect was highly effective in supporting on-task behavior and assignment completion, even though the participants did not receive any specific rewards from the system for staying on-task. However, the participants did earn breaks upon completing their assigned classwork. By helping speed up assignment completion, the I-Connect may have incentivized the participants to work harder on their assigned work so that they could earn more frequent breaks. The I-Connect assisted the participants in this study with completing independent work in class without depending on reminders from a teacher. Future research may be useful to test different types of self-monitoring systems for young people with ASD in multiple settings, such as in the classroom or in the workplace.

### To Learn More

The AbleData database of assistive technology products and manufacturers lists hundreds of computer- and tablet-based technology to assist with [behavioral training](#) and [cognitive skills training](#). They also offer a library of factsheets on assistive technology topics, including [augmentative and alternative communication \(AAC\) mobile apps for children with autism](#) and [assistive technology for fidgeting](#).

### To Learn More About this Study

Rosenbloom, R., Wills, H.P, Mason, R., Huffman, J.M., and Mason, B.A. (2019) [The effects of a technology-based self-monitoring intervention on on-task, disruptive, and task-completion behaviors for adolescents with autism](#). Journal of Autism and Developmental Disorders, 49 (12), 5047-5062. This article is available from the NARIC collection under Accession Number J82956.

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NARIC operates under a contract from the National Institute on Disability, Independent Living, and Rehabilitation Research (NIDILRR), Administration for Community Living, Department of Health and Human Services, contract #GS-06F-0726Z.