



Autism Spectrum Disorder Assistive Technology for Cognition (ASDATAAC) Project:

A Randomized Controlled Trial of the Apple iPod Touch as Task Support Among People with ASD on the Job

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This project is the first ever randomized controlled trial of handheld computers as cognitive-behavioral aids for people with an autism spectrum disorder (ASD). Working collaboratively with the Virginia Department of Rehabilitative Services, the research team recruits people with ASD who are initiating a vocational trial with the support of a job coach. These recruits are randomized into one of two groups. The first group is immediately provided an Apple iPod Touch and trained in its use as a cognitive-behavioral aid on the job. The second group is followed for three months, and provided with an Apple iPod Touch and training at that point. We are comparing the vocational success of the two groups, primarily looking at the first three months of their work history (when one group has an iPod Touch and the other group does not). We are examining job retention, hours of job coach support needed and worker and co-worker satisfaction. For both groups, we are examining utilization of the iPod Touch, strategies employed and satisfaction with the device as a job support aid.

So far, nineteen participants have completed the study. Though we have not completed data analysis, it is clear that for these participants the iPod Touch: (1) reduces the need for job coaching support, (2) improves on-time performance of job-related duties, (3) supports independent performance of complex work tasks, (4) supports appropriate social behavior in work settings, (5) improves the worker's sense of self-efficacy and (6) is readily accepted by co-workers and employers as a useful vocational support aid. Additionally, all nineteen participants were able to learn to use their ipod touches on the job and continue to do so, in some cases suggesting their own creative uses of applications that support their work.

This study will eventually include 54 participants, providing a rich data set of information on the utility of handheld computers as cognitive-behavioral aids in vocational settings.

■ Vignettes:

AJ: 20-year old with autism trialing work as a hospital supply orderly. A.J. relies on his iPod Touch calendar alarms to stay on schedule (get up, morning routine, catch the bus, start work, take lunch breaks, and clock out), has an electronic task list that tracks his workday production, and refers each day to a home video that shows him describing how to behave if a hospital visitor accosts him. A.J. is now entirely independent at work, and his employer has expanded his job duties to other hospital floors. He keeps his iPod Touch charged and in his pocket at all times.

VCU

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KM: 24-year old non-verbal gentleman with autism, trialing his first job, as a day custodian at a fast food restaurant. Before beginning the ipod touch trial, KM required direct supervision to transition from one task to another, got caught in repetitive task loops, and when anxious stood in the middle of the dining room slowly spinning and humming to himself, which distracted customers. He was at risk of losing his job, because of these challenging behaviors. On his ipod touch he now has timed tasks with reminder alarms that provide cues to switch from one activity to another, and detailed step-by-step task lists to assure completion of complex activities. For the past six months, he has successfully followed the iPod Touch reminders and to do lists, requiring infrequent supervision. He no longer exhibits the anxious behaviors, which may have been caused by a confusion about what to do next on the job, and his part-time work hours have been doubled.

DM: 20-year old with Asperger's Syndrome, who lives in a group home and works as a prep cook and custodian at a nearby doughnut shop. DM relies on his ipod touch task reminders to take his medications, get ready for work, take appropriate work breaks, and clock out on time. He uses a clicking metronome application to help him maintain a productive pace when working the doughnut conveyer belt. He has a series of task notes that provide step-by-step instructions on various job duties, and a personal finance application that helps him keep track of his budget. DM's boss often allows him to play music on his ipod touch at work, which helps to reduce anxiety. DM's work hours have doubled since acquiring the iPod Touch, and he is now being trained to help out as a cashier. We are working with him to compose home videos to help him learn and maintain appropriate customer service behaviors.

MG: 19-year old with autism and a high school completion certificate. He has recently begun work at an auto body shop, where he is tasked with keeping the shop in good order. He uses reminder alarms to get ready for work, catch the bus to work and take appropriate lunch breaks. He has detailed task lists on his iPod Touch for complex activities and home videos that show him successfully performing shelf stocking, bathroom cleaning and other complex activities. MG is being trained now to preview a video before starting a complex task, play and pause the video during the task, as needed, and review the video after task completion to make sure the work was completed correctly. We expect that he will soon internalize these steps, so we can move on to new videos for new tasks.

■ **Dissemination Activities:**

We are analyzing the results of the first year of our trial now. In addition, we are sharing information about the use of hand-held devices as cognitive-behavioral supports through conference presentations, workshops and seminars, both face-to-face and online. We are developing a website intended to help consumers, caregivers and clinicians learn how to use these devices as cognitive-behavioral aids and to serve as a forum for sharing information across the autism community.