

THE PREVENTION GROUP

The Prevention Group (TPG) is a research collaborative developing meaningful interventions for school and work environments. Our current team includes professionals in psychology, medicine, artificial intelligence, statistics, and software development. Our school programs have been presented across the U.S., as well as in Japan and Guyana. Current employment focused projects have been funded by the Autism Action Partnership and the U.S. Department of Education, National Institute on Disability and Rehabilitation Research. Additional TPG projects currently involve the evaluation of school based behavior management programs, state-wide adoption dissolution prevention interventions, water safety instruction for children, and primary care interventions to reduce fear of movement in chronic back pain patients.

PUBLISHED ARTICLES

Burke, R. V, Allen, K. D., Howard, M., Downey, D., Matz, M. G., & Bowen, S. L. (In press). Tablet-based video modeling and prompting in the workplace for individuals with autism. *Journal of Vocational Rehabilitation*.

Abstract. The current study involved a preliminary job-site testing of computer software, i.e., *VideoTote*, delivered via a computer tablet and designed to provide users with video modeling and prompting for use by young adults with an autism spectrum disorder (ASD) across a range of employment settings. A multiple baseline design was used to assess changes in rates of completion with a complex, 104-step shipping task by four participants diagnosed with ASD. Baseline data were collected on accuracy of task completion after exposure to typical job-training involving instruction, modeling, and practice. The intervention involved video modeling and prompting with a 13 min video depicting an individual completing job responsibilities that entailed checking to make sure materials were in working order, replacing defective items, packing materials in a container, entering information into a computer, and attaching a label to a container. Results suggested that video modeling and prompting were effective in helping individuals with autism complete a multi-step shipping task. Participants and their parents gave the device and software high ratings as an acceptable treatment for adults with autism to use in the workplace and intervention that complies with universal design principles. Implications for competitive job opportunities for individuals with autism are discussed.

Allen, K. D., Burke, R. V, Howard, M.R., & Bowen, S. L. (In press). Use of audio prompting to expand employment opportunities for adolescents with autism spectrum disorders and intellectual disabilities. *Journal of Autism and Developmental Disorders*.

Abstract. We evaluated audio cuing to facilitate community employment of individuals with autism and intellectual disability. The job required promoting products in retail stores by wearing an air-inflated WalkAround® costume of a popular commercial character. Three adolescents, ages 16–18, were initially trained with video modeling. Audio cuing was then used by an attendant who delivered prompts regarding when to perform job skills. The two interventions were evaluated in an interrupted time series withdrawal design during training and then again in an actual job setting. Results show video modeling was not effective. However, the audio cuing produced job performances well above the designated criteria during training and when on the job. These changes were replicated with each participant, demonstrating clear experimental control. The changes proved statistically significant as well. Participants and parents reported high job satisfaction. The challenges of competitive employment for individuals with autism and intellectual disabilities are discussed.

Burke, R. V., Oats, R. G., Ringle, J. R., O'Neill Fichtner, L., & DelGaudio, M. (2011). Implementation of a classroom management program with urban, high risk, elementary students: Does program fidelity affect behavior and academic performance? *Journal of Education for Students Placed At Risk, 16*, 201-218.

Abstract. Students with persistent disruptive behavior problems lose valuable time in academic lessons, are a distraction for classmates, and cause stress for teachers. Recent meta-analyses indicate that 87% to 92% of published studies on school-based interventions targeting student problem behaviors report results from demonstration projects (involving highly trained staff under ideal circumstances) rather than routine practice programs. The present study investigates the routine use of a school-wide classroom management program and its relationship to elementary students' social and academic outcomes. Three years after training in the classroom management program, 56 second-, third-, and fourth-grade teachers in an urban school district were assessed for fidelity to the program. Program fidelity was determined via direct observation in the classroom and validated by teacher self-ratings of fidelity and administrator ratings of teacher fidelity. Dependent variables included student engagement during academic lessons, out-of-school suspension rates, and report card grades. Results indicated that high program fidelity was significantly related to greater academic engagement and fewer suspensions, but not higher report card grades. This study adds to the scant literature on implementation fidelity of routine programs with high-risk populations.

Burke, R. V., Andersen, M. N., Bowen, S. L., Howard, M., & Allen, K. D. (2010). Evaluation of two instruction methods to increase employment options for young adults with autism spectrum disorders. *Research in Developmental Disabilities, 31*, 1223-1233.

Abstract. We evaluated the efficacy of a vocational training program including behavioral skills training, and a "performance cue system" (i.e., a proprietary iPhone application adapted for the study) to teach targeted social-vocational skills to six young adults with an Autism Spectrum Disorder. In two separate studies, participants were employed to assist in the delivery of a fire safety education program. Participants were asked to wear an inflatable firefighter WalkAround® mascot costume and to perform 63 scripted behaviors in coordination with a fire prevention specialist who was the lead program presenter. In Study 1, three participants were initially exposed to established company training procedures comprised of behavioral skills training components to determine whether they met mastery of the skills. If necessary to reach criteria, participants were then exposed to a performance cue system. In Study 2, three additional participants were provided with the performance cue system alone, and then behavioral skills training if required. A single case, multiple-baseline design across subjects was used to evaluate efficacy of each intervention. Results indicate that 5 of 6 participants reached criterion only after introduction of the cue system while the sixth reached criterion with behavioral skills training alone. The program received high satisfaction ratings from participants, their parents, and consumers. Implications and potential use of the PCS in other employment settings are discussed.

Allen, K. D., Wallace, D. P., Renes, D., Bowen, S. L., & Burke, R. V. (2010). Community-based vocational instruction using videotaped modeling for young adults with autism spectrum disorders performing in air-inflated mascots. *Focus on Autism and Other Developmental Disabilities, 25*, 186-192.

Abstract. The authors examined the benefits of video modeling to teach a unique vocational skill set to an adolescent and two young adults with Autism Spectrum Disorders. Video modeling was used to teach skills necessary to entertain customers and promote products in a retail setting while wearing a WalkAround® costume. The three participants were observed before and after watching a video model perform the skills in the costume in scripted and naturalistic scenes. Data can be interpreted to conclude that all participants learned to use the skills in combination or sequence after watching the video model. The skills generalized to an actual job opportunity. The participants reported they enjoyed the work, and comments from supervisors were positive. Implications are discussed.

Allen, K. D., Wallace, D. P., Renes, D., Bowen, S. L., & Burke, R. V. (2010). Use of video modeling to teach vocational skills to adolescents and young adults with Autism Spectrum Disorders. *Education and Treatment of Children, 33*, 339-349.

Abstract. As part of a collaborative project between a University Center for Excellence in Developmental Disabilities and a local private business, we examined the effects of video modeling to teach vocational skills to four adolescents and young adults with Autism Spectrum Disorders. Video modeling was used to teach the participants to wear a WalkAround® mascot and entertain customers in a retail setting. Observations were conducted before and after participants watched a video model of the skills performed in both scripted and naturalistic scenes. All participants learned to use the targeted skills after watching the video model and all reported that they enjoyed the work. Implications and vocational applications are discussed.

CONFERENCE PRESENTATIONS

Guck, T. P., Rainville, C., Hill-Taylor, D. S., Burke, R. V. (2013, March). ***A brief primary care intervention to reduce fear of movement in chronic back pain patients.*** Paper submitted for presentation at the Society for Behavioral Medicine annual conference, San Francisco.

Burke, R. V., Allen, K. D., Bowen, S. L., Howard, M. R., Downey, D., Flegle, J. K., & Matz, M. (2012, May). ***From fun to factories: Bootstrapping our way to tablet-based assistive technology for the workplace.*** Paper presented at the annual convention of the Association of Behavior Analysis International, Seattle.

Burke, R. V., Bowen, S. L., Allen, K. D., Wallace, D. P., Howard, M. R., Downey, D., Andersen, M., & Matz, M. (2011, November). ***Getting to work: Technology-based solutions for increasing employment opportunities for individuals with Autism.*** Paper presented at the annual convention of the Association of Behavior Analysis International, Granada, Spain.

Allen, K. D., Burke, R. V., Bowen, S. L., & Howard, M. R. (2011, November). ***PDA-based training and support for the workplace.*** Paper presented at the Autism Action Partnership's Annual Autism Summit, Omaha, NE.

Burke, R. V. (2011, October). ***From fun to factories: Developing assistive technologies for young adults with autism.*** Paper presented at the annual WINAhead Conference, Omaha, NE.

Allen, K. D., Wallace, D. P., Bowen, S. L., Burke, R. V., & Wilczynski, S. (2011, May). ***Evaluation of vocational training approaches for increasing access to employment for young adults with autism.*** Symposium presented at the annual convention of the Association of Behavior Analysis International, Denver.

Burke, R. V., Oats, R. G., Ringle, J. L., O'Neill Fichtner, L., DelGaudio, M. B., & Gross, J. (2011, March). ***School-wide classroom management fidelity and outcomes with students in elementary school.*** Paper presented at the Annual Conference on Positive Behavior Support, Denver.

Burke, R., Allen, K., Bowen, S., Bell, R., Bell, P., Egger, D., & Egger, P. (2010, November). ***Manufacturing mascots and mirth: "Inflating" employment opportunities for individuals with ASD.*** Paper presented at the Autism Action Partnership's Annual Autism Summit, Omaha, NE.

Bowen, S., & Burke, R. (2009, April). ***Effective education: Learning from the NBA and PhDs to keep kids alive.*** Paper presented at the Fire and Life Safety Conference of the Rockies, Winter Park, CO.

Allen, K. D., Wallace, D. P., Renes, D., & Burke, R. (2008, May). ***Use of video modeling to teach vocational skills to adolescents and young adults with autism spectrum disorders.*** Presented at the annual convention of the Association of Behavior Analysis, Chicago.

SOFTWARE DEVELOPMENT

VideoTote software. The Prevention Group developed VideoTote software as part of a Small Business Innovation Research grant funded by the U.S. Department of Education, National Institute on Disability and Rehabilitation Research. The *VideoTote* software is an iPad App that allows job coaches, employers, parents, teachers, and other users the opportunity to create, edit, and view self- or other-modeling videos for the instruction of social, employment, educational, and life skills. The app can be used for both video modeling and video prompting, on the job, at home, and in the classroom.

The *VideoTote* software was developed with universal design features in mind that have been found helpful with individuals with intellectual and developmental disabilities. Design features include:

- a “chapter” format (i.e., job tasks can be divided into relevant “chapters” that group a small number of related task steps),
- navigational clarity and consistency to minimize distractions and make it easy to use the device at one’s own pace,
- user interface specifically designed to improve ease of use for individuals with fine motor skill challenges, and
- a non-linear chapter selection system allowing users to easily select and review chapter tasks at any time and return to where they left off in the overall task.

The *VideoTote* software allows users to

- (a) Create, edit, and view self- or other-modeling videos on one device
- (b) Select the necessary training video based on video icons and brief narrative descriptions,
- (c) Choose the video modeling format (i.e., view all scenes without stopping or pause after each video chapter), and
- (d) Stop and start video viewing by touching anywhere on the screen at any time.

A recently published study that used the *VideoTote* app as a training and on-the-job prompting tool yielded interesting and promising results for predictive use patterns. Specifically, through data mining and analysis we were able to predict job performance success for the small number of individual users in our study based on their use of the device. This has broad implications for increasing job placement and employment outcomes for individuals with developmental disabilities. Results are very preliminary and more work with a larger number of participants needs to be completed before we can reliably establish this link between user patterns and job performance.