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Effects of Picture Prompts Delivered by a Video iPod on Pedestrian Navigation

Kelly R. Kelley, Ph.D.

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Statement of Problem

- National data indicate individuals with intellectual and developmental disabilities (IDD) have not had the same access to education, employment, independent living, and extracurricular activities (Newman, Wagner, Cameto, & Knokey, 2009)
- One reason is lack of transportation access and training (Myers, 1996; Sohlberg, Fickas, Lemoncello, & Hung, 2009)
- Travel training and pedestrian navigation are critical skills that need to be explicitly taught since they impact how people live, work, and participate in their community (Groce, 1996)



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Limitations in Current Literature

- Most travel training studies were conducted in the 1970s and 1980s in simulated classroom environments with skill generalization to natural environments producing mixed results
- Recently, two studies paired travel training with the latest, age-appropriate technologies to teach students how to navigate by bus or walk to destinations (Mechling & O'Brien, 2010; Mechling & Seid, in press)


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Limitations in Current Literature

- No studies have provided instruction for navigating back to starting locations
- No studies allowed for “independent” travel without the researcher present
- Adult models were placed in pictures and not directional arrows
- Previous Cyrano Communicator technology was expensive (\$1,300) and not universally accessible


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Purpose

- To investigate the effects of using picture prompts displayed through a video iPod on pedestrian navigation with young adults with IDD (18-26 years old) participating in an inclusive individualized postsecondary program at a 4-year university


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Research Questions

1. What is the effect of pedestrian navigation training using a video iPod (i.e., picture prompts of a series of intermediate on-route and final locations) on travel route completion to and from specified locations for young adults (age 18-26) with IDD?
2. To what extent do young adults (age 18-26) maintain independent use of the video iPod for pedestrian navigation skills?


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Research Questions

3. To what extent do young adults (age 18-26) generalize use of the video iPod to untrained locations?
4. What are participants' perceptions of using the video iPod as a method for independent travel?
5. What are undergraduate special education majors' and minors perceptions of developing materials for video iPod training?


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Participants and Settings

- Participants
 - 4 young adults (18-26 years old) with mild to moderate intellectual and/or developmental disabilities (IDD)
 - 2 males, 2 females (Caucasian)
 - All ambulatory; independently used crosswalks
 - All lived and participated in a fully inclusive postsecondary program
- Setting
 - Rural accredited university located in southeastern United States near the Blue Ridge Mountains


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Dependent Variables

- Correct and independent travel of a route to and from specified locations
- Percentage of correct landmarks reached for each route
- Length of time it took participants to complete the entire travel route (i.e., from point A to point B and back to point A)

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Sample Route of Pictured Routes and Directional Arrows



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Additional Results

- Interrater Reliability- collected on 30.1%
 - For correct routes and percentage of landmarks overall interrater reliability was 100%
 - For length of time using total duration overall IOA was 98.6% (range of 91.3% to 100%)
 - For length of time using mean duration per occurrence overall IOA was 96.4% (range of 66.7% to 100%)
- Procedural Fidelity- collected on 55% of sessions and was 100% across all sessions




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Social Validity

- Undergraduate agreed or strongly agreed that:
 - Developing routes seemed easy and practical
 - Felt more confident they could create the materials
 - Would use the iPod to teach travel training in future teaching experiences
 - They could use the iPod device to teach other independent living tasks
 - Training should be shared with future teachers and students to help individuals with disabilities
 - They felt comfortable using technology to teach with


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Discussion

- Findings support using picture prompts displayed on the video iPod to teach pedestrian navigation skills to and from various campus locations
- Maintenance data indicated all four participants were able to navigate successfully using the iPod for up to 28 days
- Generalization data indicated all four participants were able to navigate successfully to trained routes without prompting and one participant only needed one prompt to navigate to untrained novel routes


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Limitations

- Small number of participants limits generality
- Lack of long-term maintenance data
- Study did not address indoor travel training
- Hard to determine if participants continued to rely on iPod or learned routes
- Walking times were not as accurate since researcher had to follow further behind participants
- Weather could have impacted iPod function (e.g., rain getting device wet, sun disrupting picture display)


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Suggestions for Future Research

- Conduct future studies with varied student populations and geographic locations
- Collect maintenance data at 1, 3, and 6 months
- Examine levels of fear and anxiety for traveling alone
- Combine indoor and outdoor travel training
- Take the iPod device away to see if participants have mastered the route without iPod support
- Find ways to collect time data without being close to the participants
- Consider weather related issues and find ways to maximize iPod use in rain and sun


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Implications for Practice

- Find ways to modify or adapt devices to unique needs of individuals
- Know and research technology before using it
- Consider behaviors being taught to maximize alertness and safety
- Consider stimuli when taking pictures and adding directional arrows
- Picture prompts can be used to teach concepts with and without technology to individuals with IDD


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Questions? Contact Information

Kelly R. Kelley Ph.D., UP Program Coordinator
Western Carolina University
University Participant Program
152D Cordelia Camp Building
Cullowhee, NC 28723
kkelley@email.wcu.edu
Office: 828-227-3298
WCU UP Program Website: <http://up.wcu.edu>
