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Use of Driving Simulation in Off-Road Screenings

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Driving Simulation Off-Road Screening For Individuals With Intellectual and Developmental Disabilities

Presenter: Jake Davis, BS, OT/S

Capstone & Site Mentor: Andrea D. Fairman, Ph.D., MOT, OTR/L, ATP, DRP

Abstract

Driving is a cornerstone to an individual's independence and allows for participation in many occupations. There is a need for off-road driving screenings in Rhode Island that is not currently being met. This project aimed to address this community gap by providing off-road driving screenings. Five individuals were included in the project with intellectual and developmental disabilities (IDD). To conduct the off-road driving screenings, the Occupational Therapy Driver Off-Road Assessment Battery (OT-DORA) and a driving simulator were used. Individual's participated in two to three approximately one-hour long sessions at Johnson & Wales College of Health & Wellness building. At the conclusion of the screening's recommendations were made for each individual to either continue to on-the-road driving services, begin rules of the road classes, or to explore community mobility options. A satisfaction survey was then sent out to the participants at the end of the program.

Background

Driving and Community Mobility

- How an individual navigates around the community using public or private transportation
- Driving improves engagement in occupations
 - Work
 - Leisure
 - Social Participation
 - Health Management
 - Education
- Driving is a complex task
 - Requires perceptive, cognitive and motor functions

Driving Simulation

- Screenings before moving to on-road or other driving related services
- Repetitive assessment in a safe environment with exposure to different driving scenarios and conditions
- Limitations
 - Simulator sickness
 - Driving skills may not transfer exactly to real a world environment
 - Not a substitute for on-the-road driving evaluation

IDD and Driving Simulation

- Intellectual Disabilities
 - Limited research with driving simulation
- Autism Spectrum Disorder (ASD)
 - Delays in receiving driver's license
 - Increased driving errors with driving simulation
- Attention-Deficit/Hyperactivity Disorder (ADHD)
 - Increase risk for driving collisions

Project Aims

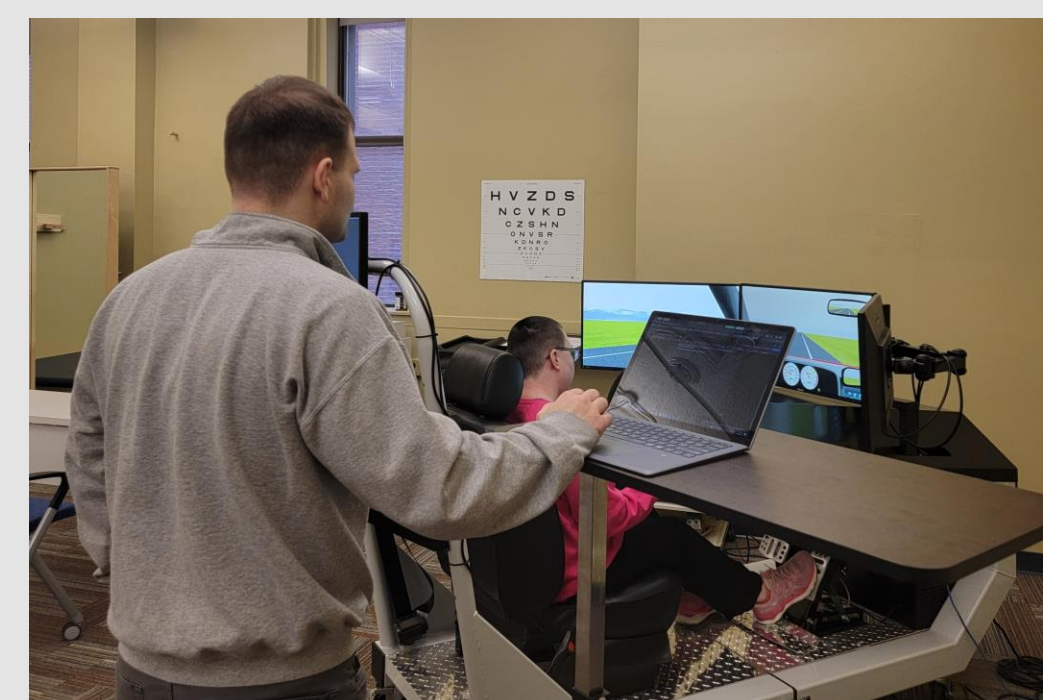
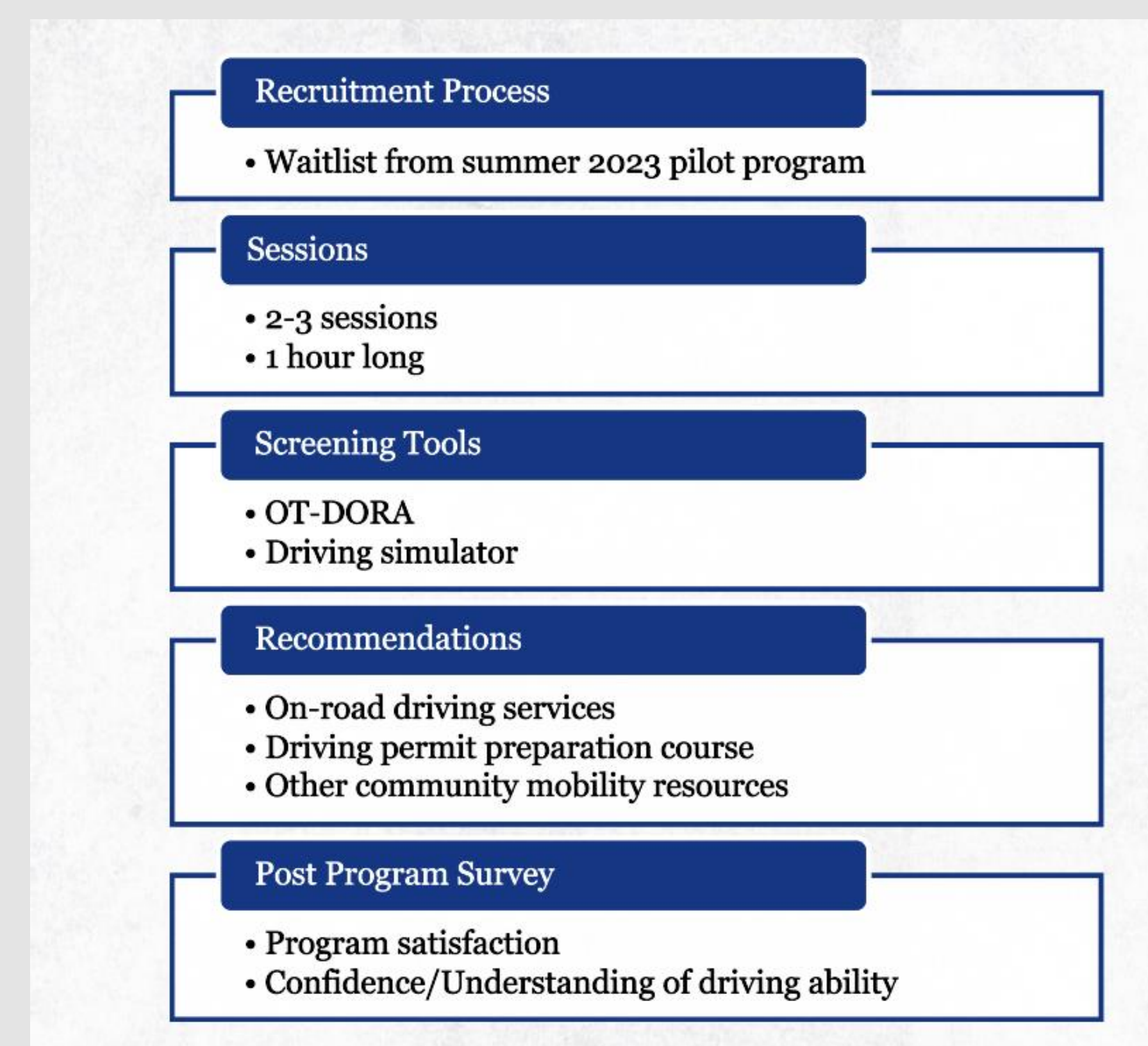
PIO Question

- How effective is the use of driving simulation as a screening tool to improve individuals with IDD confidence and/or understanding of their driving ability?

Purpose Statement

- The purpose of this capstone project was to meet a community need by providing driving simulation as a part of an off-road screening for individuals with IDD.

Methods



Results

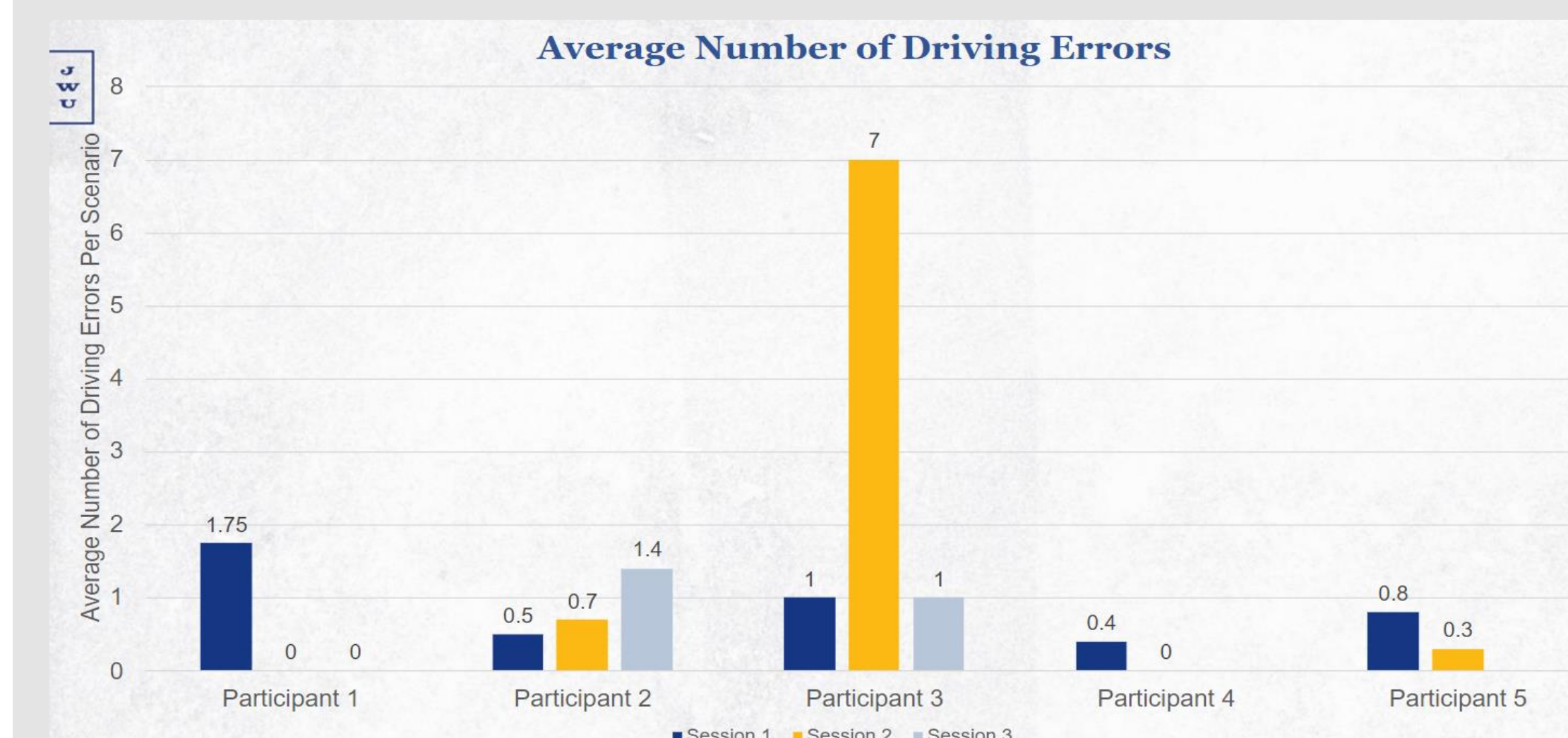
Demographics

- Participants
 - N=5
- Age Range
 - 18 to 38 years old
- Diagnoses
 - Intellectual disability, ADHD, ASD, developmental delay, nonverbal learning disorder, general anxiety disorder
- Pre-Screening Community Mobility
 - Rides from family/friends/staff/public transportation

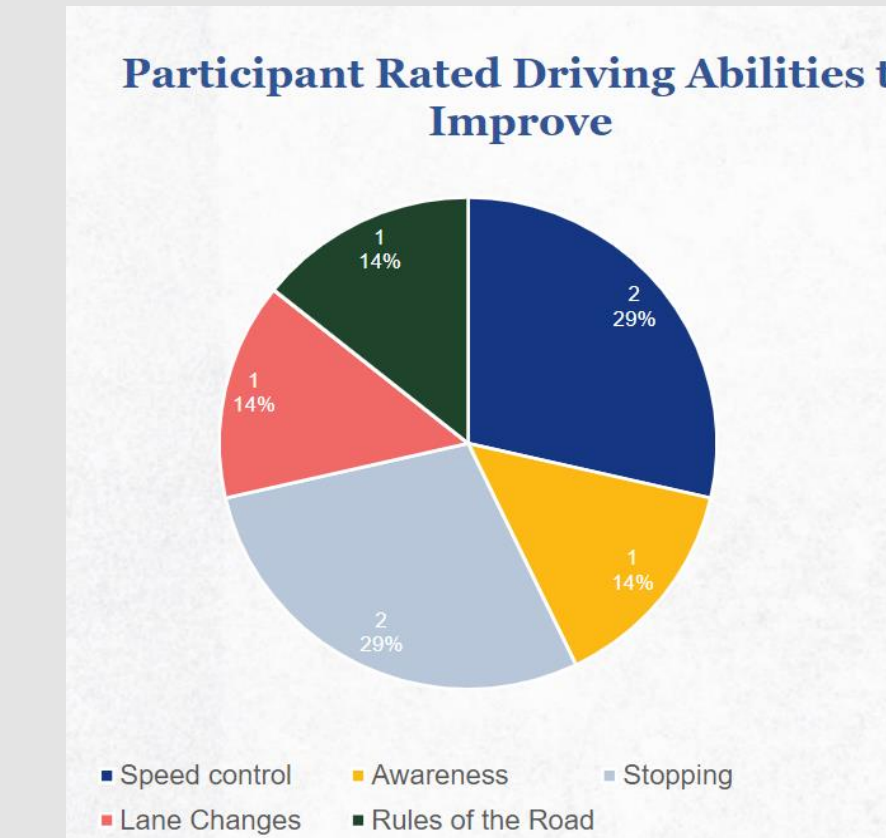
OT-DORA

- Sensory Assessment
 - 4 out of 5 participants had visual acuity at or better than 20/40
- Physical Assessment
 - 2 out of the 5 participants scored errors on the accelerator brake test
 - All participants motor sequences, proprioception, motricity and balance were within functional limits
- Cognitive Assessment
 - 27 seconds to 137 seconds to complete OT-Drive Home Maze
 - Mini Mental Status Examination Scores ranged from 14/30 to 30/30
 - 2 out of the 5 participants received passing scores on the Road Craft and Road Law test

Driving Simulator



Post Screening



Recommendations

- 3 participants were recommended to move to on-the-road services
- 2 participants were recommended to move on to rules of the road classes

Feedback

- "It was a great program because you can learn how to drive before getting into a car."
- "It gave me a better understanding of my ability to drive."
- "It made me realize that my biggest problem with driving is anxiety, not outright skill."

Conclusions

- Driving simulation and the OT-DORA are valuable screening tools.
- Performance on the driving simulator session to session had a wide range of results which could indicate that driving simulation may be better used as an assessment tool rather than as an intervention for improving driving ability.
- The driver screening program was extremely effective at increasing the participants confidence/understanding of their driving ability.

Impact for Occupational Therapy

Need for Off-Road Driving Services

- Bring awareness to the need for off-road driving services for individuals with IDD.

Opportunities for Research

- Is driving simulation an effective intervention tool to improve driver performance for individuals with IDD?
- Does driving simulation improve the confidence of individuals with IDD to pursue obtaining their driver's license?
- How effective is driving simulation as a screening tool when compared to other off-road assessments for individuals with IDD?

Driving Simulation Screening Service

- Starting a driving simulator screening service at Johnson & Wales to both help individuals in the community and provide a learning opportunity for occupational therapy doctorate students.

Case Series Publication

- A case series manuscript will be published to disseminate the information of this project to a wide range of readers.

Additional Information

Contact Information

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Handout & References

