MCGILL UNIVERSITY - MASTER'S PROJECT

THE CREATION OF A HAZARD PERCEPTION DRIVING TRAINING TOOL FOR NOVICE DRIVERS WITH FUNCTIONAL LIMITATIONS

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Hazard perception is a cognitive skill defined as the ability to identify potentially hazardous situations and react appropriately.

Hazard perception is recognized as a vital skill to safe driving.
- Hazard Perception = Driving crash risk.

Novice drivers are more vulnerable to road traffic accidents than experienced drivers
- Experience with driving = Hazard Perception

(Horswill Anstey, Hatherly and Wood, 2010; Wallis and Horswill, 2007; Wells, Tong, Sexton, Grayson, and Jones, 2008)
(Borowsky, Oron-Gilad, Meir and Parmet, 2012; Vidotto et al., 2011)
TARGET POPULATION

■ Novice drivers with functional limitations
  ■ Functional limitations: congenital or acquired
  ■ Delayed learning of skills required to react to complex environments.
  ■ Lack of judgment in complex situations
  ■ Deficits in visual scanning
  ■ Decreased processing speed and reaction time

■ There are no existing hazard perception tools created to accommodate the target population

(Lafrance, 2012)
OBJECTIVE

- To create a multimedia tool comprised of pictures and video clips of real-life traffic scenes to help enhance hazard perception skills, and facilitate the driver training process for novice drivers with functional limitations.
  - To address the gap in the literature.
  - To satisfy the need for a hazard perception training tool to include the Driving Readiness Program at the Constance Lethbridge Rehabilitation Centre.
The project was carried out in 4 phases:

1. Scoping Review
2. Focus Group
3. Tool Development Process
4. Tool Revision Process
1. Scoping Review

**Objective:**
- To review the scientific and grey literature
- To identify existing hazard perception assessments and training tools designed for on-road driving.

**Results:**
- 14 relevant driving tools were found
- Limitations included:
  - Driving on the right side of the road (based out of the UK and Australia)
  - Outdated
  - Inappropriate driving scenarios
  - Ranged in accessibility
  - Language Barrier
- Gained examples of common hazards
- Gained examples of various formats and styles

(Accident Commission, 2015; Gouvier et al., 1989; Avanquest Software, 2015; Oasis Business Services, 2013)
2. Focus Group

Objectives:

(a) To validate the difficulties among the targeted population, as well as identify gaps from the scoping review.
(b) To discuss current existing tools, and their use in clinical practice
(c) To determine the ideal video scenarios of the new tool
(d) To determine the ideal format of the new tool

Results:

There were 5 participants: OTs (4) and specialized driving instructor (1)
Participants were recruited from 3 driving rehab centers in Montreal
10 minute online questionnaire, 2 hour semi-structured interview
Feedback:

Existing tools not used clinically mainly due to language barrier for French speaking clients, and outdated software.
Incorporate grading, explicit verbal and written feedback, and an interactive interface.
Other preferences regarding format and content
3. Tool Development

- Video clips were captured using a Go-Pro during on-road driving.
- The tool consists of 55 driving scenarios (2-3mins).
- Translated in French, and English.
- Scenarios categorized into four themes:
  - Residential neighborhoods (20 scenes)
  - Construction zone areas (8 scenes)
  - Downtown driving (15 scenes)
  - Parking lots (12 scenes).
- Each theme includes multiple variations of potential driving hazards.
- Scenarios in each theme differ in driving conditions (ie. night-time driving, rain, and sun glare), and the number of hazards to identify (1-3).
- All videos available on YouTube!
4. Tool Revision Process

- Revision with expert driving clinicians, and a driving instructor
  - Validated relevant content
  - Validated and made changes to driving explanations to be sure that the tool respects the national driving safety rules and regulations
  - Eliminated 5 driving scenarios
YouTube: The McGill Hazard Perception Driving Training Tool

INTRO

THEME 1

THEME 2

THEME 3
You are driving along a boulevard undergoing minor construction. Pay close attention to your environment in order to identify potential driving hazards that may have an effect on your driving, and the driving of others.
Video Clip
What potential hazard(s) did you observe in this video?

- A- The construction cones indicates for you to change lanes

- B- An emergency vehicle indicates for you to change lanes

- C- The driver ahead stops suddenly in front of you
A - The construction cones indicates for you to change lanes

Have a look at the video again, and take note of the environment.
City construction is often indicated by orange and white cones or panels on the road. In the event you encounter construction, it is important to reduce your speed, and pay close attention to the signs and indications to guide your next move in order to avoid a potentially hazardous situation. In this case, the cones on the road slowly begin to block the lane indicating for you to change lanes. By observing the drivers ahead, you can also use their behaviours as a guide to determining your next move.
Video example
CONCLUSION

- The tool may fulfill the need for an updated clinical driving training tool in occupational therapy to help enhance hazard perception skills, facilitate the driving training process of novice drivers with functional limitations.

- Ongoing revision process!

- Contact information available on YouTube: alyssa.morellato@mail.mcgill.ca
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QUESTIONS!
References


