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## Do You Text & Walk? What's the Risk?

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# DO YOU TEXT & WALK? WHAT'S THE RISK?

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## INTRODUCTION

- The creation of technology has increased the prevalence of texting while walking which impairs gait and may increase the risk of falls [1,2].
- Vision plays an important role in walking locomotion [3].
- When vision is taken away from the walking task, differences in gait can be observed as well as increased risk of falling.
- Obstacles with greater contrast showed the safest and greatest amount of clearance [4].
- Few studies have looked at the relationship of texting while walking with obstacle negotiation and real-world environments [5].
- The amount of interruption to visual behaviors while texting and walking is uncertain.
- Gaze behavior via an eye tracker can be used to determine differences in visual behaviors.

## PURPOSE

To capture the recognition of gaze fixation, gait behaviors, and texting performance amongst young adults.

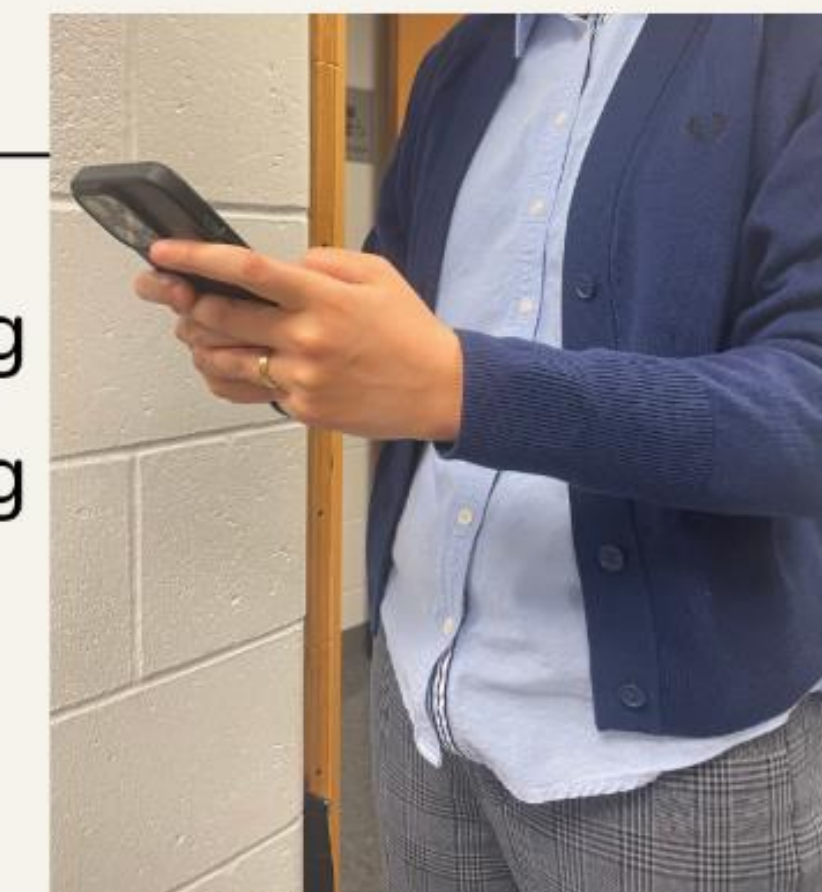
## METHODS

### EXPERIMENTAL CONDITIONS

Independent Variables

#### Single/Dual Task

- Single Task: Walking without Texting
- Single Task: Texting without Walking
- Dual Task: Texting & Walking



#### Walkway

- No Obstacle Present (Clear)
- Obstacle Present
- Visually Attractive Obstacle Present (LED Lights)



#### Environment

- No Pedestrians or Dummies Present
- Pedestrians & Dummies Present

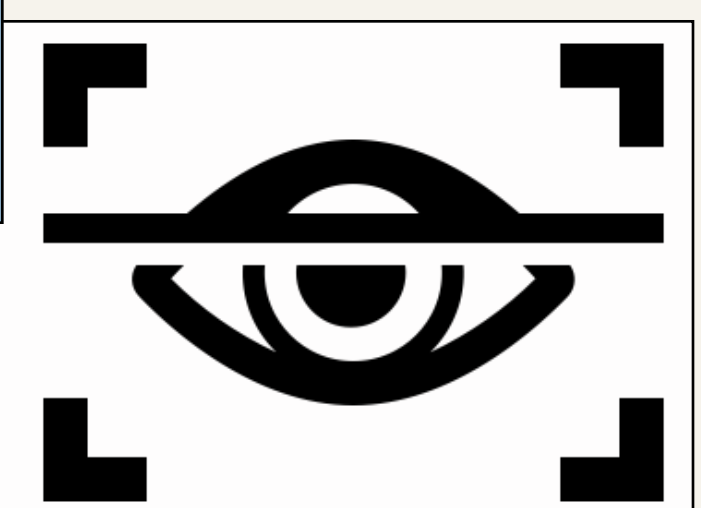


### Measurements

Dependent Variables

#### Gaze Behavior

- Number of Fixation
- Fixation Time



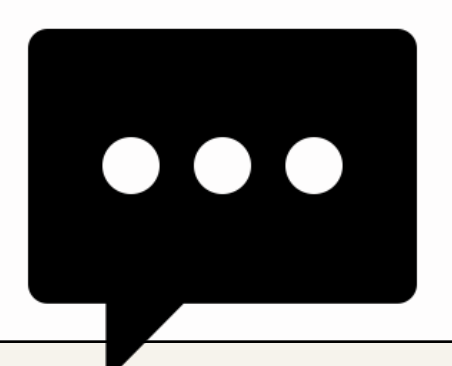
#### Gait Parameters

- Walking Speed
- Number of Obstacle Contact



#### Texting Performance

- Texting Speed
- Texting Errors



## EXPECTED OUTCOMES

- The participants gait speed will decrease when their environment becomes busy in both texting and non-texting.
- Texting performance will decrease when participant walks in both a busy and non-busy environment.
- While the participant is texting and walking there will a decrease in their gaze fixation on the walking path and decrease in their walking speed.

[1] Chen, S. H., Lo, O. Y., Kay, T., & Chou, L. S. (2018). Concurrent phone texting alters crossing behavior and induces gait imbalance during obstacle crossing. *Gait & posture*, 62, 422-425.

[2] Ioannidou, F., Hermens, F., & Hodgson, T. L. (2017). Mind your step: the effects of mobile phone use on gaze behavior in stair climbing. *Journal of technology in behavioral science*, 2(3), 109-120.

[3] Patla, A. E., & Vickers, J. N. (1997). Where and when do we look as we approach and step over an obstacle in the travel path?. *Neuroreport*, 8(17), 3661-3665.

[4] Bjelica, M., Levine, I. C., & Novak, A. C. (2021). Increasing the contrast of tread edge highlighters improves stair descent safety in older adults with simulated visual impairment. *Applied Ergonomics*, 97, 103525. <https://doi.org/10.1016/j.apergo.2021.103525>

[5] Licence, S., Smith, R., McGuigan, M. P., & Earnest, C. P. (2015). Gait pattern alterations during walking, texting and walking and texting during cognitively distractive tasks while negotiating common pedestrian obstacles. *PLOS ONE*, 10(7). <https://doi.org/10.1371/journal.pone.0133281>