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Increased Reaction and Movement Times when Text Messaging during Simulated Driving

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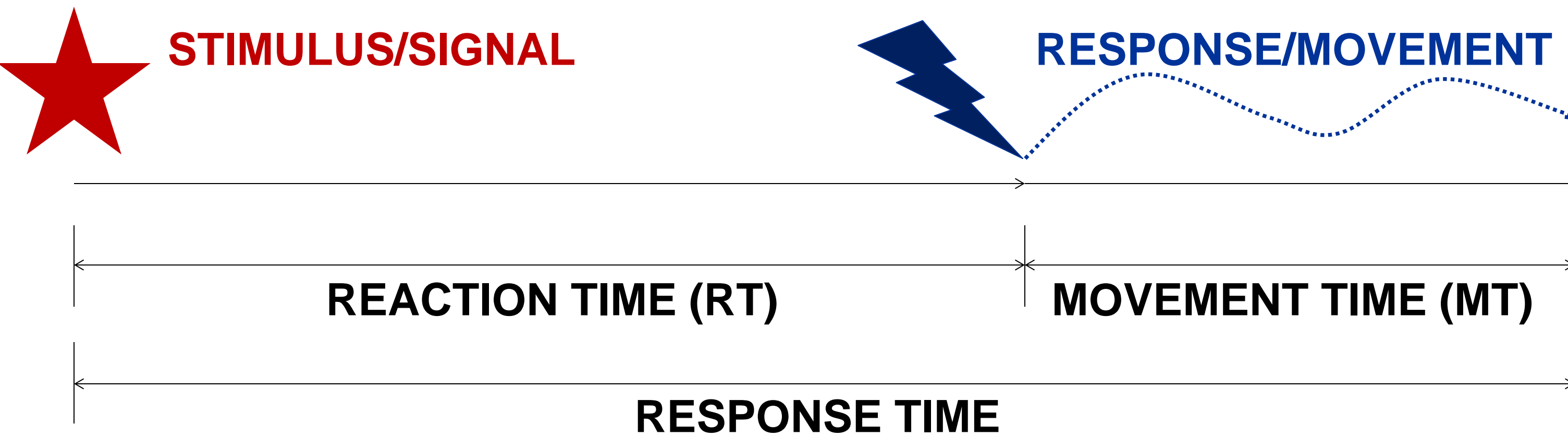


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Introduction



RT, MT and/or Response Time have been previously tested using a driving simulator [1,2,3].

Methods

- **'No-Texting Condition'**: Participant pressed and held their foot on the right side ('gas pedal') of the foot switch mat.
- When the **red stimulus** illuminated, the participant lifted their foot and pressed their foot onto the left side of the foot switch mat ('brake pedal') (Figure 1).
- Releasing the 'gas pedal' was recorded as the simple RT, and the initial pressing of the 'brake pedal' was recorded as the MT.

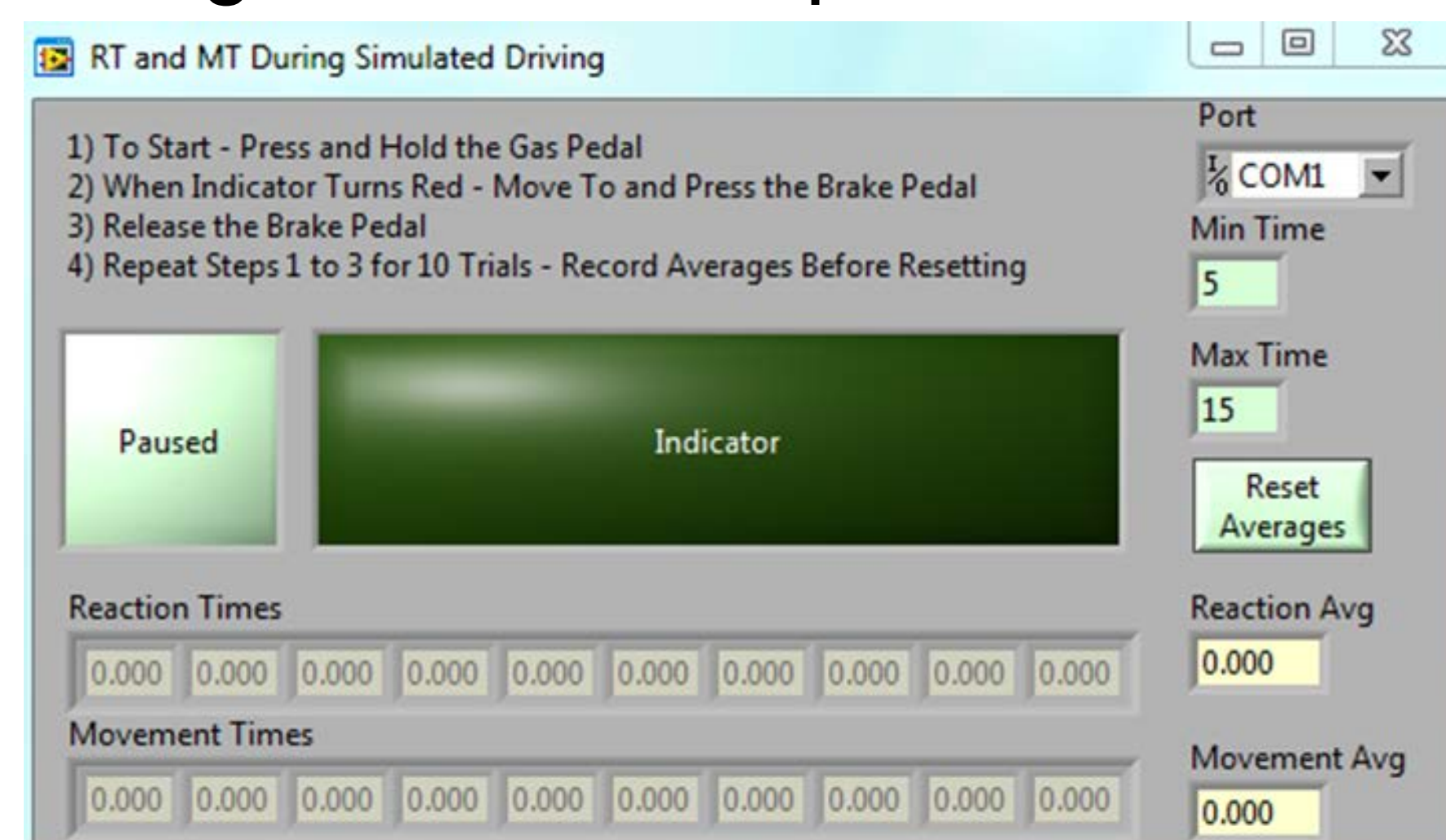


Figure 1: 'No Texting Condition' LabVIEW program interface.

- **'Texting Condition'**: same protocol as the control condition; however, the participant typed a 'text message' that appeared while pressing the 'gas pedal' (Figure 2).



Figure 2: 'Texting Condition' LabVIEW program interface.

Results

- RT and MT during the texting condition ($0.47s \pm 0.10s$ and $0.28s \pm 0.16s$) took longer than the no-texting condition ($0.34s \pm 0.05s$ and $0.22s \pm 0.11s$)(Figure 3).
- Longer response times were recorded during the texting condition ($0.75s \pm 0.19s$) than the no-texting condition ($0.56s \pm 0.12s$)(Figure 3).

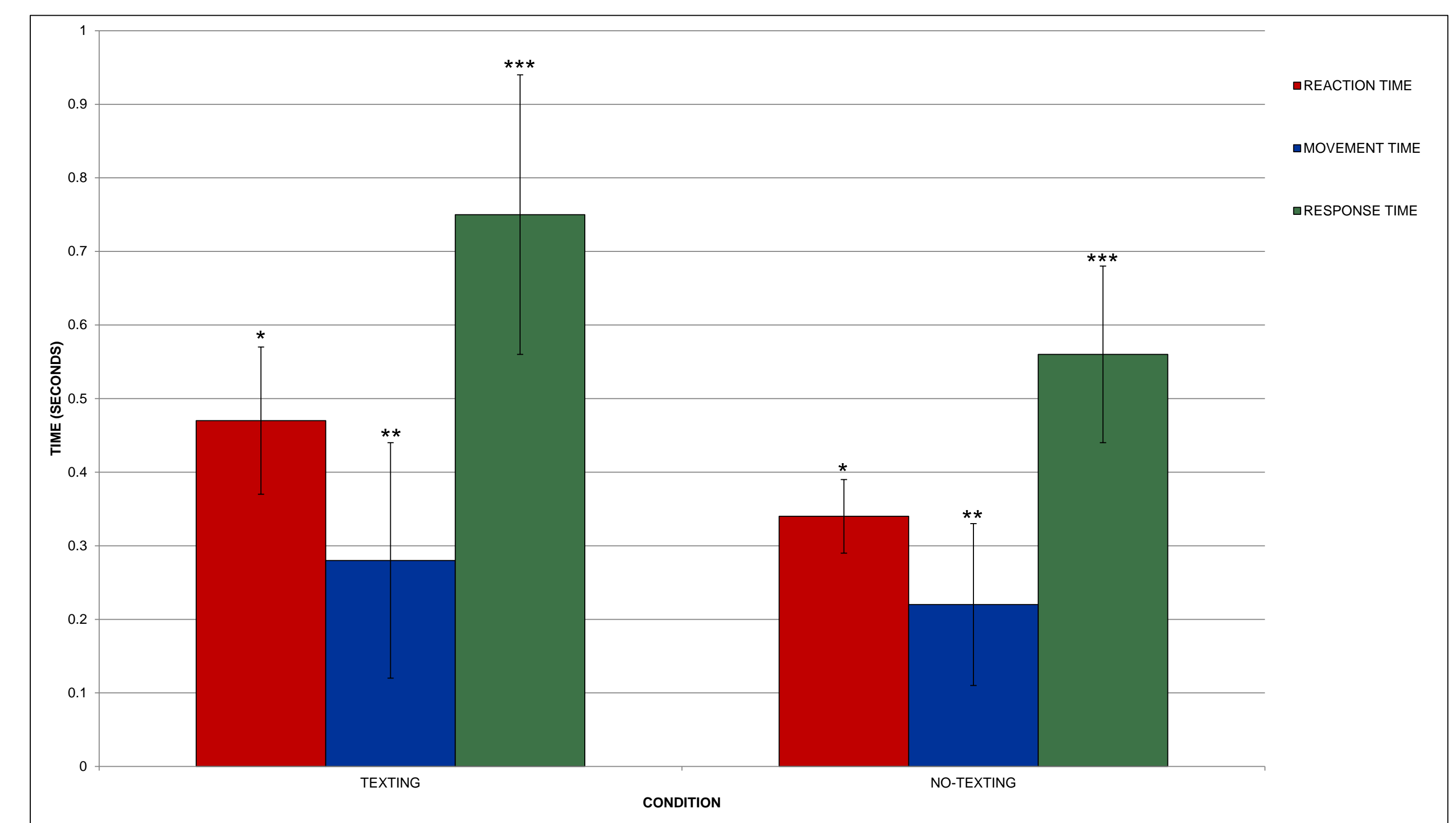


Figure 3: Overall response time, reaction time (RT) and movement time (MT) during the texting and no-texting conditions (*p=.000, **p=.001, and ***p=.000, respectively).

Discussion & Conclusion

The increased dual-task demands required to divide one's attention to complete the texting task while simultaneously awaiting the stimulus indicator light, resulted in a significant increase in overall RT, MT, and response time, thus providing further evidence against text messaging while driving.

Acknowledgements

Mr. Don Clarke for creating the LabVIEW Program.

References

1. Consiglio et al. (2003). Effect of cellular telephone conversations and other potential interference on reaction time in a braking response. *Accident Analysis and Prevention*, 35, 495-500.
2. Drews et al. (2009). Text messaging during simulated driving. *Human Factors*, 51(5), 762-770.
3. Long et al. (2012). Mathematical model of predict drivers' reaction speeds. *Journal of Applied Biomechanics*, 28(1), 48-56.