The RT-2S Simple Reaction Time Tester: Test/Retest Reliability

Angela Brake, OTS; Leticia Hernandez, OTS; Laurel Mann, OTS;
Anne Dickerson, PhD, OTR/L, FAOTA; Timothy Reistetter, PhD, OTR/L

PURPOSE

• The purpose of this study was to examine the test/retest reliability of the RT-2S brake reaction timer.
• The establishment of a reliable and valid reaction time tester is critical for occupational therapists who evaluate drivers for safe mobility in a motor vehicle.

DESCRIPTION

• A brake reaction timer may assist in determining a driver’s ability to safely operate a motor vehicle. The previously used AAA brake reaction timer, which has established norms with reliability and validity, is no longer being manufactured which suggests the need for a reliable reaction timer.
• The RT-2S brake reaction timer is a lightweight and portable device that assists driving evaluators in assessing driving safely.
• Brake reaction time is measured as the time of the stimulus to the time an individual fully depresses the brake pedal. The researcher randomly controls the illumination of the red and green lamps.

SAMPLE

• Simple test/retest design
• Independent Variable: Age, gender, race, health status
• Dependent Variable: Reaction Times
• Participants brake reaction time is tested one day and then retested 3-14 days later

RESULTS

RT-2S Brake Reaction Timer
• Correlation displayed test retest reliability was 0.871, which is significant p=0.01. Refer to table 1 for age group correlations.
• Based on an ANOVA, there was a significant difference among age groups. The difference was between the over 66 age group and the 21-35 age group (p=0.003) and between the over 66 group and the 36-55 group (p=0.005).
• The post hoc test found a significant difference between the over 66 and 21 to 35 group and between the over 66 and 36 to 55 group.
• Tables 2 and 3 show a comparison by age group between test and retest.

DISCUSSION

• Research showed that brake reaction time averages increased with age and both brake reaction timers.
• There was a statistically significant difference between both young and old subjects with both times.
• Average brake reaction times for males were faster than females on the second trial. There was an increase in variance as age increased. There was a significant difference among the age groups.
• As a person gets older, there is more variability in processing, with more younger subjects, the test/retest would be higher.

Does the RT-2S reliably test brake reaction of individuals consistently, reliably, and validly over time?

• One could argue that because there is no established or universal safe driving reaction time (Ganz, Levin, Peterson, & Ramwat, 2003), one cannot say with certainly whether the RT-2S can measure validity.
• The data shows consistent patterns between test and retest, strongly suggesting that the RT-2S is a reliable instrument.

CONCLUSION

• The RT-2S brake reaction timer is a useful tool for occupational therapists who evaluate driving.
• It is recommended that the RT-2S brake reaction timer be used as part of a multi-disciplinary evaluation rather than used alone.
• Additional studies that included a greater sample size and a more diverse age sample would be ideal.