

The Effect of Cell Phone Conversation on Drivers' Reaction Time to Audio Stimulus: Investigating the Theory of Multiple Resources and Central Resource of Attention

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Abstract

Objective: This research was aimed at investigating the theory of multiple resources and central resource of attention on secondary task performance of talking with two types of cell phone during driving.

Materials & Methods: Using disposal sampling, 25 male participants were selected and their reaction to auditory stimulus in three different driving conditions (no conversation with phone, conversation with handheld phone and hands-free phone) were recorded. Driving conditions have been changed from a participant to another participant in order to control the sequence of tests and participants familiarity with the test conditions.

Results: The results of data analysis with descriptive statistics and Mauchly's Test of Sphericity, One- factor repeated measures ANOVA and Paired-Samples T test showed that different driving conditions can affect the reaction time ($P<0.001$). Conversation with a handheld phone increases drivers' simple reaction time to simple auditory stimulus ($P<0.001$). Phone Conversation with hands-free phone increases drivers' simple reaction time to auditory stimulus ($P<0.001$). Using handheld phone does not increase drivers' reaction time to auditory stimulus over hands-free phone ($P=0.861$).

Conclusion: The results confirmed that the performance quality of dual tasks and multiple tasks can be predicted by Four-dimensional multiple resources model of attention and all traffic laws in connection with the handheld phone also have to be spread to the use of hands-free phone.

Keywords: Reaction time / Multiple resources / Central resource / Interference