

Laboratory Experiment on Visual and Auditory Inattention of Pedestrians Using Cell Phones

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The purpose of this study is to add more scientific data on the phenomena of inattention of pedestrians using cell phone, including text messaging as well as talking. We also investigate the effects of input device type, i.e. numerical keypad (regular cell phones) or touch panel (so-called “smart phones”).

Twenty-four undergraduate students participated in the experiment. They used their own cell phones to perform the experimental tasks; 13 phones were keypad types and 11 were touch-panel types. Participants performed a manipulation of cell phone task and signal detection task while walking clockwise along the sides of a 3-by-3 meter square. They were asked to walk in as straight a line as possible and turn right at the corners at a faster pace than usual.

There were four conditions for cell phone manipulation: Condition 1 (Keying); the participants performed a task while keying Japanese prefecture names into the cell phone. Condition 2 (Conversation); the participants talked with one of the experimenters through their cell phones. The experimenter told the participant a Japanese district name and the participant was to answer a prefecture name in that district. Condition 3 (Shadowing); the participants repeated the district names said by the experimenter through the cell phone. Condition 4 (Control); the participants performed the detection tasks while walking with just holding the cell phone in their hand.

Auditory and visual signals were presented to the participants while walking. The participants were asked to walk in as straight a line as possible and to press a wireless mouse key immediately when the color of visual displays changed from blue to red, or when the pitch of auditory signals changed from low to high. Reaction time and the number of errors in response (missed targets or false alarms) were recorded. After practice, every

participant performed four trials of one-minute walking and the signal detection tasks under the four different cell phone use conditions. The results showed that reaction time to either visual or auditory stimuli was significantly longer under Conditions 1, 2, and 3 than under Condition 4. Moreover, the number of errors was larger in the cell phone use conditions. The results clearly demonstrate that cell phone use may make pedestrians and people walking inattentive to hazards and could increase the risk of accidents.