

A Mobile Game Aiming to Evoke Arousal Effects of Nicotine

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## Abstract

Although tobacco use may have decreased, it remains the leading cause of preventable death in the United States (RWJ Foundation, 2009). Among adult smokers, 70% report that they want to quit completely, and more than 40% try to quit each year (World Health Organization, 2008). New behavioral approaches may be helpful to address this pervasive problem and we ask if such an approach could be a mobile game.

A collaborative research team from Teachers College, Columbia University that believes games have the power to effect change, are in the process of developing Lit—a mobile game to potentially help smokers achieve their smoking reduction goals. Specifically, we are exploring if Lit can evoke similar emotional and physiological effects as smoking a nicotine cigarette. The study reported here is part of a larger study funded by the Robert Wood Johnson Foundation to explore the applications of games for health. The results from the alpha testing phase of this iterative game study will be presented.

Mirroring the perceived stimulating and sedating physiological effects of nicotine (Donovan & Marlatt, 2007), our game, Lit, is designed in two modes: RUSH (to create an energetic, stimulating experience for players) and RELAX (to create a relaxed, sedating experience). Building on previously presented data that statistically supported specific music and graphic assets of the game's RUSH mode as arousing (Jamalian, Levitan, Mezei, Hammer, Kinzer, Alex, 2010), this presentation provides and discusses additional measures used, their results and implications. The extensions include emotional data related to game play, using a self-assessment manikin (SAM) rating scale (Lang, 1980), and biological measures using electroencephalography (EEG), electrocardiography

(EKG) and skin conductance (SC). These data sets will be analyzed and used as joint assessments comparing smokers' responses before and after smoking as well as pre and post Lit game-play. The alpha-phase study specifically is interested in comparing emotional and physiological measures of game play, nicotine smoking, and rest states for the RUSH mode of the game.

Ten participants played the alpha prototype of the RUSH mode and underwent multiple phases of emotional and physiological data collection. The participants were asked to spend 3 hours of time in our lab experiencing the following rounds of data collection: Phase I, Game Play testing; Phase II, Physiological game tests; and Phase III, Nicotine testing. Data analysis included comparing results of the emotional measures (SAM data) after playing the game and after smoking a cigarette, comparing physiological rest states to post intervention (gameplay or smoking) states, as well as comparing physiological results across categories (game-play and smoking). Results are expected to confirm preliminary analyses implying that the game intervention causes arousing effects similar to those caused by nicotine after smoking a cigarette. These results are important to the future development and design stages of this iterative project to explore factors leading to an effective behavioral coping strategy for smokers who want to quit or reduce their habit.

## References

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