E-cigarettes: A novel measure for the expectancies of e-cigarette use as directly compared to cigarette use

Alexandra Hershberger, B.A., Kenny Karyadi, M.A., & Melissa Cyders, Ph.D

Department of Psychology

Indiana University-Purdue University Indianapolis

Background: Electronic cigarettes (e-cigs) were created as an alternative to cigarettes and approximate the look and experience of smoking a cigarette (American Cancer Society, 2014). E-cigs are often marketed as having fewer health risks as compared to cigarettes (Grana & Ling, 2014) and individuals anecdotally report choosing to use e-cigs because they are safer than traditional cigarettes. However, no research has directly compared expectations individuals have about e-cigs and traditional cigarettes. Having positive expectations about e-cigs makes it more likely an individual will choose e-cigs over traditional cigarettes. The present study created a novel measure, the Electronic Cigarette Questionnaire (ECQ), to directly compare e-cig and cigarette expectations. *Method*: Undergraduate students enrolled in an Introduction to Psychology course voluntarily completed an online survey containing the ECQ and other demographic questions as part of a larger study. Participants received course credit for study completion. *Results*: Two hundred ninety-one students (mean age=20, SD=4.05, 71.2% white, 75.3% female, 8.3% e-cig users) completed the ECQ and other measures. The reliability of the scale was high (Cronbach's alpha=0.93). An exploratory factor analysis using Promax rotation found three factors (eigenvalue>1, supported by scree plot): *health related expectancies* (e.g. "Electronic cigarettes are less harmful to the user's health than traditional cigarettes"; 6 items; Cronbach's alpha=0.93), *craving and withdrawal related expectancies* (e.g. "Electronic cigarettes are more enjoyable to use than traditional cigarettes"; 6 items; Cronbach's alpha=0.90), and *general use behavior expectancies* (e.g. "Electronic cigarettes are less addictive than traditional cigarettes"; 5 items; Cronbach's alpha=0.82). Correlation between all three scales were significant (p<.01; *Health* x *General Use*, r=0.562; *Health* x *Craving*, r=0.515; *General Use* x *Craving, r*=0.585). Frequency of e-cig use (*never, a few times a month, a few times a week, at least once a day, 10 or more times per day*) was related to higher positive expectations towards e-cigs as compared to cigarettes, $F_{(4, 287)}=3.7$, p=0.01. *Conclusions*: Individuals directly compare e-cigs and cigarettes on health-related, craving and withdrawal, and general use expectations. Although cross-sectional, this data suggests the viability of a causal model in which more positive expectations about e-cigs as compared to cigarettes likely influences one's choice to choose e-cigs over traditional cigarettes and leads to more frequent e-cig use. Future studies should investigate how these expectations affect later e-cig use and how e-cig advertisements, which often claim that e-cigs are better for your health than cigarettes (Huang et al., 2014; Paek et al., 2014) without strong empirical data to support these claims, can change expectations and subsequent e-cig use. The relationship between the ECQ and e-cig use frequency suggest that this is a valid measure of expectancies towards e-cigs as compared to cigs.