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Document:
Statistical Analysis Plan

Official Study Title:
Responses to Message Source and Presentation Using Psychophysiology

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Psychophysiological Testing

<u>Study Design and Power Analysis:</u>

We will assess which communication principles influence psychophysiological responses on visual attention, orienting response, and arousal to determine the features that can increase acceptance of e-cigarette education messages in young adults. Eligible participants will be randomly assigned to one of four experimental conditions in a 2 (Source: expert and peer) x 2 (Presentation: one-sided and two-sided) design. For the psychophysiological part of the Aim 1, we will recruit total 112 young adults (age 18 to 24) vapers and susceptible non-vapers. We will use stratified sampling, with n=56 for each vaping status. The estimation was based on Stevens et al.'s (2021) study. Based on simulations as in crowdsourcing study, participants per message condition gave stable ranks for the top 3 messages. We use a conservative approach and propose 7 participants per the message condition for each vaping status. I will use a multi-attribute decision-making (MADM) framework to produce a dataset containing data on participant response to each message with source + presentation type. I will merge crowdsourced and psychophysiological data to rank messages and determine optimal content. This technique has been used in our previous work. MADM provides a practical, transparent framework for considering data across multiple inputs, determining the relative importance of each attribute, and simultaneously evaluating detail at the attribute level and in a summary measure across all attributes using aggregate data.