

# Developing the E-Cigarette Motivation Questionnaire (E-CMQ)

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## Introduction

### Aims

- Develop scale for measuring e-cigarette motives
- Establish vaping motives and whether these vary by demographic status and vaping habits

### Rationale

- E-cigarettes have 50% annual increases among children and adolescents within the UK (Action on Smoking and Health, 2023)
- Vaping related lung injuries have caused several deaths in younger populations (Smith et al., 2020)
- It is essential to understand why adolescents with no prior tobacco use start using e-cigarettes to inform interventions and public health policies

## Methodology

### Procedure

- Participants ( $N = 678$ ,  $M = 26.87$ ) recruited via social media to complete Qualtrics questionnaire
- Adapted alcohol and smoking questionnaires were used to capture reasons for using e-cigarettes
- Data analysed via exploratory factor analysis (EFA) with varimax rotation and kaiser normalisation (SPSS) to determine factor structure of items
- Factor structure was tested via confirmatory factor analysis (CFA), with items removed if standardized estimates under .50 (Amos; Cheung et al., 2023)

### Measures

**Drinking motives questionnaire (Cooper, 1994).** Identified 4 motives for drinking, shown to be associated with e-cigarette use (Hefner et al., 2019)

**Modified reasons for smoking scale (Berlin et al., 2003).** Identified seven motives for smoking, adapted to be specific to e-cigarette usage

**Vaping habits.** Vaping frequency, nicotine concentration, and device preference were measured to compare with e-cigarette motives.

## Results

### Findings

The EFA revealed 6 unique factors which capture motivations to use e-cigarettes based on modified questions from the drinking motives questionnaire (Cooper, 1994) and modified reasons for smoking scale (Berlin et al., 2003). Further analyses indicate the strength of these motivations varies by individual nicotine concentration, device preference, frequency of vaping and reasons for first use.

**Table 1.** Table of e-cigarette motives found through the E-CMQ as well as example items used to measure each factor

E-CMQ Factor	Example items
<b>Coping</b>	<ul style="list-style-type: none"><li>• “Vaping helps me forget about my worries”</li><li>• “I use E-Cigarettes when I feel angry about something”</li></ul>
<b>Conformity</b>	<ul style="list-style-type: none"><li>• “I use E-Cigarettes to be liked”</li><li>• “I use E-Cigarettes to fit in with groups I like”</li></ul>
<b>Enhancement</b>	<ul style="list-style-type: none"><li>• “Vaping gives me a pleasant feeling”</li></ul>
<b>Automatism</b>	<ul style="list-style-type: none"><li>• “I've found myself vaping and have not remembered putting it in my mouth”</li></ul>
<b>Social</b>	<ul style="list-style-type: none"><li>• “I vape much more when I am with other people”</li><li>• “Vaping makes social gatherings more fun”</li></ul>
<b>Handling</b>	<ul style="list-style-type: none"><li>• “Part of the enjoyment of using E-Cigarettes comes from the steps I take before vaping (e.g., refilling liquid, cleaning my 'tank', opening a disposable)”</li></ul>

## Discussion

### Implications

- Our research influences policies targeted to children and adolescents who vape, using vaping motives to communicate health messages
- Social media’s role in perceptions of e-cigarettes are dangerous to those who vape to conform due to being portrayed as socially acceptable

### Limitations

- The modified DMQ and MRSS do not consider motives specific to e-cigarette use, further research should consider whether vaping has individual motives not captured in the E-CMQ
- Due to participants only living in the UK, the sample used was limited and therefore motivations may vary cross-culturally

### Conclusions

- The E-CMQ is a reliable scale for measuring e-cigarette motivation
- 6 vaping motivations were established; coping, conformity, enhancement, automatism, social and handling
- Vaping motives were found to vary by nicotine concentration, frequency of vaping, device preference and reasons for first use

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