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# Reported exposure to E-cigarette advertising and promotion in different regulatory environments: Findings from the International Tobacco Control Four Country (ITC-4C) Survey

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ABSTRACT

Electronic cigarette (e-cigarette) advertising regulations differ across countries. This study examines how differences in e-cigarette advertising regulations influence exposure to e-cigarette advertising, and perceptions about what participants had seen and read about e-cigarettes. Data come from the ITC Four Country Survey (Canada [CA], United States [US], Australia [AU] and United Kingdom [UK]) carried out between August 2013 and March 2015 ($n = 3460$). In 2014, AU and CA had laws prohibiting the retail sale of e-cigarettes containing nicotine while the US and UK had no restrictions, although a voluntary agreement restricting advertising in the UK was introduced during fieldwork. Smokers and ex-smokers were asked whether in the last six months they had noticed e-cigarettes advertisements and received free samples/special offers (promotion), and about their perceptions (positive or otherwise) of what they had seen or read about e-cigarettes. Data were analyzed in 2017. US and UK participants were more likely to report that they had noticed e-cigarette advertisements and received promotions compared to CA or AU participants. For TV and radio advertisements, reported exposure was higher in US compared to UK. For all types of advertisements, reported exposure was higher in CA than AU. Overall, nearly half of AU (44.0%) and UK (47.8%) participants perceived everything they had seen and read about e-cigarettes to be positive, with no significant differences between AU and UK. Participants in countries with permissive e-cigarette advertising restrictions and less restrictive e-cigarette regulations were more likely to notice advertisements than participants in countries with more restrictive e-cigarette regulations.

## 1. Introduction

Electronic cigarettes (e-cigarettes) are electronic devices that can create an aerosol to deliver nicotine. A recent review suggests that e-cigarettes provide lower exposure to toxins and chemicals, and are therefore less harmful than smoking cigarettes (Glasser et al., 2017). Since their introduction to the market in 2004, awareness and use of e-cigarettes has grown rapidly (Yong et al., 2015; Pepper and Brewer, 2013; Office for National Statistics, 2017). In 2015, the global market for e-cigarette sales was estimated at around 10 billion US dollars (World Health Organization, 2016). In the UK, the percentage of smokers who reported regularly vaping increased over 5-fold from 2010 to 2015 (i.e. from 2.7% to 14.4%) (Office for National Statistics, 2017). Similar increases in the reported use of e-cigarettes by adult current and ex-smokers have been reported in CA, US, and AU (Pepper and Brewer, 2013).

Advertisements and the internet are common channels through which many users become aware of and learn about e-cigarettes (Glasser et al., 2017; Pepper et al., 2014; Wackowski et al., 2015). Research shows that cigarette advertising has a causal relationship with cigarette consumption (National Cancer Institute, 2008; World Health Organization, 2013), so one might expect to find the same relationship

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**Table 1**
Unweighted sample characteristics by country (Aug 2013–Mar 2015), $n$ = 7746.

| | Respondents in all four countries ($n$ = 7746) | | | | Respondents included in the analyzes ($n$ = 3460) | | | |
|---|---|---|---|---|---|---|---|---|
| | Canada % ($n$ = 1592) | US % ($n$ = 3208) | UK % ($n$ = 1470) | Australia % ($n$ = 1476) | Canada % ($n$ = 475) | US % ($n$ = 1799) | UK % ($n$ = 734) | Australia % ($n$ = 452) |
| Sex | | | | | | | | |
| Female | 53.0 | 51.7 | 52.6 | 53.7 | 53.5 | 54.3 | 54.0 | 56.9 |
| Male | 47.0 | 48.3 | 47.4 | 46.3 | 46.5 | 45.7 | 46.0 | 43.1 |
| Age | | | | | | | | |
| 18–24 | 1.2 | 5.2 | 2.4 | 2.8 | 1.9 | 7.1 | 3.5 | 5.1 |
| 25–39 | 12.8 | 20.0 | 19.0 | 15.7 | 21.3 | 24.1 | 22.1 | 19.0 |
| 40–54 | 34.7 | 26.6 | 32.2 | 36.9 | 35.8 | 27.6 | 35.3 | 38.3 |
| 55+ | 51.3 | 48.2 | 46.5 | 44.6 | 41.1 | 41.2 | 39.1 | 37.6 |
| Ethnicity | | | | | | | | |
| White | 92.5 | 77.6 | 92.7 | 91.7 | 92.2 | 78.2 | 93.2 | 92.9 |
| Non-white | 7.5 | 22.4 | 6.7 | 7.7 | 7.8 | 21.8 | 6.8 | 7.1 |
| Education | | | | | | | | |
| Low | 38.3 | 39.8 | 47.1 | 46.3 | 34.9 | 38.1 | 43.6 | 42.0 |
| Medium | 39.5 | 39.2 | 27.9 | 31.9 | 44.2 | 42.1 | 28.9 | 37.2 |
| High | 21.6 | 21.0 | 23.7 | 21.1 | 20.8 | 19.8 | 27.5 | 20.8 |
| Income | | | | | | | | |
| Low | 22.4 | 37.3 | 30.3 | 26.4 | 17.5 | 36.6 | 25.3 | 25.7 |
| Medium | 34.2 | 29.2 | 29.8 | 26.4 | 36.8 | 28.9 | 30.9 | 27.0 |
| High | 34.2 | 31.3 | 31.6 | 38.1 | 36.8 | 32.6 | 36.1 | 38.5 |
| No answer | 9.2 | 2.2 | 8.3 | 9.1 | 8.8 | 1.8 | 7.6 | 8.8 |
| E-cigarette status | | | | | | | | |
| Not at all | 21.7 | 29.8 | 9.4 | 19.8 | 72.8 | 53.0 | 46.2 | 63.5 |
| Daily | 1.8 | 6.8 | 6.0 | 2.4 | 6.1 | 12.2 | 18.3 | 7.7 |
| Weekly | 1.9 | 6.5 | 12.1 | 1.5 | 6.5 | 11.7 | 11.6 | 4.6 |
| Monthly | 4.3 | 13.0 | 23.3 | 7.4 | 14.5 | 23.1 | 24.0 | 24.1 |
| Smoking status | | | | | | | | |
| Quitter | 24.1 | 18.6 | 23.1 | 26.2 | 12.0 | 14.6 | 16.1 | 11.7 |
| Daily | 70.9 | 68.5 | 70.7 | 68.1 | 81.9 | 72.2 | 77.1 | 80.5 |
| Non-daily | 5.1 | 12.8 | 6.2 | 5.8 | 6.1 | 13.2 | 6.8 | 7.7 |
| Survey mode | | | | | | | | |
| Telephone | 42.1 | 19.5 | 35.6 | 25.8 | 39.2 | 14.6 | 32.7 | 25.9 |
| Internet | 57.9 | 80.5 | 64.4 | 74.2 | 60.8 | 85.4 | 67.3 | 74.1 |

with e-cigarette advertising. Indeed, studies have found associations between exposure to e-cigarette advertising, and intention to use or use of e-cigarettes (Agaku et al., 2017; Collins et al., 2018). E-cigarette use is higher in countries with less restrictive e-cigarette regulations (Yong et al., 2015; De Andrade et al., 2013a; Federal Trade Commission, 2013; Gravely et al., 2014). This could be beneficial if adult smokers who would otherwise not quit switch to e-cigarettes, whereas the opposite would be the case if e-cigarette advertisements increased dual use and use by non-smokers (National Cancer Institute, 2008; De Andrade et al., 2013a; De Andrade et al., 2013b; Fairchild et al., 2014; Kim et al., 2014; Maloney and Cappella, 2016).

Previous studies have explored the effect of advertising regulations on noticing e-cigarette advertising in the Netherlands (Nagelhout et al., 2016) and examined exposure to advertising in the European Union member states (Filippidis et al., 2017). No study to date has looked at a cross-country comparison where the countries have varying e-cigarette advertising regulations but similar restrictive tobacco advertising regulations. In this paper, we present the results from the International Tobacco Control Four Country (ITC-4C) Survey. We compare exposure to e-cigarette advertising in two countries, which at the time of the survey had restrictive (CA and AU) policies on advertising e-cigarettes and two countries with permissive (US and UK) policies. In addition, we compare perceptions of what participants had seen and read about e-cigarettes in AU and UK. At the time, both CA and AU had laws prohibiting the retail sale and advertisement of e-cigarettes containing nicotine in all channels asked in this study, whereas there were no such regulations in the US and UK (BBC News, 2014; Global Tobacco Control, n.d.; Government of Canada, n.d.; Hammond et al., 2015; McNeill et al., 2015; Office of the Federal Register, 2016). However, in the UK a voluntary agreement restricting e-cigarette advertising content was introduced during fieldwork, which restricted advertisements that promoted any image associated with tobacco, or that would undermine cessation messages (BBC News, 2014; McNeill et al., 2015).

In this paper we propose three hypotheses: (i) that advertising exposure will be higher in the US and UK and lower in CA and AU; (ii) that there will be further differences between individual countries due to other regulations, geographical locations, and presence of different e-cigarette companies; and (iii) that participants from less restrictive countries will be more likely to hold a positive opinion about e-cigarette messaging than those from more restrictive countries. All four countries adopted different advertising and regulatory approaches to e-cigarettes, which allows examination of differences in consumer exposure to advertising across countries with similar tobacco advertising regulations. This type of evidence will be important to inform advertising regulations as countries develop their frameworks.

## 2. Methods

### 2.1. Study design

The ITC-4C Survey has been conducted regularly in CA, US, AU, and the UK since 2002. It is a prospective cohort study with approximately 2000 participants per country per 'wave' with replenishment to compensate attrition. Further details including study design and recruitment can be found elsewhere (Fong et al., 2006; ITC Project, 2004; ITC Project, 2011a; ITC Project, 2011b; Thompson et al., 2006).

Recruitment of participants involved random digit dialing using probability sampling methods. Inclusion criteria included adults (over 18) who had smoked at least 100 cigarettes in their lifetime with a minimum of one cigarette smoked in the last 30 days. The same inclusion criteria were used in all replenishments. Participants completed the surveys via the internet or telephone. Participants were