Quantifying Children’s Non-Supermarket Exposure to Alcohol Marketing via Product Packaging Using Wearable Cameras

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ABSTRACT. Objective: The aim of this research was to quantify children’s exposure to alcohol marketing via product packaging using wearable cameras, observing sociodemographic differences and contextual features of exposure. Method: In Wellington, New Zealand, 167 children (ages 11–13; 53% girls) wore wearable cameras for 4 consecutive days. The cameras automatically captured images approximately every 7 seconds. Image data (n = 700,000 images) were coded through content analysis to determine the extent of children’s exposure to alcohol marketing via product packaging. Negative binomial regression models were used to calculate rates of exposure per day and to examine differences between groups. Results: Children were exposed to alcohol marketing via product packaging 7.7 times per day, on average. Product packaging contained limited health information and lacked defining features that could provide visual cues to children to differentiate alcohol from other commodities. No statistically significant differences by sociodemographic characteristics were detected. Conclusions: Children are frequently exposed to alcohol marketing via product packaging. Such exposure normalizes alcohol in children’s environments and fails to send accurate information to children about the health risks associated with alcohol consumption. Mandatory labeling on alcohol product packaging, including prominent health warnings (text, pictorial, and graphic), or plain packaging, provides governments an opportunity to substantially reduce children’s overall exposure to alcohol marketing and potentially increase children’s awareness of the risks associated with alcohol consumption. (J. Stud. Alcohol Drugs, 80, 158–166, 2019)

WORLDWIDE, ALCOHOL IS a leading risk factor for death and disease (Lim et al., 2012), contributing to an estimated 3.3 million deaths each year (5.9% of all deaths) (World Health Organization [WHO], 2014). Alcohol marketing restrictions are one of the best ways to reduce alcohol-related harm (WHO, 2017). Most countries rely on industry self-regulation of alcohol marketing. However, such systems have been shown to be ineffective at preventing children’s exposure to alcohol marketing (Noel et al., 2017; Tinawi et al., 2018) and do not incorporate alcohol marketing via product packaging in their self-regulated systems (WHO, 2014).

There is an established longitudinal evidence base showing that children’s exposure to alcohol marketing is associated with adverse outcomes, including intentions to drink, early onset drinking, and hazardous drinking (Anderson et al., 2009; Jernigan et al., 2017; Smith & Foxcroft, 2009). Previous studies have demonstrated that children’s exposure to alcohol marketing is patterned by sociodemographic characteristics; children living in the highest deprivation and children of an ethnic minority or indigenous population experience high levels of exposure (Chambers et al., 2018; Collins et al., 2016; McKee et al., 2011; Stacy et al., 2004). These same groups also experience the greatest burden of alcohol-related harm (Loring, 2014; Ministry of Health, 2017), which makes children’s disproportionate exposure to alcohol marketing a major issue for health equity.

Product packaging is an important aspect of alcohol marketing strategies (Al-Hamdani & Smith, 2017; Tricas-Sauras & Garres, 2014; WHO, 2010). Brand design, including its packaging, influences consumer preferences in children as young as 12 years old (Achenreiner & John, 2003). Experimental studies in Australia have shown that alcohol product packaging that appeals to children is associated with higher palatability ratings (Gates et al., 2007) and, during blind taste tests, increased children’s acceptability of alcohol in drinks (Copeland et al., 2007). Another Australian study found that children’s perceptions of alcohol products came primarily from the products’ packaging (Jones & Reis, 2011).

Product packaging is used by the alcohol industry to market alcohol (Purves et al., 2014), but it is also an opportunity for health promotion. For example, in South Africa, every alcoholic beverage must contain one of seven different health warnings, such as “alcohol abuse is dangerous to your health” (International Alliance for Responsible Drinking, 2017). The interest in health warning labels for alcohol is, in part, attributable to the effectiveness of tobacco health warn-
ing labels, which reduce positive attitudes toward tobacco and increase the likelihood of smoking cessation (Hammond, 2011). For children, graphic health warnings on tobacco products increase negative perceptions of smoking (Evans et al., 2017; Netemeyer et al., 2016) and intentions to quit (Brodar et al., 2018). However, evidence for alcohol health warnings for children is limited. Evidence suggests that health warnings on alcohol labels are effective in reducing adults’ intentions to drink (Pettigrew et al., 2016; Wigg & Stafford, 2016). Thus, health warnings on alcohol packaging could potentially reduce children’s intentions to drink and alcohol consumption, but more research is required to demonstrate causality.

Despite the potential health promotion opportunities provided by health warning labels, WHO (2014) reported that only 41 of 167 reporting countries had mandatory health warning labels for alcohol. Israel, Kenya, Russia, the United States, and France are examples of countries with statutory regulation enforcing health warnings on alcohol products, which are more effective in increasing both industry compliance and consumer awareness than self-regulatory systems (Cecchini & Belloni, 2015; WHO, 2014). However, the size and content of the warnings differ substantially between countries (International Alliance for Responsible Drinking, 2017).

In addition to text-based health warnings, evidence suggests that graphic health warning labels, such as those used on tobacco packaging, are effective at decreasing intentions to drink, reducing positive perceptions of alcohol, and increasing intention to quit drinking alcohol (Al-Hamdani & Smith, 2015; Wigg & Stafford, 2016). Currently, Thailand is the only country attempting to introduce graphic health warnings on alcohol, but this is being challenged by the World Trade Organization Technical Barriers to Trade Agreement (O’Brien, 2013). In addition, industry resistance is a substantial obstacle to introducing mandatory health warnings. For example, the Yukon Government in Canada introduced health-warning labels that were quickly challenged by the alcohol industry and subsequently withdrawn (University of Victoria, 2018).

Plain packaging is another strategy used to modify product packaging, but it has received limited attention with regard to alcohol (Al-Hamdani, 2014; Al-Hamdani & Smith, 2017). The strategy is primarily based on the success in tobacco control. Plain packaging involves modifying the style and design of product packaging to a standardized version, stripping away all elements of the brand imagery (Wakefield et al., 2008). Plain packaging of tobacco products has been shown to decrease children’s positive attitudes toward cigarettes (Germain et al., 2010). Moreover, it increases awareness of associated health warnings on labels by emphasizing the health warnings (Al-Hamdani & Smith, 2017). It is likely that similar effects would result from plain packaging on alcohol products.

In Australia and New Zealand, Food Standards Australia and New Zealand (FSANZ) regulates food and alcohol labeling (FSANZ, 2017). Unlike other food and beverages, alcohol is exempt from displaying mandatory nutrition information. In 2011, the Australia and New Zealand Ministerial Forum on Food Regulation, a forum of government ministers, recommended that FSANZ introduce voluntary health warning labels about the dangers of drinking while pregnant (Rout & Hannan, 2016). By 2014, only 32% of beer and 76% of ready-to-drink products had pregnancy warnings (Rout & Hannan, 2016). In 2014, FSANZ granted the alcohol industry another 2 years of voluntary regulation; it is now under review. Alcohol marketing, including product packaging, is also subject to the self-regulatory codes on marketing created, monitored, and enforced by industry actors via the Advertising Standards Authority (2018).

In 2018, a New Zealand study of alcohol health warnings on product packaging found that they occupied less than 1% of the total surface area, contained ambiguous messages, and were limited to warnings about drinking while pregnant and operating heavy machinery or driving (Tinawi et al., 2018). The authors concluded that mandatory standardized labeling, with clear and unambiguous health warnings, was required to overcome the weaknesses of the current self-regulatory system (example of proposed health warning presented in Figure 1).

Although product packaging is a key element of alcohol companies’ marketing strategies, previous exposure studies have excluded product packaging from measurements of alcohol exposure (Chang et al., 2014; Snyder et al., 2006; Unger et al., 2003). At least in part, this is likely attributable to the difficulty of acquiring a reliable exposure measurement for product packaging, which is hard to capture. It is also difficult for participants to recall such exposures.

Wearable cameras provide a methodological advance that could address the evidence gap described. Wearable cameras collect data on the wearers’ real-time exposure to environmental drivers of health by focusing on their lived experiences, and in turn, improving the ecological validity of the results (Bryman, 2012). In recent years, health researchers have used wearable cameras to observe several health-related behaviors and exposures, including blue space (Pearson et al., 2017), diet (Gemming et al., 2015), physical activity (Doherty et al., 2013), food marketing (Signal et al., 2017b), alcohol marketing within supermarkets (Chambers et al., 2017b), and neighborhood mobility patterns (Chambers et al., 2017a). There appear to be only two other studies using exposure data for alcohol marketing, and these found children were exposed to alcohol marketing 4.5 (Chambers et al., 2018) and 3.1 (Collins et al., 2016) times per day on average, respectively. However, neither study included product packaging in their definitions of alcohol. Further, Collins et al. (2016) required children to record exposures using a portable electronic device, increasing the likelihood
of self-report bias, especially given some children’s limited knowledge of alcohol brands.

Our study aimed to quantify the extent of children’s exposure to alcohol marketing via product packaging using wearable cameras and to identify differences in exposure by sociodemographic characteristics to highlight potential inequities. Supermarkets were excluded because of the difficulty of coding the intensity of exposures in this context. The study also examined the contextual features of children’s exposure to alcohol marketing via product packaging, such as the setting, visibility of health warnings, and physical appearance of the alcohol product.

**Method**

**Ethical approval**

This study was nested within Kids’Cam, a larger cross-sectional observational study (Signal et al., 2017a). The University of Otago Human Ethics Committee (Health) (13/220) granted Kids’Cam ethical approval to study the world in which children live, including their exposure to alcohol marketing. Researchers obtained school approval, child assent, and parental consent in writing from participating schools, children, and their parents.

**Study design: Kids’Cam**

Kids’Cam Alcohol, a substudy, examined children’s exposure to alcohol marketing (Chambers et al., 2018). Results from Kids’Cam Alcohol repeated the methods used for Kids’Cam, including the sampling strategy, coding rules, and statistical analyses to enable comparability. Thus, the current article reports on the product packaging results. Kids’Cam involved children ages 11–13 (N = 167) in Wellington, NZ, using a wearable camera (Autographer; OMG Life Ltd., Oxford, England) for 4 days. The camera automatically captured a 136° image every 7 seconds. The camera was on a lanyard that was worn around the child’s neck and was also equipped with a clip that could be fastened to children’s shirts. Children collected 1.4 million images across the 4 days of data collection. More information about the study design, sampling strategy, and data collection for Kids’Cam has been published elsewhere (Signal et al., 2017a, 2017b).

**Content analysis**

The content analysis used a subsample of the Kids’Cam image data, excluding school hours and supermarkets. Of all recruited children, only one had no image data for this period. The result was 167 participants in this study with a total of 700,000 images. Content analysis was facilitated by customized computer software developed by Dublin City University. The software used a three-tiered framework that enabled the user to tag image data with codes, indicating when a marketing exposure occurred, where it occurred, and how many occurred within a single image.

Three key coding rules were used for processing images. First, product packaging exposures were coded when 50% or more of a logo or brand name was visible. Second, a
30-second rule prevented coding an exposure multiple times in a sequence of images unless the marketing disappeared from the image entirely for a period of greater than 30 seconds (the 30-second rule), consistent with previous study frequency analyses (Chambers et al., 2018). The 30-second rule captures the notion that marketing functions through repeated exposures but is more conservative than other frequency analyses that simply require the exposure to leave the field of view momentarily (Gee et al., 2017). The 30-second rule increases the likelihood that the alcohol marketing had actually left the child’s field of vision than shorter temporal parameters (e.g., 7 seconds). Third, because of constraints of the coding software, when more than three exposures were visible in a single image, the image was coded as only three exposures. More information on all coding rules has been published elsewhere (Chambers et al., 2018). These rules were implemented, in part, to limit the impact of our assumption that children are visually exposed to alcohol marketing when we observed it in the images captured from wearable cameras.

Exposures that occurred within supermarkets were not used in this analysis, as these specific exposures were too extensive to reliably code and have been explored elsewhere (see Chambers et al. [2017b] on supermarkets for information on marketing in these settings). In addition to alcohol marketing, the presence of health warnings on alcohol packaging was also examined.

### Table 1. Sociodemographic characteristics of children included in analysis

<table>
<thead>
<tr>
<th>Sociodemographic characteristics</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total 167</td>
<td></td>
<td>100</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male 78</td>
<td></td>
<td>47</td>
</tr>
<tr>
<td>Female 89</td>
<td></td>
<td>53</td>
</tr>
<tr>
<td>Total 167</td>
<td></td>
<td>100</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11 13</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td>12 122</td>
<td></td>
<td>73</td>
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<tr>
<td>13 25</td>
<td></td>
<td>15</td>
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<tr>
<td>14 1</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Total 161*</td>
<td></td>
<td>96</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NZE 66</td>
<td></td>
<td>40</td>
</tr>
<tr>
<td>Māori 60</td>
<td></td>
<td>36</td>
</tr>
<tr>
<td>Pacific 41</td>
<td></td>
<td>24</td>
</tr>
<tr>
<td>Total 167</td>
<td></td>
<td>100</td>
</tr>
<tr>
<td>Neighborhood deprivation (NZDep2013)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low 57</td>
<td></td>
<td>34</td>
</tr>
<tr>
<td>Moderate 48</td>
<td></td>
<td>29</td>
</tr>
<tr>
<td>High 58</td>
<td></td>
<td>35</td>
</tr>
<tr>
<td>Total 163*</td>
<td></td>
<td>98</td>
</tr>
</tbody>
</table>

Notes: M (SD) age = 12.6 (0.5). NZE = New Zealand European; NZDep2013 = New Zealand Deprivation Index, 2013. *Six participants had missing data on age; four participants had missing address information.

### Results

The sociodemographic characteristics of the study sample are presented in Table 1. There were almost as many boys (47%) as girls (53%) in the sample, with a mean age (SD) of 12.6 (0.5) years. More New Zealand European (NZE; 40%) than Māori (36%) or Pacific (24%) children were included in the sample. The sample included slightly more children living in neighborhoods of high (35%) and low (34%) than moderate (29%) deprivation. Children were sampled by ethnicity and school socioeconomic position to enable comparisons by sociodemographic characteristics, which largely reflects this sampling design.

The mean rate of exposure to alcohol marketing via product packaging per day is presented in Table 2. Children were exposed to alcohol product packaging, on average, 7.7 (95% CI [4.5, 12.6]) times per day. Table 2 displays the unadjusted negative binomial regression models demonstrating the association between sociodemographic characteristics and exposure to alcohol marketing via product packaging. No
significant differences by sociodemographic characteristics were detected; however, there were much higher mean rates observed by NZE ($M_{rate} = 8.2$ per day) than Pacific children ($M_{rate} = 5.2$ per day), albeit not statistically significant (rate ratio = 0.63, 95% CI [0.18, 2.26]). Table 2 also presents results from an adjusted negative binomial regression model showing children’s exposure to alcohol marketing via product packaging, mutually adjusting for sex, ethnicity, and neighborhood deprivation. Similar to the unadjusted models, there are no statistically significant differences in exposure via product packaging.

Table 2. Mean rates of children’s exposure to alcohol product packaging by sociodemographic characteristics, with unadjusted models showing the differences in exposure by sociodemographic characteristics, and adjusted models mutually adjusted for sex, ethnicity, and neighborhood deprivation

<table>
<thead>
<tr>
<th>Sociodemographic characteristics</th>
<th>Mean rate per 10 hours</th>
<th>Unadjusted rate ratio</th>
<th>Adjusted rate ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total, all children</td>
<td>7.7 [4.5, 12.6]</td>
<td>1 (ref.)</td>
<td>1 (ref.)</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>8.0 [3.9, 16.3]</td>
<td>1 (ref.)</td>
<td>1 (ref.)</td>
</tr>
<tr>
<td>Male</td>
<td>7.5 [4.8, 11.8]</td>
<td>0.94 [0.47, 1.85]</td>
<td>0.93 [0.48, 1.79]</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NZE</td>
<td>8.2 [4.3, 15.8]</td>
<td>1 (ref.)</td>
<td>1 (ref.)</td>
</tr>
<tr>
<td>Maori</td>
<td>7.9 [4.8, 13.1]</td>
<td>0.97 [0.43, 2.21]</td>
<td>0.89 [0.38, 2.10]</td>
</tr>
<tr>
<td>Pacific</td>
<td>5.2 [1.7, 15.5]</td>
<td>0.63 [0.18, 2.26]</td>
<td>0.55 [0.14, 2.12]</td>
</tr>
<tr>
<td>Neighborhood deprivation (NZDep2013)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>7.6 [4.4, 13.2]</td>
<td>1 (ref.)</td>
<td>1 (ref.)</td>
</tr>
<tr>
<td>Moderate</td>
<td>7.2 [3.8, 13.5]</td>
<td>0.94 [0.54, 1.64]</td>
<td>1.01 [0.56, 1.84]</td>
</tr>
<tr>
<td>High</td>
<td>8.9 [4.6, 17.1]</td>
<td>1.16 [0.56, 2.42]</td>
<td>1.37 [0.64, 2.92]</td>
</tr>
</tbody>
</table>

Notes: Ref. = reference; NZE = New Zealand European; NZDep2013 = New Zealand Deprivation Index, 2013 [95% confidence intervals in brackets]. Mean rates and p value for difference were calculated using negative binomial regression, accounting for complex sampling strategy and participant observation time.

Discussion

Children in this study were exposed to alcohol marketing via product packaging, on average, 7.7 times per day. To our knowledge, this is the first research to quantify the extent of children’s exposure to alcohol marketing via product packaging. The results suggest that previous exposure studies, which have omitted product packaging, may substantially underestimate children’s overall exposure to alcohol marketing.

In contrast to previous studies (Chambers et al., 2018; Collins et al., 2016; McKee et al., 2011; Stacy et al., 2004), there were no statistically significant differences in New Zealand children’s exposure by sociodemographic characteristics. However, because this study used secondary analysis of data from a project that was powered to examine a different outcome, it is quite possible that this study may have been underpowered to detect differences in exposure to packaging by sociodemographic characteristics, as indicated in the wide confidence intervals for rates and rate ratio estimates. Nevertheless, inequitable exposure to alcohol marketing is still a concern for policy makers, and future research is warranted given the disproportionate burden of alcohol-related harms by sociodemographic characteristics (Loring, 2014; Ministry of Health, 2016).

Health warnings on product packaging were never clearly visible in the images. As a result, the lack of reference to the potentially adverse health consequences of alcohol consump-
Figure 2. Examples of children’s exposure to alcohol marketing via product packaging captured using wearable cameras (A) Vodka Cruiser in a refrigerator; (B) numerous spirits on cabinet in the home; (C) Jim Beam and Jack Daniels in a garage; (D) Tui beer at an outdoor event; (E) Rekorderlig Cider in the home; and (F) White Cliff wine in the home.

Exposure means that the majority of alcohol-related information provided to children via product packaging likely biases their perceptions of alcohol toward being just another ordinary commodity. Drawing on the evidence of children’s perceptions and reactions to tobacco health warnings on packaging, it is likely that similar warnings could influence children’s perceptions of alcohol and awareness of the risks associated with alcohol consumption (Brodar et al., 2018; Evans et al., 2017; Netemeyer et al., 2016). Further, it would appear from this study that product packaging on alcohol may breach New Zealand’s Advertising Standards Authority code that states that marketing, including product packaging, should not have “evident appeal to minors or . . . create confusion with confectionary or soft drinks” (Advertising Standards Authority, 2018).

This study had a number of strengths. First, this research provides one of the only quantified estimates of children’s exposure to alcohol marketing via product packaging, an aspect that previous studies have not measured (Chang et al., 2014; Snyder et al., 2006; Unger et al., 2003). Second,
wearable cameras provided unprecedented access into the world in which children live, including their homes, and real-time exposure to alcohol marketing in their day-to-day lives. Previous research on alcohol marketing has relied on self-reported data to estimate children’s exposure, which are prone to recall bias and measurement error (Chang et al., 2014; Gallopel-Morvan et al., 2017; Unger et al., 2003).

This study also has some limitations that may influence the interpretation of the findings. First, exposures within supermarkets were excluded from the overall estimate. Such exposures were too extensive to reliably code and have been explored elsewhere (Chambers et al., 2017b). Second, the conservative coding rules required more than 50% of the brand to be identifiable, repeat exposures were not counted unless a gap of greater than 30 seconds occurred, and only a maximum of three exposures of any given image were counted. These limitations likely mean the observed rates of exposure underestimate children’s true exposure. Third, the study did not attempt to analyze the association between exposure and drinking behavior. However, established longitudinal evidence has consistently shown that exposure to alcohol marketing is associated with children’s alcohol-related outcomes (Anderson et al., 2009; Jernigan et al., 2017; Smith & Foxcroft, 2009).

These results provide important evidence that can inform policies to reduce children’s overall exposure to alcohol marketing and alcohol-related harm. Restricting alcohol product packaging could reduce children’s overall exposure to alcohol marketing by up to seven exposures per day. One approach would be to introduce plain packaging, an action no country has yet implemented. Arguments for alcohol plain packaging are primarily based on the successful implementation of tobacco plain packaging (Al-Hamdani, 2014). If the effects of alcohol plain packaging mirror those for tobacco (Al-Hamdani & Smith, 2017; Germain et al., 2010), this approach could reduce children’s positive attitudes toward alcohol and heighten awareness of associated health risks. Recently, in England, a government report recommended that research be conducted into plain packaging for alcohol; it is one of the only countries to do so (Public Health England, 2016).

The findings of this research also suggest that there are multiple opportunities for health promotion. For example, effective health messages could be incorporated in alcohol product packaging. Health warnings send messages about the health risks associated with alcohol consumption, messages that are likely to be seen by children. Such action would also help children in differentiating alcohol from hundreds of other ordinary consumer goods. Many countries currently enforce basic nutrition labeling and health warnings on alcohol packaging, without legal action, suggesting that countries may enforce regulations on product packaging without the threat of litigation (European Commission, 2017). Israel, Kenya, Russia, the United States, and France are examples of countries that enforce health warnings through legislation. For example, Kenyan legislation requires alcoholic beverages to include two of five designated health warnings that must comprise no less than 30% of the total surface area of the package (International Alliance for Responsible Drinking, 2017).

In New Zealand, alcohol product packaging is self-regulated by FSANZ. Currently, one of the few health warnings is about the consumption of alcohol during pregnancy. However, evidence suggests that these warnings have had limited effect on increasing consumer awareness of the risks of drinking while pregnant, because the labels cover a very small section on the back of the bottle and do not appear on all alcohol packaging (Rout & Hannan, 2016). Further, by focusing on pregnancy, the labels are not likely to be effective in denormalizing alcohol consumption among children (Rout & Hannan, 2016). A more recent New Zealand study found that health warnings occupied less than 1% of the total surface area, contained ambiguous messages, and had a limited scope of alcohol-related harms (Timawi et al., 2018). In contrast, statutory regulation of alcohol packaging that enforces strong warnings about the health risks associated with alcohol consumption (including cancer, injury, or death), that cover a minimum of the packaging (e.g., no less than 50%), and that is positioned on the front of the packaging are likely to have a greater impact (Cecchini & Belloni, 2015; Pettigrew et al., 2016; Wigg & Stafford, 2016).

Kenya and South Korea have effective health warnings on alcohol packaging, providing exemplars for New Zealand. Moreover, New Zealand could extend beyond these models and attempt to introduce graphic health warnings, such as those on tobacco products and as proposed by Thailand for alcohol. New Zealand could also follow its own example set with tobacco packaging and implement graphic health warnings and plain packaging of alcohol products (Ministry of Health, 2018). However, such regulation appears unlikely given that New Zealand is one of a group of countries that referred Thailand to the World Trade Organization, citing its graphic health warning labels as a barrier to free trade (O’Brien, 2013). New Zealand is a major producer and trader of alcohol, particularly wine. The World Trade Organization citing reflects a clear conflict between promoting national economic growth and population health that occurs in New Zealand and similar jurisdictions. However, Delany et al. (2018) argue that international agreements must take a more comprehensive approach, addressing health and the environment, rather than the current approach that is overly focused on economic concerns.

In summary, New Zealand children are frequently exposed to alcohol marketing via product packaging, which contains limited information on the risks associated with alcohol consumption. Governments can regulate alcohol product packaging and defend such actions in international courts based on the experiences with tobacco plain packaging and
graphic health warnings. The findings in this research sug-
est that plain packaging and prominent health warnings
are required to protect children from a prominent source of
exposure to alcohol marketing and may increase their aware-
ness of the risks associated with alcohol consumption.

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Conflict of Interest Statement

The authors have no competing interests to declare.

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