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SSM - Qualitative Research in Health

How New Zealand adults who smoked understand novel tobacco 'endgame' policies. Qualitative analysis using the associative propositional evaluation model to determine comprehension.

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ABSTRACT

Tobacco smoking is a leading cause of early death. In 2022, New Zealand legislated to introduce three previously untried tobacco 'endgame' policies aimed at reducing demand for cigarettes and restricting supply. This study aimed to determine how a key stakeholder group, NZ adults with no intent or low belief that they could stop smoking by 2025, understood proposals to restrict nicotine in combustible tobacco and the number of tobacco retailers to a very low level, annually raise the age of purchase, set minimum prices, and ban filters.

The Affective Propositional Evaluation model was used to analyze participants' comprehension of the policies. That model and discourse analysis worked well for distinguishing which policies were familiar to participants and for determining participants' understanding. Responses and discourse on the novel policies (denicotinization, sinking lid on age of purchase, filter ban), the semi-familiar policy (reducing the number of retailers), and most familiar minimum pricing policy differed qualitatively. Compared to familiar policies evaluative judgements of the novel policies were often inconclusive. If approval of a novel policy was expressed, propositional evaluations suggested that approval was for the intent (to prevent young people from smoking) rather than the means to achieve it. The results complement the 'endgame' policy literature, adding the strength of feelings towards, and nuances of doubt about, the potential effects and unintended consequences and provides useful information for formulating metrics for future evaluation of 'endgame' policies.

1. Introduction

Although smoking rates are decreasing worldwide, smoking-related diseases remain the largest preventable cause of premature death. In 2019, smoking was associated with an estimated 7.69 million deaths annually (GBD 2019 Tobacco Collaborators, 2021). Significant disparities in smoking rates exist between high- and low-income groups, and in many countries for marginalized groups, such as those with mental health conditions and Indigenous peoples who have disproportionately high smoking rates (Glover et al., 2020). Identifying acceptable and effective interventions that can rapidly reduce smoking rates is of great public health significance.

Some novel, as in previously untried, policies intended to rapidly eliminate tobacco smoking have attracted attention at the government level. For example, the United States of America (USA) Food and Drug Administration (FDA) has been investigating the potential public health benefits of lowering nicotine in tobacco cigarettes to a subfunctional level (FDA, 2022). Meanwhile, in December 2022, the New Zealand (NZ) government introduced this policy with the passage of its Smoke-free Environments and Regulated Products (Smoked Tobacco) Amendment Act (the Act). The Act also introduced two other untried policies: a 'sinking lid' on the age at which people can legally buy smoked tobacco products and reducing the number of tobacco product retailers from an estimated 6000 nationally to a maximum of 599 (Section 20M (2)).

Usually, robust policy analysis is conducted before such novel interventions are introduced into law. Policy analysis includes the expectation that stakeholders will be consulted and that their responses will be considered alongside scientific evidence, such as randomized controlled trials and pilot studies in real-life settings. Economic and pragmatic determinants and the potential unintended effects of policy change should also be considered (Kaplan & Connelly, 2021; Luetjens et al., 2019).

Attitude surveys are often conducted to determine public and stakeholder support for policy change. Surveys gauging public opinion

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typically use a mix of question methods such as forced choice, yes/no, and Likert scales (Althaus, 1996). To ensure surveys measure what they intend to measure, questionnaire design should include testing for comprehension, construct, and internal validity. Survey designs should also strive to reduce the effects of response bias such as conformity or social desirability bias (Choi & Pak, 2005; Van Ryckeghem & Crombez, 2022).

Poorly developed surveys, selection bias, and researcher bias can undermine robust policy analysis. For example, a poll could extract a result that suggests that a majority favors a policy change that could inflict deleterious effects on minority groups normally under-represented in public polling. Unintended negative effects of a policy are more likely to occur when it is assumed that the public is informed about the policy, especially if it is novel (Gugiu, 2021). Qualitative research improves policy analysis by contributing in-depth insights into 1) people's understanding of and perspectives on proposed policies, 2) the many features of the target setting that will influence the implementation and outcomes of a policy, and 3) the processes by which a policy could achieve results that could include unintended outcomes (Maxwell, 2020).

1.1. Study aim

This study aimed to determine whether a key stakeholder group, NZ adults with no intent to stop smoking or low belief that they could stop by 2025, had sufficient understanding of the abovementioned 'endgame' policies to express an informed opinion of them. One model that can be used to explore how people form opinions about a stimulus is the Affective Positional Evaluation (APE) model of Gawronski and Bodenhausen (2007, 2014). The APE model is useful for identifying conflicting evaluations people make in everyday life, and is particularly suited for analyzing in-depth qualitative data. Therefore, we used the APE model as the theoretical framework for exploring participants' comprehension of the policies by identifying the cognitive processes used when evaluating them. To our knowledge, this is the first study to use the APE model to assess policy comprehension.

1.2. The APE model

The APE model (Table 1) proposes that two cognitive processes, associative and propositional, are activated when people are polled for their opinions on an object or policy. The model proposes that initial reactions to such a stimulus, especially a novel (previously unencountered) one, can include positive or negative affective reactions. These depend on the cognitive associations that a person makes with the policy. Propositional reasoning is evoked to rationalize a person's affective reaction and to reach an evaluative judgement. Evaluative judgements can be value judgements ("propositional evaluations of other attitude objects") or factual ("nonevaluative propositions"). The process includes comparison of a proposed policy with more familiar propositions that at the time are considered similar to the proposed policy to assist forming an evaluative judgement (Gawronski & Bodenhausen, 2007). The APE model theorizes that evaluative judgements are typically based on propositional reasoning. However, when little information is available about a policy, or a policy is completely new having never been implemented in a real-life setting, evaluative judgements are more likely to be influenced by affective responses. However, in the process of relating a novel policy to something familiar, people can make associations that are not directly applicable or comparable to the novel concept, and consequently, they might form an inconclusive or misdirected evaluation.

1.3. Research questions

This study first explores the feasibility of using the APE model to identify the cognitive processes participants use when presented with

Table 1
APE model response processes and coding key.

APE Model Process	Explanation
Immediate affective response (affective)	Initial response to first hearing about the policy, including exclamations of emotion, prosody, and other exclamations or speech disfluencies, for example, "hmm". In discourse analysis, these sounds and pauses are sometimes how people first express an affective reaction or they indicate that the person is thinking more deeply. They can indicate lack of knowledge or doubt (Tannen et al., 2015). If the emotion being expressed was ambiguous, the audio recording was listened to. Only the first occurrence of an affective response, after the participant being introduced to a policy, or to a similar policy was coded. If a policy had been mentioned in a previous interview, or the participant expressed familiarity with it, their response was coded as 'primed'.
Looking for existing knowledge (thinking aloud)	Responses indicative of the participant seeking to comprehend the concept, for example by asking questions for clarification or searching for associations, for example, "that's quite low, eh?" "What's the point of buying a cigarette then?" Linguistic markers such as "Okay" and "Mmmm" are often indicators of processing or receiving new information (Tannen et al., 2015). This suggests there may be no immediate association with existing knowledge or experience.
Further associative responses with something familiar (associations)	Participant talk about a different concept they are familiar with that they think might be similar to the policy being asked about. For example, "It's like taking beer and making beer zero percent alcohol" when low nicotine cigarettes were likened to low alcohol beer (something familiar).
Further associative responses based on experience (experiences)	Participant talk about their own or another person's experience of what they perceive the proposed measure would be like. For example, they talk about what it was like to obtain cigarettes when they were under the legal age of purchase, for example, "'Cause that's how I've got them when I couldn't, you know, legally get my own back in the old days".
Propositional evaluation of other attitudes (alignment with values)	The participant states a judgement revealing how the policy aligns with their values. For example, a participant may believe that adults have a right to freedom of choice over what products they should be able to buy, or they believe that laws are sometimes needed to protect children from risks. For example, "I don't think that prohibition is the way to go" or "I think it's good yeah totally."
Propositional reasoning (positive and negative consequences)	Statements explaining a participant's reasoning. This includes participants' consideration of potential positive and negative consequences of implementing the policy. It can also include motivational reasoning, which can indicate indirect effects of social desirability bias (Gawronski & Bodenhausen, 2007). For example, "I think it's a good idea … we'd probably be the first ones in the world to do that".
Evaluative judgement	Statements expressing the participant's opinion or concluding evaluation of the policy, for example, "Totally, I'd be all for it … But, I guess I wouldn't know until it happened".

novel policies and whether the APE model can be used to formulate hypotheses about participant comprehension of policies that had been proposed in the legislative process, especially the novel ones. Applying the APE model, we hypothesized that novel policies would be more likely to elicit affective responses and questions seeking clarification initially, before participants try to associate the policy with other interventions they have knowledge or experience of. Hypotheses can be useful in qualitative research, especially when new concepts are being explored, such as the aforementioned objective of assessing the feasibility of the APE model (Chigbu, 2019). Third, when presented with familiar policies, participants would be quicker to voice propositional evaluations and their reasoning (such as listing positive and negative consequences) and evaluative judgements.

We expected that the three novel policies would be:

a) denicotinization (capping nicotine in combustible tobacco products at a subfunctional level),
b) a sinking lid on the age of cigarette purchase; and
c) prohibiting filters in cigarettes.

Two semi-familiar policies used to assess if the cognitive process differed qualitatively were as follows:

d) restricting the number of tobacco retailers to a very low level; and
e) introducing minimum prices for tobacco products.

The details of these five policies are provided below.

1.4. Denicotinization

Denicotinization is the most unfamiliar of the policies, and thus more background information is presented than for the other policies. Two brands of reduced nicotine cigarettes (0.5 mg) per gram of tobacco (hereafter shown as mg/g) have been approved by the FDA as modified-risk products. This approval permits manufacturers to market cigarettes with reduced nicotine exposure claims (FDA, 2021). The FDA has proposed the development of a product standard to establish a maximum nicotine level in cigarettes below that pharmacokinetically detectable by consumers (FDA, 2022).

NZ's Act introduced a nicotine cap for combustible tobacco products of 0.8 mg/g from April 1, 2025. The policy intent was to make combustible tobacco products "less appealing and addictive" (Section 3A (a)(iv)). In the USA, preexisting manufactured cigarettes typically contain 0.8 g–1 g of tobacco with a nicotine content totaling 10–15 mg (Benowitz & Henningfield, 2013). NZ cigarettes have been found to contain higher proportions of nicotine, ranging from 18 to 28 mg/g (Laugesen & Fowles, 2005) to 44–45.8 mg/g (Institute of Environmental Science and Research, 2019). A level of 0.8 mg/g would approximate 0.72 mg of nicotine per cigarette. On average, 10% of nicotine is absorbed (yield) during smoking (Benowitz & Henningfield, 2013). Thus, the low nicotine cigarettes to be sold in NZ would yield approximately ≤ 0.08 mg/g. This is below the 2.4 mg/g (an approximate yield of 0.2 mg/cigarette) at which participants in reviewed trials consciously detected nicotine (Donny & White, 2022), that is, a subfunctional level.

Research on the effects of smoking denicotinized cigarettes has been limited to laboratory testing and controlled trials (Donny & White, 2022). One NZ trial (n = 1410) assessed the cessation efficacy of low nicotine (=<0.05 mg) yield cigarettes for people motivated to stop smoking (Walker et al., 2012). A later small feasibility cessation trial (n = 33) provided free <0.05 mg nicotine cigarettes to people who had no intention of stopping smoking and found no significant differences in the number of cigarettes smoked per day (Walker et al., 2015). Capping nicotine in combustible tobacco products including cigars, pipe, and roll-your-own tobacco to the subfunctional level of <0.08 mg/cigarette yield would be novel globally. At the time of writing, no jurisdiction had trialed this, and no research had observed the unintended negative

consequences of implementing such a policy in a real-world setting.

The Donny and White review (2022) speculated on the potential benefits and unintended consequences of reducing nicotine in cigarettes to a subfunctional level but concluded that further information is needed to inform policy analysis. One limitation of the review was that it grouped all trials of cigarettes containing nicotine at anything less than 2.4 mg/g and all participants had access to their usual cigarettes. Potential negative consequences included consumers altering products to increase the level of nicotine, and increased smoking prevalence if consumers form the erroneous belief that denicotinized cigarettes are less harmful than usual-strength cigarettes for example because of the FDA's decision that reduced nicotine means "reduced exposure" (Donny & White, 2022). They also warned that individuals with mental health conditions typically have higher levels of craving and other negative effects during abstinence, which could exacerbate their conditions (Donny & White, 2022). Among people with high dependency on smoking, abrupt cessation of usual-strength cigarettes could trigger acute withdrawal symptoms, which can include anger, irritability, and increased appetite (American Psychiatric Association, 1994).

Some attitude surveys have reported high public support for denicotinization (allowing sales of only very low-level nicotine cigarettes). Among NZ people who smoked, 73% supported denicotinization (Edwards et al., 2021). A survey of people who smoked daily, in Canada, England, Australia, and the USA were asked if they "support or oppose a law that reduced the amount of nicotine in cigarettes and roll-your-own tobacco, to make them less addictive" if alternative sources of nicotine were available (ITC project website, https://itcproject.org/). The percentage of respondents who responded affirmatively were 64%, 58%, 55%, and 51%, respectively (ITC Project, 2022).

1.5. Sinking lid on the age of purchase

A sinking lid mechanism (Tait et al., 2013) to gradually increase the legal age for purchasing combustible tobacco products until the sale of cigarettes to anyone is effectively banned, is another untried policy. The Philippine City of Balanga introduced such a policy, but it was never enacted (World Health Organization, 2021). NZ's Act bans the provision and sale of combustible tobacco products to people born on or after January 1, 2009. In 2027, when the affected people turn 18, the legal age of purchase will increase to 19 years. Every year after it would increase by one year. The Edwards et al. (2021) attitude survey reported that 78% of participants supported this policy.

1.6. Banning filters

The NZ Ministry of Health (MOH) (2021) proposed a ban on filters in cigarettes to make smoking "less appealing" and reduce littering, but the Act did not include this. However, it did provide for the development of regulations that reduce the appeal of combustible tobacco products, which may allow for the regulation of filters in the future. Bans on product ingredients, components, flavorings, or accessories to reduce the attractiveness or satisfaction of tobacco are not unknown. For example, San Francisco banned menthol cigarettes and flavored vaping liquids (Yang et al., 2020). However, filters and their features are erroneously believed to reduce harm (Hammond & Parkinson, 2009) and banning them could be novel.

1.7. Restricting the number of retailers

The Act introduced the licensing of tobacco retailers and reduction from an estimated 6000–8000 to a total of 599 nationwide by July 1, 2024. Licensing and restricting the number of retailers for vaping products, alcohol, and dangerous goods such as fireworks and guns are in widespread use, suggesting that this could be a semi-familiar policy.

1.8. Minimum pricing

Minimum pricing was not included in the Act. Pricing controls to restrict tobacco use, such as taxation, are a familiar policy worldwide.

2. Methods

We report interim findings from a prospective four-year longitudinal qualitative study of people who smoked, who had no intention to stop smoking, or believed they would not be able to stop by 2025, the government's target date to reach 5% or below smoking prevalence. The overall study aimed to identify facilitators and barriers to smoking cessation to inform public policies.

2.1. Study design

A longitudinal qualitative research (LQR) design was used to investigate the continuity or change in behavior over time, potentially influenced by macro-policy changes implemented to reduce national smoking prevalence. LQR has been extensively used in the social sciences, including community health (Wanat et al., 2021). This methodology is useful for determining facilitators and barriers to change, building an understanding of transitional behaviors, and how people make sense of and deal with these transitions (ibid). While the overall study used multiple data collection points, the data analyzed for this study were collected during interviews in the first two years, providing for in-depth analysis of perceptions held prior to the introduction of the proposed policies.

2.2. Participants and recruitment

Participants were NZ adults aged 19–81 years, representing a diverse range of demographics (ethnicity, age, and gender) from across the country.

Recruitment was conducted from June 2020 to March 2021 by placing advertisements in print and online media, including distribution through the researchers' professional networks and social media accounts. Enrolled participants were also asked to send the study advertisement to people they knew who might be eligible (snowball method).

Potentially eligible respondents who expressed interest in the study were sent a participant information sheet and consent form via email or post. These explained: the purpose of the study, what participants would be asked to do, who was conducting and funding the study, how participant identity would be protected, and that anonymized data may be published online or in publications. Participants who signed and returned the informed consent form were assessed for inclusion in the study using a sampling frame (Supplementary Table 1). Selection quotas were set to proportionally recruit adults varying in ethnicity, age, and gender, reflecting NZ smoking prevalence rates for these demographic groups. For example, Māori (the Indigenous people) were oversampled because they had disproportionately high smoking rates (20.9% for Māori versus 8.5% for Europeans, non-Asian, and non-Pacific people in 2020/21, MOH, 2022).

2.3. Data collection

The baseline naturalistic phone interviews, using a semi-structured interview schedule, collected background information such as participant demographics, current smoking and vaping status, smoking and cessation history including healthcare support, and intent to stop smoking. In addition, participants were prompted for their attitudes towards topical interventions or events that might impact their smoking consumption. Such events and policies were selected based on topics recently discussed by mainstream media in NZ. Using the same method, follow-up interviews asked about changes in smoking or vaping consumption and how and why changes, if any, may have occurred. In addition, participants were prompted for their attitudes towards existing topical and proposed interventions aimed at supporting cessation. The topics relevant to this study were explored in interviews conducted during May to August 2021 when media broadcast public health academics' lobbying efforts calling for the introduction of a range of 'endgame' policies and again during interviews conducted between December 2021 and March 2022 when the media discussed a MOH discussion document proposing adoption of the policies into law. Interview prompts and the interview schedule in which they were included are summarized in Supplementary Table 2. Baseline interviews took 20–60 min and follow-up interviews, usually conducted every two to three months (participant circumstances permitting), took 10–45 min. Interviews were audio recorded, transcribed by an independent service, and checked against the audio recording for errors by a research assistant.

2.4. Data analysis

Comments on the policies were contained in interviews conducted between June 2020 and March 2022. Of the 62 study participants, one withdrew, two were lost to follow-up, and 16 were not prompted for data relevant to this analysis due to delayed interviews. One researcher screened all transcripts from the period above for data relevant to this study. A total of 43 participants commented on at least one of the policies across 95 transcripts.

The transcripts were independently read by two other researchers. Using discourse analysis, the researchers identified and coded units of analysis (sections of narrative, including oral utterances) illustrative of the APE model processes. Thirty-one transcripts with insufficient responses were excluded. Similar utterances by a participant were coded once to avoid duplicate counting of a participant utterance or phrase. MAXQDA Analytics Pro (2020 version) was used for coding and sorting data by APE model processes following the methods of Tannen et al. (2015). Using Choi and Pak's (2005) criteria for identifying bias, responses to prompts coded as incorrect or leading were identified and discussed by the researchers until consensus was reached about whether such responses should be excluded from the dataset. Excluding potentially led responses was preferred for robustness. This led to the exclusion of two full transcripts, resulting in three additional participants being excluded. To strengthen inter-rater reliability, only units of analysis coded similarly by both coders were extracted to produce a final dataset to be described in the results. Therefore, the analysis presented in this study was based on 62 transcripts from 40 participants. The included units of analysis were then annotated with participants' pseudonyms and source follow-up (FU) interview numbers. Qualitative research can encompass a diverse range, and mix of data collection, analytic and presentation methods (Chigbu, 2019). Contrasting with a narrative storytelling style of results presentation, our results present examples of speech or utterances illustrative of the different APE model cognitive processes more fitting for reporting on our research questions, hypotheses, and given the deductive use of the APE model for the analysis.

2.5. Availability of data

The anonymized data coded in MAXQDA are available at Zenodo https://zenodo.org/doi/10.5281/zenodo.10902183. Anonymized lightly edited raw case story data presenting participants' smoking history, reasons for smoking, cessation experience, barriers and facilitators to stopping smoking and attitudes to tobacco control interventions are available at https://voicesofthe5percent.com/home.

2.6. Ethics

The NZ Health and Disability Ethics Committee (HDEC) assessed the study application for ethics review and deemed the study low risk,

indicating that HDEC approval was not required.

3. Results

Participant demographic characteristics, smoking or vaping status at baseline and follow-up interviews when changed if applicable, and the legend of pseudonyms are listed in Supplementary Table 3. An overview of participants' responses to each policy in the order of the APE model response processes with exemplar quotes is provided next. The same results were used to assess whether APE model response processes differed qualitatively by policy type. The quotes for each APE model response process by policy are listed in Supplementary Table 4. Finally, the extent to which the response processes followed the chronological order suggested by the APE model is considered.

3.1. Denicotinization

Immediate affective responses to the denicotinization policy included expressions of shock ("Oh my gosh") or horror. Considering whether she would smoke low nicotine cigarettes, "Maia" said "I don't know. I'm stressing out now" (FU6).

Some questions of the interviewer after the initial affective response sought clarification about the policy: "That's quite low, eh?" ("Kelvin" FU2); "And that will be in 2027?" ("Mahalia" FU6); "What's the point of buying a cigarette then?" ("Mei" FU2); and "Nikora" said: "Do you reckon they're gonna get away with it?" (FU1). Other statements indicated participants were thinking aloud about how the policy might affect them. For example, "Elspeth" said: "I think it's, well for me, it's a habit so if there was nicotine in it or not would it make a difference?" (FU5) and "Andy" appeared to think aloud about the existence of denicotinized cigarettes before seeking to associate the policy with something he had experienced. During FU7, when the full policy to limit nicotine to a subfunctional level was explained, his reaction was "interesting." After further explanation from the interviewer, he said "Okay. Okay. Yeah. Mmm. Yeah, yeah", indicating a search for associations. He then made a comparison with zero-alcohol beer. "Kelvin" (FU2) also thought smoking denicotinized tobacco might be like drinking zero-alcohol beer.

Other behaviors participants thought might be like smoking low nicotine tobacco included smoking fake (no-nicotine cigarettes) used as props in movies ("Tane" FU6), smoking lawn clippings ("Mei" FU2), or light tobacco ("Henry" FU6). In most cases, associations were made only in the first interview in which the topic was introduced and not subsequent ones. One exception was "Andy's" comparison with zero-alcohol beer, which was made during his second interview on the topic.

Some participants looked to their own experience for an association that might help them form an opinion on smoking denicotinized tobacco. Several thought that it might be similar to vaping with low or no nicotine ("Knife" FU4; "Kiwa" FU4; "Wairere" FU5). For example, "Tayla" said "I tried the ones with nicotine and the ones without nicotine and to me it didn't really make a difference. I mean I was only on a low, low mg of nicotine in the vape." (FU3) But, later she stated, "I've never smoked a cigarette with no nicotine, so I don't know what, like what, if it would affect the taste of it. Or I don't really know how that would affect me actually." (FU3) By contrast, "Nigel" believed that the effect of nicotine in cigarettes delivered the relief he felt after his first cigarette of the day. Thus, he imagined that smoking a very low nicotine cigarette would affect him in the following way:

> Because [I] always look forward to my first smoke, well, I don't look forward, but it's always a relief to have my first smoke of the day. I think it could be a big deal not having the same amount of nicotine happening every morning. (FU3)

Some propositional evaluations participants made were based on the consequences they imagined for themselves or others who smoked if usual-strength cigarettes were unavailable. Causing these consequences

to occur conflicted with some participants' values, for example, "Kelvin" and "Amber" appeared to believe that people who smoke should be offered an alternative: "… that would be kinda cruel if they didn't offer an alternative with the same amount of nicotine." ("Kelvin" FU3); "… like you're taking away all of our options by taking that away." ("Amber" FU3). "Tui" appeared to believe that adults had a right to a certain amount of autonomy over their behavioral choices: "We're old enough to choose our own choices." (FU2).

"Hineawhi" appeared to be concerned that tobacco companies would continue to benefit from the restriction to very low nicotine cigarettes, suggesting that she believed they shouldn't: "Wow! And where are they going to get these low nicotine cigarettes from? The same tobacco company?" (FU6).

Many participants exhibited propositional reasoning when they expressed expectations and reservations regarding the potential positive and negative consequences of the policy, as summarized in Table 2.

Some potential positive consequences participants imagined might result from the denicotinization policy were that it would help people who wanted to stop smoking to reduce their consumption ("Ariana" FU9; "Maka" FU3; "Knife" FU4). "Roger" thought it could lead to fewer people smoking, but he expressed uncertainty that this would occur when he said: "And if there's less nicotine, I'm not sure what would happen actually. It might work that you get less smokers." (FU1).

"Tiana" thought that it would be good to enjoy the social aspects of smoking a cigarette without nicotine. As she said:

> I like the social aspect of it, and I like the ability that it gives for, like, move away from situations. Or being social or, like, I mean if they still, if I could still have a smoke that just wasn't with nicotine, it probably would be less bad. (FU2)

Most participants who reached an evaluative judgement opposed the policy. In addition to "Tayla" quoted above, some participants concluded that the concept was too novel to state a definitive opinion. For example, "Alna" said: "Yeah, I can't really, yeah, 'cause it's like hard to say what you, how you will react to it or how it will be if you, if you didn't, if you've not tried it." (FU3); and, "Amber" said: "It's going to stop people from wanting to smoke, but I'm unsure on whether that would mean people would want to try and smoke more. Or whether it would mean they would actually smoke less." (FU6).

3.2. Sinking lid on the age of purchase

Affective responses to the sinking lid on the purchase age policy included expressions of anger, contempt or disapproval, surprise, and confusion: "I'm kinda pissed off at, not the law, 'cause I can't do crap about that." ("Scott" FU7); "That's a joke." ("Bled" FU7); "What about me? I'll be 81." ("Henry" FU6); and "Julia" said "Wow!" in an incredulous tone. (FU6). "Miri" expressed surprise as an affective response, followed by a question indicating incredulity: "Oh wow! Ever?" (FU1).

Table 2
Perceived negative consequences of denicotinization.

Consequence	Participant and interview number
People getting "angry"	"Elspeth" FU4, "Scott FU8″
Hardships for those with high dependency	"Anaru" FU3
Effect on those with mental health conditions	"Nigel" FU6
Increase in the black market supply	"Mei" FU4, "Maka" FU3, "Roger" FU1.
People switching to higher risk alternatives	"Amber" FU3, "Alna" FU6, "Anthony" FU2
An increase in "homegrown" tobacco	"Scott" FU4; "Maka" FU3; "Bled" FU5
"Cause more poverty" as people "spend more" to get more nicotine	"Kiwa" FU4, Maia" FU6
A decrease in foreign tourists visiting NZ and subsequent downturn in income from tourism	"Amber" FU3

There were questions on the effectiveness of the policy ("Hana" FU4), and on the possibility of a black market developing ("Edward" FU4). For example, "Tane" asked: "Raise it every year after that? … They're just asking for a black market, aren't they?" (FU6).

"Maka", "Maia", and "Hana" skipped expression of an affective response when first introduced to the policy and just stated an evaluative judgement approving of the policy.

Some participants appeared to draw on associations between familiar or similar interventions and outcomes. They thought the policy would be subverted like the way under 18-year-olds currently obtain cigarettes. An example "Bled" gave was that of "a man going into a liquor store, you tap him on the shoulder and say look here's some money, would you buy us a case of beer. And the same thing with tobacco." (FU7). Similarly, "Kiwa" said: "it will be the same thing as when you go to the liquor store, and you know some people skulking around the liquor store to ask the older people to buy their alcohol for them." (FU4).

"Scott" drew on his own experience of when he and his son began smoking at a young age:

> We caught him smoking. Basically, we now know that he is smoking weed, drinking, and smoking, vaping, smoking cigarettes, smoking weed, and drinking at 14. (FU7)

"Alna" and "Miri" also referenced their own experiences. This appeared to lead to a value proposition, suggesting that they did not want young people to smoke. Consequently, they expressed support for the policy's purpose. For example, "Miri" said: "Oh. I don't want my kids to start smoking because it's not a nice addiction." (Miri FU4); and "Alna" said:

> Smoking is not a good habit … So, I know these things. Do I still enjoy smoking? Absolutely, but do I want my children to smoke? No. So yeah, I think it's just when you look at it from your own situation and then, like I'm now addicted to smoking and I know that, or vaping or whatever. And you know, kind of feeding your own addiction is what you're only looking out for, you know. So, would I want my children to smoke? (FU6)

After associating the policy with the smokefree policy in prisons (which in NZ, completely bans the presence of tobacco on the premises), "Edward" expressed a propositional evaluation suggesting that the policy conflicted with a value he held about not undermining people's wellbeing:

> The government wants to be a bit careful about the whole thing, the same thing as you know, taking the rights of prisoners away from not smoking. Well, if somebody smokes all their life, putting them in jail and taking their privileges away from them is not going to do the prisoner any good is it? (FU4)

A few participants discussed the potential negative consequences of the policy. Their propositional reasoning included that a black market could develop because young people could always get tobacco from their elders ("Sheree" FU5; "Tane" FU6). "Kara" (FU5) thought some people denied access to tobacco smoking might switch to using cannabis or methamphetamine, and she said: "My god it's just going to create a black market isn't it? … it's going to be the new marijuana, the new meth and all that sort of stuff. Oh madness." Whereas "Hineawhi", who had switched to vaping, was concerned that young people might switch to vaping: "If children are currently under 13 will no longer be able to, oh well, I've noticed an uptake in youth who are vaping." (FU6).

"Maka", "Maia", and "Nigel" considered that discouraging or preventing young people from starting to smoke would be a positive consequence. Their statements were: "At least it's giving the youngsters the opportunity not to be able to smoke, I guess." ("Maka" FU3); "I don't know, there's a lot of young people I know who aren't really into buying cigarettes or smoking anyway. So, I guess in a way it is working for the next generation." ("Maia" FU6).

Final evaluative judgements supporting the policy were offered by several participants illustrated by the following quotes: "I totally agree with that, absolutely. Yeah. I've no issues with that." ("Andy" FU7)

> Kind of that suits me because it's not going to affect me, but it's still going to be in my favor that I know that my kids are not going to, it's not going to be available, accessible for them you know? ("Alna" FU6)

> I'm in total agreeance with it, I think it's awesome … I could get the age wrong. But anyone at that age in 2027 that turns 13 or something, anyone under that age will never be allowed to smoke, like cigarettes. ("Ariana" FU9)

"Miri" expressed some support for the policy but was unsure it would work as intended: "I kind of support it and then, you know, I don't know if it's gonna work that well or not." (FU4). Meanwhile, "Nigel" said "I'd have to say it would be effective", but he prefaced that with "I wouldn't know". (FU6).

"Bled" and "Bulma" opposed the policy because it conflicted with their values. In the following quotes they appear to express concerns about using neo-prohibition as a general principle: "It won't fly … Look this government are becoming very dictatorial" ("Bled" FU7); and "Bulma" said:

> I think prohibiting more substances that are, you know, I think that's a bad idea. I think generally if you have prohibition when it comes to drugs and alcohol, including kind of like tobacco, you know nicotine, is a bad idea. And yeah, I just, it rubs me the wrong way. (FU6)

"Mei" was unsure about whether a law was needed to implement a sinking lid on the purchase age, but she did not provide any reasons: "I don't know. Like I mean, yeah … but making a rule out of it, I'm not sure aye. I don't know." (FU4) "Nigel" however did expand on why he was unsure if the policy would be effective, though he appeared to support the government trying to stop young people from initiating smoking:

> I wouldn't know … even though they say 'rules are for fools' I think there will be a lot of people who worry about getting a criminal record. And worrying about it being under the drugs thing when it comes to employment and travel and things like that. They aren't going to quit smoking, but I guess they [the government] have to start sometime somewhere. (FU6)

3.3. Banning filters

Affective responses to banning filters included expressions of anger, surprise, and contempt. Some representative responses were: "Gosh … I think that would be really shitty." ("Elspeth" FU5); "I've never, gee that's weird." ("Andy" FU4); and "It's dumb. It just sounds dumb." ("Knife" FU4).

"Knife" and "Edward" thought that filters reduce the harm from smoking cigarettes. They expressed incredulity that filters would be banned: "I don't understand that one much because it was my understanding that cigarettes without filters were worse for you." ("Knife" FU8)

> Well, just for the simple fact it does take a certain amount of the nicotine and stuff out of the cigarette, doesn't it? And if they take it out, then it's the whole lot going into your system. ("Edward" FU2)

In attempting to associate the proposed policy banning filters with something familiar "Elspeth" thought of other behaviors that represent a risk to health and how proportionately similar interventions are not implemented to reduce them:

> Why are they not putting restrictions on how much people get McDonald's, you know, how much people can buy coke you know, fizzy drink or like all this sort of stuff? Alcohol sort of thing, you know, and it's like yeah everyone's just targeting smoking, but not all these other things. (FU4)

Some participants had smoked with and without filters and drew on that experience. "Tayla" (FU3), "Alna" (FU3), "Ariana" (FU5), and "Moana" (FU4) said they don't like to smoke without a filter. "Bled" (FU5) said it would make no difference to him. "Knife" (FU4) said that they don't use filters and "Bulma" (FU6) said they don't like filters.

Examples of propositional evaluation of the policy against held values, included "Nigel" who appeared to have honesty as a value. He supported the policy because he thought that filters misled people to think that smoking was safer than it was. As he said: "I guess, that'd be okay. It's just that I know that they don't really do anything." (FU3) In a later interview, he expanded on this:

> Oh, okay, I can kind of see the logic because it's, especially on tailies, because it's the misleading, it's a misleading device in the start off to make it look like, as if it's taking chemicals out of the cigarette. (FU6)

"Marion" had the same concerns about filters being misleading. She also appeared to value environmental protection, as she expressed concern about the effect of discarded filters on the environment (see her exemplar case story in Supplementary Table 5).

"Alna", "Bled", and "Roger" appeared to have as a value adult autonomy and democracy. They opposed a filter ban because: "that's where the whole thing comes in with kind of forcing you to do the wrong thing" ("Alna" FU3); "you can't have governments doing, telling people what to do" ("Roger" FU1); and "democracy is slowly disappearing, and things like that only add, put another nail in the coffin to democracy." ("Bled" FU5).

For a few participants, some negative consequences were the reason for concluding that the policy would be ineffective. "Anthony" (FU2), "Mei" (FU2), and "Alna" (FU6) thought banning filters would be ineffective because it would be easy for people to make filters from cardboard, cotton, tampons, or other material. "Alna" expressed concern that a black market in filters would develop (FU3). "Kara" asked whether tourists would be deterred from visiting NZ if they could not buy filters (FU1), and "Knife" was against the policy because they believed that smoking without a filter would be more harmful: "it would just mean that people were smoking, but it was messy and more harmful." (FU4).

Most participants who expressed a final evaluative judgement opposed it. The rest were ambivalent or didn't know what they thought of it, as illustrated in the following quotes: "I don't know. I think we'll just have to wait and see what happens." ("Henry" FU6); "I don't use a filter, so I don't know. It doesn't worry me one way or the other." ("Edward" FU4); "Maybe, I'm not sure. It depends 'cause you adjust, adapt." ("Moana" FU4); and "To start with, it will [affect me] while I get used to it, without the filters. But, once I've got used to it, I'll just carry on [smoking]." ("Julie" FU6).

3.4. Reducing the number of retailers

A common response to the proposed large reduction in the number of retailers was surprise: "Wow. That'll be a major change." ("Hana" FU4); "Wow. Oh my god!" ("Wairere" FU5); and "Oh man!" ("Tane" FU6).

An affective response showing surprise was often followed immediately by questions indicating that the participant was thinking aloud and wanting more clarification. For example, "Tane" asked, "That would be barely like what, 30 or 40 shops in each region?" (FU6) "Maka" said: "Wow! So only 500 stores will be selling cigarettes?" (FU3) and "Hineawhi" said: "Oh wow! By 2027?" (FU6) See Supplementary Table 5 for a fuller account of her views.

On first hearing about the policy, "Julie", "Edward", and "Sheree" did not express an affective response but mentioned negative consequences (see below). Initially, an incorrect but similar sounding policy of limiting tobacco sales to supermarkets was described to "Ariana". Associating the policy with similar concepts, she thought that the inconvenience of not being able to buy cigarettes from the local convenience store would be like not being able to buy milk or bread there either.

"Edward" associated the policy with the USA experience of prohibition on alcohol: "… it just goes back to the, you know, the 20's in the States when they had prohibition with booze. Well, the black marketers, the crims were having a field day." (FU1).

The policy prompted "Scott" (FU8) to reminisce about his teen years when there were tobacconists and the thought the government was probably trying to create tobacconists (retailers who don't sell other products). Conversely, "Nigel" recalled his experiences of going into town to stock up, suggesting his thinking was shifting to projecting a potential consequence of the policy that people would stock up: "… we'd go into town on a Friday, and I'd be sure to get three, about three packs just to see me through the week yeah. Same that people plan for." (FU6).

Propositional evaluations of the fit of the policy with values led "Knife" to express concern that a reduction in retailers could have a deleterious effect on marginalized groups, because it would make it more inconvenient for them to find places that sell tobacco.

> No. I think that's like ridiculous … Marginalized groups of people for years figure [smoking] is a coping tool for life's stresses. Like, which, you know, they have been identified as a group of people who smoke and who are faced with the most like adverse health effects from smoking. That just put, that just makes their lives harder. (FU8)

Propositional reasoning statements describing potential negative consequences of the policy were common. Sub-themes included that people would not stop smoking, they would simply be inconvenienced ("Edward" FU4; "Nigel" FU6; "Alna" FU6). "Amber" thought elderly people would be particularly inconvenienced (FU6). Others thought small businesses would suffer a loss of business ("Maia" FU6; "Marion" FU5) and there would be an increase in aggravated robberies of stores ("Bled" FU7). "Wairere" thought it would encourage people to grow their own (FU5) and "Sione" thought it would encourage people to switch to marijuana. (FU4).

Final evaluative judgements were mostly against the policy. A few participants were unmoved by it, for instance, "Maia" (FU6) and "Wairere" (FU5) thought the policy wouldn't affect them, and "Andy" appeared resigned to the prospect that the policy would be implemented regardless of the effects on people. However, he was glad that his father wouldn't have to experience it:

> Oh, oh okay. Well yeah, I think tobacco's on its way out, so whatever they do it doesn't matter. If you have a, the timeline then, you know people just adjust to it anyway. The great thing is the people like my father [who quit smoking] don't have to go through that. (FU7)

3.5. Minimum pricing

Apart from "Marion" whose initial affective response was to express shock (FU5), minimum pricing attracted an affective response mostly of resignation. For example, "Mahalia" said "that was always gonna happen though." (FU6) and "Hana" already expected "they would [increase the price]." (FU4). "Maia" however did seek further clarification: "And does that keep moving up or does it stay that minimum?" (FU6) Thus, most participants appeared to be familiar with minimum pricing and some participants did not appear to care about the consequences for themselves as the following quotes illustrate: "… it won't affect me anyway." ("Julie" FU6); and "… heck oh well, we'll see what happens eh?" ("Henry" FU6).

None of the participants voiced any cognitions that suggested that they needed to associate the policy with something familiar. "Scott" (FU8) and "Mahalia" (FU5) however did refer to previous experience with price controls, which was that the price always increases over time.

Evaluating how the policy aligned with his value of seemingly minimizing government intervention and taxation, "Edward" asked:

> Who is going to get the extra funds in that situation? The government or what? … Yeah okay. Say for example, the … price is 10 dollars,

okay, and they increase that by say, to 11 dollars. Okay where's that dollar going to go? You say it's not a tax. Well, okay, who's going to take that dollar? The retailer, or the seller, or the taxpayer, or the government? (FU4)

A few participants engaged in propositional reasoning and discussed potential negative consequences. These included the possibility that "burglaries and beatings" in tobacco retail stores would increase ("Bled" FU7) and "Teuila" thought raising the price would make no difference to people who smoke:

If the price go up, the people don't care about the price as long as they get a smoke. You know, as long as they feel comfortable when they get their smoke then they're settled. (FU4)

Final expressed evaluative judgements were mostly opposed to the policy, except for "Marion" who expressed approval of the intent behind the policy, as did "Sione" when he said: "Well, as long as it helps to stop it, especially the young ones coming up now." (FU4).

3.6. Alignment with APE model

The APE model provides for cognitive processes that overlap or occur out-of-order. Nevertheless, some participants provided more responses (Supplementary Table 5 exemplar case stories) and, in some cases, a chronology reflecting the order of the APE model processes was discernible. "Ariana's" case story demonstrates how APE cognition can occur out of order. She started with an affective response then skipped to propositional reasoning considering potential positive and negative consequences of denicotinization, but her potentially premature evaluative judgement ended with her saying she "wouldn't know". In her following interview she was more definitively in support of the policy, but again mitigated that by saying, again, she "wouldn't know" until she'd tried the denicotinized cigarettes. Her attempts to associate the policy with past experiences failed, and her case story shows her speculation about what the effects might be. "Tayla's" case story also started with an affective response – a negative one. She then discussed potential negative consequences (proposition reasoning), followed by a propositional evaluation of the sinking lid on the purchase age policy against a held value. Associative responses that followed show her justifications for that opinion by recounting some of her own experience of tobacco retailers contravening the age purchase law and her and others' experiences of developing addiction to smoking. She concluded with an ambiguous evaluative judgement. "Marion's" discourse on banning filters more closely followed the chronology of the APE model processes. After initially expressing an affective response, she drew on her experience of smoking cigarettes with filters. She then evaluated the policy against her values, mentioned potential positive consequences, and concluded with an evaluative judgement in support of it. "Hineawhi's" exemplar, though shorter and omitting an evaluative judgement about reducing the number of retailers, similarly followed the order of the APE model processes, as did "Marion's" exemplar showing her cognitions about minimum pricing.

4. Discussion

The APE model was useful for evaluating the comprehension of tobacco 'endgame' policies. We hypothesized that novel policies would be more likely to elicit affective responses and questions initially seeking clarification, which the model suggests indicates the novelty of the stimulus. In general, this is what we observed. Participants then progressed to trying to associate the novel policies with something familiar they had knowledge of or that they had experience with. Many participants considered how the policies aligned with their own values and discussed potential positive and negative consequences of the policies. These cognitions appeared to contribute to the formation of an evaluative judgement. While some participants stated a firm opinion, many

suspended judgement saying they did not know enough, or that they wanted to think further about the consequences or speak to others who would potentially be negatively impacted by the policy. As hypothesized, when presented with the semi-familiar policy of reducing the number of retailers or the most familiar policy of minimum pricing, participants were quicker to progress to voicing propositional evaluations and their reasoning (such as listing positive and negative consequences) and evaluative judgements.

While some participants did not strictly articulate the cognitive processes in the APE model description order, others did. However, Gawronski and Bodenhausen (2007) allowed associative and propositional responses to be expressed in a non-ordered way, as we observed. Evaluative judgements were sometimes presented prior to the participants articulating their associative or propositional responses, explaining how they reached their evaluative judgement. Evaluative judgements expressed early were sometimes retracted, or mitigated by the participant stating that they couldn't "really know" because they had no experience upon which to base an evaluative judgement.

As Gawronski and Bodenhausen (2007) warned, some statements can elude a clear categorization as one APE model response or another. For example, "Edward's" comparison between age-based purchasing restrictions and a ban on smoking in prisons could have been coded as an association or a value. Regardless of a few ambiguous responses, in general the cognitive processes proposed by the APE model did apply.

4.1. Quality of responses to novel versus familiar policies

Responses and discourse on the novel policies (denicotinization, sinking lid on the purchase age, and a filter ban), the semi-familiar policy (restricting the number of retailers), and the most familiar minimum pricing policy differed qualitatively.

Novel policies elicited stronger affective responses of shock, horror, and disdain. Denicotinization appeared to be the most unfamiliar policy, eliciting more intense responses across each APE model response process. Compared to familiar policies, the quality and breadth of affective responses, searches for clarification, and attempts to relate to something familiar indicate that consideration of the novel policies appeared to consume more mental resources. Evaluative judgements were mostly inconclusive.

Responses to the reduction in the number of tobacco retailers were not completely familiar, as indicated by affective responses more characteristic of wonder, whereas the typical affective response to minimum pricing was one of resignation. For these policies, propositional reasoning and recounting of positive and negative consequences were more immediate. There were also fewer questions and other indicators of thinking aloud, indicating less hesitation in moving from the affective response process to the propositional process, as the APE model predicted. Participants could relate these cognitions and consequences to policies or the perceived effects of the policies on themselves or others, with fewer associations not directly related to experience. As hypothesized, participants were more familiar with reducing the number of retailers and the minimum pricing policy.

One unexpected finding was that the sinking lid on purchase age, despite being untested anywhere in the world, elicited a cognitive process similar to the response pattern to familiar policies. Participants expressed fewer affective responses, and they expected that the policy would give rise to similar behaviors that they had personally experienced and witnessed of people circumventing restrictions on sales to people under 18 years of age.

Discourse analysis and the APE model worked well for distinguishing which policies were familiar to participants and for determining participants' comprehension of the policies. Discourse analysis additionally helped identify inaccurate knowledge that participants had about the harms of smoking or vaping. For example, "Tiana" appeared to not understand which components of smoking were harmful or how dependency on smoking was maintained. "Knife" and "Edward" thought

banning filters seemed vindictive. Like many people, they believed that filters reduce harm from smoking (Hammond & Parkinson, 2009).

"Anthony" expressed concern that the denicotinization policy would lead to an increase in vaping, and "Hineawhi" identified the same consequence from a sinking lid on the purchase age as a potential negative consequence. That is, an intended consequence of the policies, further to the NZ government's Smokefree Environments and Regulated Products (Vaping) Amendment Act (2020) to encourage people who smoke to stop smoking or at least switch to vaping (McCall, 2022), was interpreted as a negative consequence. Incorrect knowledge of the risks of vaping is widespread (Delnevo et al., 2022) and has been suggested as a barrier to its uptake as a cessation aid (Mendelsohn et al., 2023; Svenson et al., 2022). This study also found that misinformation regarding vaping could be a barrier to smoking cessation.

Many participants believed that these policies would result in a range of potential negative consequences. Regarding denicotinization, many of the potential negative consequences participants imagined mirrored those identified by Donny and White (2022), including increased illicit trade in tobacco and associated crimes, negative effects on marginalized groups, and intense withdrawal symptoms among people with high dependency on smoking, particularly those with mental health issues. Adding to Donny and White's (2022) warning that some people could be attracted to very low nicotine cigarettes because they think less nicotine means the products are "safe", some of our participants thought that people might increase smoking consumption to compensate if there was insufficient nicotine in cigarettes. Conversely, some participants underestimated the satiating effect of nicotine in cigarettes. However, misinformation about nicotine is widespread, with even physicians incorrectly attributing smoking-related diseases to nicotine (Delnevo et al., 2022). If the products are introduced, health messaging may need to clarify that smoking very low nicotine cigarettes represents the same health risk as smoking usual-strength tobacco.

The full list of potential negative consequences of denicotinization could be useful for informing metrics to be included in future evaluations of the implemented policies.

When interviewed on the sinking lid on the purchase age policy, value statements and evaluative judgements suggest a motivational response. Participants who expressed these views favored the *intent* of the policy, which was to prevent young people from smoking. The same response can be found in "Marion's" overall support for a smoke-free NZ, despite strong misgivings about the minimum pricing policy and her belief that the policy is unnecessary because smoking among youth is declining.

The influence of values and motivational reasoning described in the APE model could explain these responses. Such influences could reflect a social desirability bias or genuine value-based concern arising from the belief that young people might initiate and be unable to stop smoking. In either case, it suggests attention to risk of bias is needed when interpreting opinion poll results purporting support for the strategies used to achieve 'endgame' goals versus support for the intent of such policies.

Many participants expressed negative affective responses to the proposed policies including anger, disdain, and shock. Others expressed ambivalence and resignation. Propositional reasoning was negative or ambivalent for most policies, except for the sinking lid on purchase age policy. This created a mix of approving and disapproving evaluative judgements. The latter suggests that some participants supported the policy's intent based on their experiences of developing dependency on smoking at an early age and the value proposition that future generations should be protected from this.

The use of the APE model to identify affective and propositional responses revealed a complexity in thoughts and feelings about the policies, which contrasts with the results of poll-like surveys reporting high rates of approval for all the proposed policies from people who smoked or recently quit (Edwards et al., 2021; McKiernan et al., 2019), a demographic with some similarity to our study participants.

The semi-structured qualitative survey method we used elicited responses to both familiar and unfamiliar policies, which show how much information would have been lost if relying on a simple survey instrument. "Ariana's" evaluation that she would be "all for" the denicotinization policy would probably have been noted in such a survey as approval of the policy and the strategies by which it would be implemented. Her doubts about the policy and ambivalence about rushing into an untried policy without trialing it first would likely have been overlooked. The same ambivalent attitude towards supporting intent, but not the means to achieve it, was found in "Tayla" and "Marion's" case stories on the sinking lid on the purchase age and minimum pricing policies respectively.

Regarding the overall aim of the study to determine whether participants sufficiently comprehended the 'endgame' policies to express an informed opinion of them, we conclude that at least on the novel policies - they did not.

4.2. Implications for policy analysis

Policy formation should include consulting stakeholders (Luetjens et al., 2019), ensuring that the public is accurately informed about novel concepts, and if they are not, facilitating that comprehension. This can be achieved through facilitated workshops, intra- and inter-sectorial discussions, and interviews with stakeholders that provide policymakers and the public exposure to different viewpoints. Additionally, stringent attempts should be made to identify potential unintended consequences. Sometimes, it may be necessary to suspend consideration of a policy until there is more information on its effectiveness, opportunity cost, and potential negative consequences. Preferably, this information should be obtained through research including trials conducted in real-life settings.

This was not done prior to the adoption of the Act introducing the denicotinization policy, sinking lid on age of purchase, and reduction of combustible tobacco product retailers to a very low number. The proposed law change and its related documents omitted information on how low the yield of nicotine in denicotinized cigarettes would be, the potential effects of abrupt withdrawal from tobacco smoking, how few retailers would remain in operation, and the lack of real-life evidence of the potential effects of implementing these policies. Such omissions can undermine the ability of the public and stakeholders to form informed opinions.

Other criteria for a "successful" (Luetjens et al., 2019) policy include determining if the policy will fulfil its intent and that the costs, such as the potential increase in black market crime, and benefits, such as reduced smoking-related morbidity and mortality, will be distributed "equitably in society". That is, who will benefit from the policies and who will be harmed? Luetjens et al. (2019) recommend that the process of formulating policy should allow for "robust and thoughtful consideration" and stakeholders should experience the process as "just and fair". Doamekpor (2004) recommended that the more complex and value-laden a policy is, the more extensive social involvement should be, and the longer the consultation period required.

Some participants indicated that they did not think that the NZ policy process was just and fair. A sense of powerlessness to impact the policy process and expressions of resignation were common among the participants, especially regarding the minimum pricing policy. It was not clear to some participants that the costs and benefits would be distributed equitably, for example, because the costs to people with a high level of dependency on smoking, particularly those with mental health conditions, marginalized groups, and low-income people, could be higher. These higher costs could include more intense negative consequences of acute nicotine withdrawal symptoms and the exacerbation of mental health conditions (Donny & White, 2022). Financial costs associated with the greater time and cost involved in accessing cigarettes could have a disproportionately negative effect on low-income people who live a long way away from one of the 599 tobacco retailers.

Precedents for facilitating wider and more informed input on novel policies from stakeholders and the public exist. For example, consultation on allowing genetically modified organisms in NZ was lengthy (Eichelbaum et al., 2001; McGuinness et al., 2008). At least five years of highly critical debate and demand for evidence on potential negative consequences and costs preceded NZ regulations supporting the use of vaping by adults who smoked to facilitate cessation.

The government committee debating the proposed 'endgame' policies noted novel aspects of the new policies. However, the lack of previous experience of the policies worldwide was not considered significant enough to delay implementation. However, the Act included a provision that denicotinization, a very low cap on the number of retailers, and a sinking lid on purchase age policies be reviewed by 2029 (Section 105). This study provides useful information for formulating metrics for future evaluations of novel 'endgame' policies. The results will also be useful for researchers to develop hypotheses aimed at testing the APE model or designing surveys to explore how attitudes vary by age, gender, and ethnicity.

Analysis of the benefits and costs of a policy should also think about the potential effects on other public health goals. Two participants thought that denicotinized cigarettes might be like drinking zero-alcohol beer. Perceiving similarities between policies designed to reduce smoking and alcohol consumption and thinking that tobacco control policies could be applied to reduce alcohol consumption, is a contemporary debate. One difference is that the NZ denicotinization policy would have been similar to an outright prohibition, in that only subfunctional denicotinized cigarettes would have remained on sale. Conversely, zero-alcohol beer is sold alongside alcoholic beverages. The negative consequences of alcohol prohibition led to competing problem definitions and solutions for reducing alcohol-related harm (Gneiting & Schmitz, 2016) including a rejection of prohibition. Despite this difference, parallels between the challenges of global control of tobacco and alcohol, and the perceived success of the Framework Convention on Tobacco Control (FCTC), has prompted suggestions that the FCTC model can be used to develop a Framework Convention on Alcohol Control (Taylor & Dhillon, 2013), or that the FCTC itself should be extended "beyond tobacco" to address Sustainable Development Goals (Silva, 2018), which include an alcohol-focused health target. Scientific and political disagreements on how to reduce alcohol consumption continue (WHO, 2009). Other differences include the different physiological, psychological, and social determinants of smoking versus alcohol drinking, which led Pierani and Tiezzi (2009) to conclude that one cannot substitute for the other when forming policy. For example, both smoking and alcohol have dependency-forming potential, but a majority of people who regularly smoke become dependent, whereas a minority of people who regularly drink alcohol do so at a hazardous level (Rauschert et al., 2022). Complicating the application of tobacco control policies to reduce alcohol use, smoking and alcohol consumption have been found to have a complementary relationship (Pierani & Tiezzi, 2009). That relationship could alternatively or additionally have been a contemporary one (Pierani & Tiezzi, 2009), that is, drinking alcohol and smoking were similarly widespread consumptions within the same era. Understanding the similarities and relationship between alcohol consumption and smoking is useful for policy analysis of how to reduce either consumption to avoid potential unintended negative effects. Research on the NZ 2011/12 to 2022/23 data showing a rapid reduction in smoking prevalence against a marginal reduction in alcohol consumption (Ministry of Health, 2023) could help progress the debate.

4.3. Strengths and limitations

A strength of this study is that the results contrast with common attitude surveys, which are often reductionist and focus on collecting evaluative judgements of the stated intent of policies. This study uniquely applied the APE model and discourse analysis to explore affect and values influencing opinions and the level of awareness or relevance of proposed policies to an ethnically diverse and differently aged stakeholder group that will be directly impacted by the policies. Their views are unlikely to represent those of the general population, businesses, and parents, who may be impacted by the potential consequences of the policies.

There are some limitations in using data from a longitudinal study. Seeking opinions on policies during interviews over time could have raised awareness of the policies increasing the risk of research participation effects (McCambridge et al., 2014). Increased familiarity with the policies, however, may have enabled the collection of more in-depth participant insights about the policies, which is a strength of LQR. The in-depth reactions and insights gained provide a broader understanding of the potential consequences.

The initial affective response was the APE response process potentially the most biased by the LQR design. To mitigate this, we included only affective responses to the first instance of being prompted about a policy in the analysis. Affective responses to the topic in later interviews - for instance, when a policy moved from being publicly proposed to being debated by politicians for passage into law - were excluded. However, it is possible that some affective responses were included when participants had been primed due to hearing about a policy from other sources.

Since the 1980s, NZ has implemented increasingly restrictive anti-smoking policies (Laugesen & Swinburn, 2000), leading to the policies analyzed in this study. Given this history, social desirability bias could be expected to be high. Interviewer participant rapport, developed over two years of interviews, could have mitigated this. Participants were told that there were no right or wrong opinions, and interviewers were instructed to be non-judgmental, which further reduced the likelihood that participants would be motivated to give socially desirable responses (Van Ryckeghem & Crombez, 2022). However, some socially desirable affective responses may not have been detected, and the interviewer-participant relationship that developed could have influenced participants' responses (McCambridge et al., 2014). Another limitation is that the panel of interviewers (who were diverse to enable matching of interviewers with participants by gender and ethnicity – a strength) had varied levels of experience, and some prompts were leading. To minimize this bias, responses immediately following a potentially leading prompt were excluded.

5. Conclusion

The success of complex policies is aided by robust consideration of stakeholders' views. This study examining how a key stakeholder group comprehended denicotinization of combustible tobacco, banning filters, and restricting access by radically limiting the number of retail outlets and banning the sale of combustible tobacco to eventually all adults addresses the dearth of literature on the potential effects of these novel policies. The qualitative method provided rich insights into the expectations and reservations regarding the policies held by people with no desire to stop smoking or a low belief that they could.

This study suggests that surveys restricting responses to simple dichotomous answers or agreement scales could be inadequate for evaluating attitudes towards novel policies, as they are unlikely to distinguish between approval for the stated intent of a policy versus the strategies promoted as pragmatic and acceptable to achieve the intent. Affective responses and concerns about the potential negative consequences of policy changes are often omitted from simple surveys, and they do not commonly detect the way in which opinions may be influenced by misinformation. Measuring the affective component of opinions can increase the robustness of policy analysis, as illustrated in this study. The affect expressed during policy consultation processes can indicate how ready the public is to comply with or resist new laws (Changizi & Barber, 2022).

When policies are unfamiliar and likely to have disproportionately negative effects on marginalized groups, a comprehensive consultation

process that facilitates informed opinions and considers a broad range of stakeholder views might be less likely to evoke concerns about unfairness, as expressed by some participants in this study.

Compliance with ethical standards

Ethics approval was sought from the Health and Disability Ethics Committee (HDEC), but the study was deemed out of HDEC's scope as it was an observational study that would not involve more than minimal risk, that is, no more risk than participants might encounter during everyday life.

CRediT authorship contribution statement

Marewa Glover: Writing – review & editing, Writing – original draft, Supervision, Methodology, Investigation, Funding acquisition, Formal analysis, Conceptualization. **Emma Hurrell:** Writing – review & editing, Project administration, Investigation, Formal analysis, Data curation.

Declaration of competing interest

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Appendix A. Supplementary data

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