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Using the Theory of Planned Behaviour to Understand Vaping Behaviour on Campus

A thesis
submitted in fulfilment
of the requirements for the degree
of
Master of Science (Research) in Psychology
at
The University of Waikato
by
Liu Jia Qi



THE UNIVERSITY OF
WAIKATO
Te Whare Wānanga o Waikato

2026

Abstract

As part of the New Zealand National Smokefree policy, vaping is banned in public areas for example, public transport, schools and University campuses. Despite the policy and signage on campuses, like the University of Waikato, vaping behaviour still occurs. To understand the occurrence of vaping on campus, this study used the Theory of Planned Behaviour to examine how e-cigarette users' attitude, their social groups' attitude and self-control influence their intention to vape on campus; and where on campus e-cigarette users choose to vape. The study included 152 participants who completed an online questionnaire, yielding 92 usable responses. The results showed that e-cigarette users with a more positive attitude towards vaping behaviour and lower perceived behavioural control (PBC) were more likely to plan to vape on campus. Results indicated that e-cigarette users who vape on campus and those who do not significantly differ in attitude, subjective norms, PBC. Results also suggested that people with longer vaping duration and more frequent daily vaping were more likely to vape on campus.

The vaping spots where e-cigarette users were more likely to choose were the edge of the campus (76%), the field/lake (48%), walking on the campus (45%), public bathroom (38%), and student accommodation - bedroom (28%). Overall, this study indicates the importance of attitudes, subjective norms, and PBC in influencing vaping behaviour. This study extends the Theory of Planned Behaviour to address a gap in the analysis of on-campus vaping behaviour and offers new insights into the psychological drivers of vaping to inform efforts to mitigate its occurrence. These findings could be used to

identify target groups and locations for promoting campus smokefree policy and designing educational campaigns to reduce vaping on campus and prevent vaping.

Acknowledgements

Over the past year, I have had so many people to thank for their help with my thesis. Firstly, I would like to thank my supervisors, Lecturer Gemma Piercy-Cameron and Professor Nicola Starkey, for your insightful feedback, professional guidance, plenty of patience and emotional support. Without your guidance, I could not have completed my thesis.

I would like to thank Sheeba Devan and Vivin Kokuhennadige for their support in providing advice on grammar for my ethics application. I would also like to thank Alice Knight for her support; she provided extensive assistance with the IPRP system, which enabled me to recruit participants for this research.

Lastly, I would like to extend my thanks to my New Zealand family, Chinese family and my partner, Ruvin. In the past year, they have been my pillars of strength. Thank you for your endless patience, understanding, and encouragement during the stressful time.

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Chapter 1 - Introduction

Due to public health campaigns, the Smokefree Environments and Regulated Products (Vaping) Amendment Act 2020, and smoking cessation strategies, traditional cigarette smoking has been declining in Aotearoa New Zealand (NZ). However, electronic cigarette (e-cigarette) users are increasing (Ministry of Health 2024). According to Fadus et al. (2019), e-cigarettes became popular from around 2015, when the pod-mode e-cigarettes were introduced to the public. Globally, in 2025, at least 86 million adults were using e-cigarettes, and at least 15 million e-cigarette users were teenagers (World Health Organisation, 2025). Studies suggest that vaping is less harmful than smoking (Mendelsohn & Hallo, 2020; Peebles, 2019). Therefore, many countries used e-cigarettes as a tool for smoking cessation (D'Mello et al., 2025; Kotz et al., 2022; Smokefree, 2025). E-cigarettes are promoted as safer alternatives to cigarettes. Messages suggesting e-cigarettes are less harmful and can be a tool to cope with nicotine addiction have led to the belief that vaping can help smokers quit. This has increased people's trust in vaping, and people perceive vaping as a safe rather than risky behaviour (Dubé et al., 2023).

However, vaping is not harmless. Vaping behaviour is linked to e-cigarette or vaping product use-associated lung injury (Cleveland Clinic), which is a serious and sometimes fatal disease resulting in cough, chest pain, and shortness of breath (Cleveland Clinic, 2023). Additionally, vaping is also associated with a greater risk of chronic diseases such as asthma, chronic bronchitis, heart issues including heart failure, and a decline in lung function over time (Freeman, 2025). Second-hand vaping is also unsafe. Islam et al. (2022) measured the effect of vaping exposure on health within the household; they concluded that second-hand nicotine vape exposure was

associated with increased risk of bronchitis symptoms and shortness of breath among young adults.

Smoking and Vaping

Based on the history of cigarette smoking, many familiar patterns of belief and behaviour are emerging in relation to e-cigarette use. In 1881, the year James Bonsack patented a machine that could produce 300 cigarettes a minute, it was seen as the beginning of cigarette smoking's popularity (Phillips, 2013). During the two world wars of the 20th century, soldiers adopted regular use of cigarettes as cigarettes were believed to keep them calm, cheaper and easier to use than pipe tobaccos or cigars (Wayne, n.d.). Cigarette advertisements also appeared widely in newspapers, magazines, billboards and movies (Little, 2013). The display of smoking in multiple public platforms and describing smoking as "Man's companion" promotes smoking as an easy and reliable lifestyle, normalising this harmful behaviour (Phillips, 2013). In the 1930s, two tobacco companies - Lucky Strikes and Philip Morris – reportedly used physicians in their advertisements to promote their cigarettes as healers of the throat, claiming that their cigarettes could completely clear irritation (Little, 2013). In the 1940s, concerns about lung cancer emerged within the population, but most people were unaware that it was due to cigarette smoking (Little, 2013). These positive messages regarding smoking were maintained until the United States Surgeon General reported that smoking was linked with heart disease, lung cancer and many other diseases in 1964. Since then, the message that smoking is a healthy and positive behaviour has been challenged by health professionals and government policy. This change in message led to a change in people's attitude towards smoking (Little, 2013).

The first modern e-cigarette was invented by Hon Lik in 2003– 2004 and was marketed as a smoking cessation device (Khey et al., 2020). When e-cigarettes were introduced into Western countries, e-cigarette maker JUUL advertised its nicotine pods as a safer product than traditional cigarettes and as a tool to help people quit smoking (Peebles, 2019). According to the study of Ashour (2023), vaping was effective in helping smokers quit, which led to a reduction in cigarette consumption and an increased smoking abstinence. Many articles reviewed by Ashour (2023) investigated vaping as part of a combined intervention that included e-cigarettes and nicotine replacement therapies, or e-cigarettes and behavioural interventions.

Also, the use of e-cigarettes in the process of smoking cessation is not harmless. A study done by Hajek et al. (2019) suggested that e-cigarettes cause more frequent throat or mouth irritation, and that nicotine replacement causes more frequent nausea. However, a major limitation of the effectiveness of e-cigarettes for smoking cessation is the lack of long-term evidence (Ashour, 2023; Banks et al., 2019; Famiglietti et al., 2021; and Hajek et al., 2019). Additionally, e-cigarette use may increase the propensity of dual smoking (Famiglietti et al., 2021), and the nicotine dependence level was two times higher in e-cigarette users than in traditional cigarette smokers, especially in young adults and youth (Jankowski et al., 2019).

Currently, further studies comparing e-cigarettes alongside NRTs on their effectiveness in smoking cessation, as well as their long-term effects, are needed to establish the role of e-cigarettes as an NRT. Additional research is also needed on their long-term effects. Therefore, claims regarding the effectiveness and safety of e-cigarettes are exaggerated and need to be challenged to reduce harm.

Non-smokers and E-cigarettes

Unfortunately, due to the claims discussed above, a renormalisation of nicotine addiction is occurring. Following international trends from 2015/2016 to 2023/2024, the number of e-cigarette users in NZ increased from 33,000 to 480,000 (Ministry of Health, 2024). Of even greater concern, daily vaping has increased more quickly in younger age groups, especially those aged 15-17 and 18-24. The Ministry's data further indicates that in 2024, approximately 11% daily vapers in NZ were aged 15 and over. E-cigarettes have become popular among younger age groups such as teenagers (Fadus et al., 2019).

The trend of youth vaping is a serious public health concern because of its effects on their developing brains. Nicotine can harm brain development, including parts that control attention, learning, mood and impulse control, which continues until age 25 (National Center for Chronic Disease Prevention and Health Promotion (US) Office on Smoking and Health, 2016). Another reason for youth vaping concerns is that nicotine can be a "gateway" effect for combustible cigarettes and cannabis use (Fadus et al., 2019).

The factors that influence adolescents to start vaping include easy access to vaping devices, social influence, and perception of vaping. Most teenagers' first experience with vaping is often introduced by friends and peers, which provides access to vaping more easily (Dubé et al, 2023), or vaping's pervasiveness piqued their curiosity and encouraged them to try (Graham-DeMello et al., 2024). Geletko et al. (2025) found that vape exposure was associated with a 105% increase in the odds of being curious to try e-cigarettes in adolescents within a year.

Furthermore, vaping is a tool to help youth join a social group. According to Dubé et al. (2023), the pressure from bullying and the feeling of being left out as a non-vaper drove some youth to start vaping so that they could be part of their social group.

Another social influence on e-cigarette users that should be of concern is social media (Lee et al., 2021; Phua, 2019; Richardson et al., 2024; Salafia & DiPlacido, 2022). According to Phua et al (2019), joining and actively participating in pro-e-cigarette social media groups and pages can have a strong effect on attitudes and behavioural intention toward e-cigarettes. Lee et al. (2021) also found that general daily use of Instagram and Snapchat was significantly associated with increased relative risk of experimental and current regular vaping.

Perception of vaping is another reason for teenagers to start vaping. E-cigarettes are substitutes for mental health coping mechanisms; some teenagers believe vaping helps them to relieve stress and anxiety from schoolwork and social life, and weight loss (Biles et al., 2025; Dubé et al., 2023).

Different factors drive people to continue vaping after they were introduced to vaping (Biles et al., 2025; Dubé et al., 2023; Graham-DeMello et al., 2024), including addiction, social normativity and access to vaping.

Addiction is one of the main factors reported to drive adolescents to continue vaping (Dubé et al., 2023; Graham-DeMello et al., 2024). The uncomfortable feelings without vaping drive vapers to take another puff, and feeling calm encourages them to keep vaping.

Initial vapers are also influenced by their social groups. Unlike being introduced to vaping by a friend passively in the first try stage, the widespread use of e-cigarettes in their environment becomes a reinforcing and main factor that encourages youth to continue vaping (Graham-DeMello et al., 2024). When e-cigarettes are widely used among friends and family, young vapers perceive vaping as normal and acceptable, which reflects social normativity (Dubé et al., 2023; Graham-DeMello et al., 2024). Additionally, this environment serves a social function, which is an icebreaker when youth meet new people at a social occasion (Graham-DeMello et al., 2024). This function also potentially encourages youth to continue vaping.

Continued vaping is a long-term behaviour compared with first-time vaping. Most adolescent vapers share vaping devices as the first method for accessing vaping (Frost et al., 2024), but where do they get new vaping devices when the borrowed devices run out? Proxies – over-18-year-old people who buy vaping equipment from shops or online to sell to underage vapers - fill this gap. The first type of proxy was friends or family members who were over 18 years old; the second type was strangers found on Snapchat map; and the third was people who came out of a vaping shop (Frost et al., 2024). Underage vapers buy vaping equipment from proxies. Once they have an established supplier, they tend to rely on that supplier as a proxy (Frost et al., 2024). Over time, purchases between underage vapers and proxies can become a commercial supply. For example, Frost et al. found that some proxies charged an additional fee of about \$ 5 – 10 on the product's cost (Frost et al., 2024).

After a long period of vaping, many vapers develop strong intentions to quit vaping for various reasons. Vapers from NZ felt regretful because of losing control after

being addicted to vaping (Graham-DeMello et al, 2024), while cost and health were the primary reasons for vapers from Massachusetts (Dubé et al., 2023).

The research on adolescent vaping is mostly qualitative; a common limitation is the collection of individual stories of struggles with acceptance in friend groups, the role of family, and patterns of vaping, which were highly personal. A broader sample of adolescents would have enhanced our understanding of a wider range of experiences (Dubé et al., 2023).

Vaping in New Zealand Policy

More evidence on the effects of vaping is needed to clearly demonstrate that it is a harmful behaviour. However, people have easy access to e-cigarettes, and the use of e-cigarettes as a smoking cessation tool suggests vaping is very safe, which fosters a sense of optimism about vaping. When nicotine addiction is normalised, the Government should further regulate the tobacco industry.

As outlined in the history of smoking, when smoking was reported to be linked with many diseases in 1964 (Little, 2013), cigarette advertising on television and radio was stopped in NZ, and tobacco was defined as a toxic substance in the new Toxic Substances Act 1979 (Smokefree, 2025).

In 1984, Māori were reported as having the highest rate of lung cancer in the world. In the same year, NZ's first tobacco control programme began (Smokefree, 2025). In 1988, the sale of cigarettes to people under 16 years old was banned in the new amendment of the Toxic Substances Act (Sowman-Lund, 2024).

The Smoke-free Environments Act 1990 was passed, banning smoking on public transport and placing restrictions on smoking in most public indoor places, and

widening the ban on under-16s to any tobacco products (Sowman-Lund, 2024). Seven years later, the Smoke-free Environments Amendment Act 1997 was passed. This law increased the age to purchase tobacco products from 16 to 18, banned the sales of cigarettes in packs of fewer than 20, banned retailer incentives to promote tobacco, and reduced the size of in-store tobacco advertising (*Smokefree*, 2025). In 2008, health warnings appeared on cigarettes (Sowman-Lund, 2024). In 2011, NZ aimed to reduce smoking prevalence to 5% or less across all population groups by the end of 2025.

The NZ government's first action to limit e-cigarette use began in 2015 (Hardie, L., Freeman, B., & McCool, J., 2025): treating e-cigarettes as prohibited goods. However, to achieve the Smokefree 2025 goal, the NZ government still recommends smokers switch from traditional cigarettes to e-cigarettes (Fallon, 2019).

Wamamili et al (2020) interviewed university students in NZ about their attitudes towards the Smokefree 2025 goal in 2018. They reported that the Smokefree 2025 goal was highly supported and achievable, and they believed e-cigarettes could help achieve it.

By 2020, the NZ government enacted the Smokefree Environments and Regulated Products (Vaping) Amendment Act 2020, which amended the Smokefree Environments Act 1990 (Ministry of Health NZ, 2025; Smokefree Environments and Regulated Products (Vaping) Amendment Act 2020, 2020). This policy includes: (1) minimum purchase age is 18 years, (2) vaping is included in the smokefree area, (3) restrictions on advertising and sponsorship, (4) restrictions on flavours for sale in general retail settings, (5) a registration scheme for specialist retailers (Hardie, L., Freeman, B., & McCool, J., 2025).

In 2022, the Smokefree Environments and Regulated Products Amendment Act was passed, implementing a ban on the sale of tobacco to anyone born on or after January 1, 2009, known as The Smokefree Generation Law. However, this law was repealed by the new coalition of National, New Zealand First and ACT parties, a month after the general election (RNZ, 2024).

By the end of 2024, the government had added some changes on vaping in the Smokefree Environments and Regulated Products Act: (1) new specialist vape stores must be at least 100 metres from an Early Childcare Education Centres (ECEs); (2) penalties have increased for breaking the law; (3) a ban on the visibility of vaping products and heated tobacco products has been introduced for general retailers; (4) a ban on displaying vaping products in a specialist vape retailer in a way that makes them visible from outside the premises has been introduced; (5) a ban on the sale and supply of disposable vapes has been introduced. (Ministry of Health NZ, 2025; *Smokefree Environments and Regulated Products Amendment Act*, 2024).

NZ had one of the highest youth vaping rates in the world in 2024 (The Ministry of Health, 2024). Hardi et al. (2025) argued that political errors may be related to the increased rate of youth vaping in their study. For example: (1) Uptake of policies was slower compare to other high-income countries such as UK and Australia, (2) the e-cigarette industry was allowed to oppose, bypass and weaken the impact of the policies because polices lacked strength when introduced, (3) the multiple interactions between the e-cigarette industry and public health that gave the e-cigarette industry a tobacco harm reduction position.

The current NZ government also has a close relationship with a lobby group sponsored by the tobacco industry, which affects decision-making on e-cigarette-

related policy. A leaked document from tobacco company Phillip Morris, which is a member of tobacco lobby groups, says the company should target political parties such as New Zealand First to secure more favourable regulations for its heated tobacco products (Guyon, 2024). Tobacco lobby groups aim to influence government policy by opposing tobacco control legislation and sway policies in favour of its commercial interests (STOP, 2024). Therefore, in their eyes, their heated tobacco products - e-cigarettes - are suitable tools for gaining benefits for the tobacco industry, by encouraging smokers to replace traditional cigarettes with their e-cigarettes as part of the plan of Smokefree 2025 (STOP, 2023; Guyon, 2024). In the same year, the New Zealand First Party's associate health minister, who also has responsibility for tobacco control and vaping policy, cut the excise tax on tobacco products by 50% (Guyon, 2024), which could benefit Philip Morris as the sole importer (Guyon, 2025). A report from Bower Group Asia to JUUL described the leader of New Zealand First having a relationship with Philip Morris, as well as Philip Morris contacting New Zealand First to secure regulatory changes to advantage its heated tobacco products.

At the same time, in November of 2024, Health NZ launched the Getting to Smokefree 2025 Plan, aiming to take next year to make the final push towards achieving the Smokefree 2025 goal by December 2025. Unfortunately, this goal was not achieved (Brettkelly, 2025).

Vaping in the University of Waikato Policy

Under the Smokefree Environments and Regulated Products Act, many public areas have banned smoking and vaping. To reduce smoking and vaping rates in NZ and reduce the harm to public health from second-hand smoke and vape, universities in

NZ have also created their own campus smokefree policies and published them on their websites and by displaying signs on campus.

However, smoking and vaping behaviour still continues on campuses. The University of Waikato published its Smokefree Policy and planned to stop smoking on campus by 2014 (Pearl, 2013). First, this policy clearly states that all areas of the campus are 100% smoke-free. This policy applies to all people on campus and those who use university vehicles. If a person vapes or smokes on campus, anyone on the campus can ask them to stop. Furthermore, anyone on campus has the right to lodge a complaint. The complaint must be lodged with the Director of Campus Operations and Risk Management. Staff members and students who breach this policy may face disciplinary action under the Staff Code of Conduct and Student Discipline Regulations (The University of Waikato, 2022). This information is circulated in many ways. For example, in July 2025, the University of Waikato posted on social media to remind that vaping is prohibited on campus (The University of Waikato, 2025).

However, the effectiveness of a campus smoke-free policy depends on individuals' attitudes toward the policy and their self-restraint in not vaping on campus. For example, the more support students and staff provide for the smokefree policy, the less smoking and second-hand smoke exposure will occur (Lupton et al., 2014). The study by Record (2017) examined the relationship between students' attitudes and their intention to comply with the campus smoke-free policy. The difference in this study was that it measured how social influence, students' capabilities, and available resources affect the intention to follow the campus smoke-free policy using the Theory of Planned Behaviour (TPB). This article suggests that (a) when students were more supportive of the policy, (b) when students' social groups

were more supportive of the policy, and (c) when students were confident or believed it was easier to refuse to smoke on campus, students have a higher intention to follow the smokefree policy.

Together, these two studies show that attitude, social influence and behaviour control are important factors influencing smokefree policy compliance (Lupton et al., 2014; Record, 2017). The theory of planned behaviour (TPB) can be used to analyse factors and predict behaviour; therefore, it is a potentially useful framework to analyse vaping behaviour on campus.

However, Lupton et al. (2014) and Record (2017) investigated smoking rather than vaping behaviour; there is limited literature on vaping on campus. Brown et al. (2016) examined students' attitudes toward campus smoke-free policy. Their results show that 42% did not know whether their school's policy prohibited e-cigarette use on campus, nearly 29% reported observing e-cigarette use on campus, and more than half of them witnessed vaping indoors. According to Yang et al. (2022), vaping on campus is a complex interaction of individual, institutional, and interpersonal factors, including behaviour factors outlined earlier in this introduction, as well as a lack of formal enforcement or penalty policy violations, and rationalising non-compliance by making efforts to smoke or vape in ways that reduce harm to others.

Vapers choose places to vape on campus. According to a study by Russell et al. (2022), the most frequently mentioned on-campus stealth vaping locations were bathrooms, libraries, parking garages, and classrooms.

Theory of Planned Behaviour

As mentioned in the previous section, TPB was used in Record's (2017) study, which successfully explained how people's attitudes, social influence, and confidence affect their intention to follow a smoke-free policy. This can be a useful framework for explaining which factors affect vaping on campus.

The central factor of TPB is the individual's intention to perform a given behaviour (Ajzen, 1991). Intentions indicate how hard people are willing to try and how much effort they are planning to exert to perform the behaviour. Therefore, intentions are assumed to capture the motivational factors that influence a behaviour. TPB postulates three independent determinants of intention. The first is the **attitude** towards the behaviour, which refers to a person's positive or negative evaluation of the behaviour in question. Attitude is a major factor that influence people to start smoking and vaping: cigarettes were regularly given to soldiers because they believed that smoking calm their nerves during the war (Wayne, n.d.), and young people start vaping because they thought vaping is safer than smoking and helps with stress relief and anxiety (Biles et al., 2025; Dubé et al., 2023).

The second is **subjective norms**, which refer to the perceived social pressure to perform or not to perform the behaviour in question. Social influences affect how people think about smoking and vaping. When cigarettes were promoted in multiple media, people believed smoking was an acceptable behaviour and also considered it a "man's companion" (Phillips, 2013). Most young people were introduced by friends and peers to vaping for the first time (Dubé et al, 2023), and the popularity of vaping made them believe vaping is normal and acceptable (Dubé et al., 2023; Graham-DeMello et al., 2024).

The third is **perceived behavioural control** (PBC) (Ajzen, 2002); PBC refers to how easy/difficult and how confident/unconfident people think to perform the behaviour in question and is assumed to reflect past experience, and predict impediments and obstacles (Ajzen, 1991; Armitage & Conner, 2001). This perceived capability influences whether a smoker decides to follow a smokefree policy (Record, 2017).

TPB is applied across a wide range of fields, including health sciences, environmental science, business and management, and educational research. It is one of the most widely applied theories in the social and behavioural sciences (Bosnjak et al., 2020; Conner & Norman, 2005).

TPB was improved upon the Theory of Reasoned Action (TRA) (Nickerson, 2025). TRA was a psychological model developed by Martin Fishbein and Lcek Ajzen (1975), which aims to explain how attitudes and subjective norms shape intention and turn it into behaviour (Mickerson, 2025). However, the TRA is limited in its ability to predict volitional behaviour, because behaviours that require skills, resources, or opportunities are poorly predicted by TRA (Conner & Norman, 2005). Therefore, Ajzen (1991) added PBC as an additional predictor to improve the theory's predictive ability for behaviour and named it the Theory of Planned Behaviour (Conner & Norman, 2005).

TPB has been previously applied in e-cigarette use research. For example, Phua (2019) used the TPB to analyse the relation between social media and attitudes towards quitting vaping, self-efficacy and intention to quit vaping. He found that (a) greater e-cigarette-related social media use, (c) greater identification with other e-

cigarette users resulted in significantly more negative attitudes toward quitting, lower self-efficacy and lower intention to quit (Phua, 2019).

TPB was also used in Yang's (2023) study to analyse the associations between adolescents' exposure to e-cigarette information and intention to vape. The study found that adolescents' vaping intention was negatively associated with e-cigarette information seeking from health professionals but positively with e-cigarette information exposure from family and friends, outdoor advertisements, social media, and other online channels (Yang, 2023). Similarly, Wu et al. (2025) found that information provided by a healthcare professional is more likely to encourage vaping cessation than information from someone who has successfully quit vaping.

Apart from using TPB to address research questions, TPB was also used to develop new scales. Barakat et al. (2024) used PBC to develop and validate the Vaping Attitude and Perceptions Scale (VAPeS). This scale measures various psychological and social factors that may influence attitudes and behaviour towards vaping. The TPB improvements to the VAPeS scale led to the inclusion of VAPeS questions with additional considerations and more precise wording. According to their results, social influence, perceived behavioural influences, economic factors and self-efficacy demonstrated high internal consistency. Social and behavioural influences were significant factors in predicting and shaping participants' vaping behaviours. This study indicated that factors measured in VAPeS are important in public health research.

Simpson et al. (2022) employed TPB to design a framework for an educational resource on e-cigarette use among young people. Researchers identified beliefs around e-cigarette use from youth aged 11-16 years in phase 1. In phase 2, they

developed a questionnaire based on the results of phase 1 and TPB. In phase 3, researchers provided three lessons for students. Each lesson focused on each TPB construct. Attitude lessons aimed to help students shape their attitudes toward vaping; subjective norms lessons were designed to help students learn and practice how to deal with social pressure. PBC lessons aimed to improve students' individual control and confidence in refusing e-cigarettes when offered. Researchers also provided handbooks for parents on their role in influencing e-cigarette use in their children and helped schools make changes to the school ethos and environment around e-cigarettes.

Those studies show that TPB is a suitable framework for analysing vaping behaviour on campus because (a) the use of attitude and subjective norms match with the influence of attitude and social influence on starting to vape and continuing to vape; (b) TPB provides the ability to predict vaping behaviour compared to the Theory of Reasoned Action.

The Current Study

As discussed, banning vaping in public areas is important because it helps reduce smoking and vaping rates and prevents nicotine addiction in the future. This public health policy applies to both NZ and the University of Waikato campus. However, vaping behaviour still occurs on campus. In order to understand why this risk-taking behaviour occurs, TPB is applied to measure vapers' attitude toward vaping on campus, social groups' attitude and influence on vaping on campus and how confident vapers are to refrain from vaping on campus. The current study is cross-sectional questionnaire study.

This study aims to:

- a) investigate the relationship between TPB constructs (attitudes, subjective norms and PBC regarding campus vaping) and intentions to vape on campus in the future;
- b) compare the difference in attitude, subjective norms and PBC between e-cigarette users who don't vape on campus and those who do vape on campus;
- c) identify the specific campus locations where e-cigarette users choose to vape.

The remainder of this thesis is organised as follows. Chapter 2 provides a detailed description of the participants, the study design, materials, measures, procedures, analysis, and ethical considerations. Chapter 3 provides the results of this study, including relationships between TPB constructs and intention to vape on campus, differences in TPB constructs and vaping habits between those who vape on campus and those who do not, vaping locations, experiences of being asked to stop vaping, and final comments. Chapter 4 presents a general discussion that synthesises the findings of this study and connects them to existing studies. Finally, the limitations of this study, future directions and a conclusion are presented at the end of the thesis.

Chapter 2 – Method

Participants

Participants were recruited through two methods. First, participants were recruited through posters posted around the University of Waikato Hamilton campus (See Appendix A). The second cohort comprised university students at the University of Waikato studying a level one or first-year psychology paper. These students were recruited through Sona Systems (SONA), a web-based portal that displays available studies in the Introduction to Psychology Research Program (IPRP) to students enrolled in psychology papers at the University of Waikato. All participants from SONA received 1% credit on their final grade for the semester for completing the survey.

The eligible participants were people who use vaping devices. 152 participants were recruited; eight participants failed to complete the survey and had their responses removed, and 59 participants did not use vaping devices and were therefore excluded. This left 84 viable questionnaires from participants who use vaping devices.

Design

This research used a cross-sectional design, and a questionnaire with open and closed-ended questions. This questionnaire design was based on an online TPB manual written by Francis et al. (2004). This study did not use the VAPeS scale (Barakat et al., 2024) because it was designed to measure general vaping behaviour among students; our research focused on a violation (vaping on campus), so the VAPeS scale was not designed for this context. Therefore, a new scale was developed based on a TPB questionnaire development manual.

Materials

All the participants completed a questionnaire on the Qualtrics platform (<https://www.qualtrics.com/en-au/>). Participants' responses were recorded in Qualtrics.

Measures

Vaping Habits

Vaping habits were measured by two questions with six response options: a) How long have you been using a vaping device (Less than one week = 1, Less than one month = 2, less than six months = 3, Less than one year = 4, Less than ten years = 5, More than ten years = 6). b) How many times do you vape per day? (Assume that one "time" consists of around 15 puffs or lasts around 10 minutes) (0-4 times = 1, 5-9 times = 2, 10-14 times = 3, 15-19 times = 4, 20-29 times = 5, 30 + times = 6).

TPB Constructs

The operationalisation of TPB constructs included attitude, subjective norms and perceived behavioural control (PBC).

Attitudes. Attitudes toward vaping on campus were measured using three 5-point Likert-style scale statements (strongly disagree = 1, strongly agree = 5). The statements were: a) I think people should vape whenever they want on campus; b) I think people should vape wherever they want on campus; c) I think vaping on campus should be supported (Cronbach's $\alpha = .81$). The mean of the items was calculated for analysis.

Subjective norms. Subjective norms were measured by five statements: a) Most of my friends think I should be allowed to vape on campus. b) People on campus (strangers) think I should be allowed to vape on campus. c) I feel under social pressure to vape on campus. d) I care about people's (strangers) opinions about vaping on campus. e) I care about my friend's opinion about vaping on campus. Those five statements have the same five response options, with the same score for participants to choose (strongly disagree = 5, strongly agree = 1). Because of the low Cronbach's Alpha for the five statements (Cronbach's $\alpha = .47$), the last three statements were removed (Cronbach's $\alpha = .81$). The mean of this section was calculated for analysis.

Perceived behavioural control (PBC). The PBC was measured by two statements responses on a 5-point Likert-style (Strongly disagree = 5, Strongly agree = 1): a) It is easy for me not to vape on campus. b) I am confident that I will not vape on campus (Cronbach's $\alpha = .80$). The mean of this section was calculated for analysis.

Vaping on Campus and Locations

To determine whether participants have experience with vaping on campus, participants were asked: "Have you ever vaped on campus?" Participants had two response options: Yes and No. These questions separated participants into two groups – the non-vaping on-campus group and the vaping on-campus group - so the TPB construct scores could be compared in the analysis.

To collect data on the locations of vaping behaviour on campus, a multiple-response question was developed as follows: "Where do you vape on campus?" with 13 response options: edge of campus, public bathroom, library / Te pā, balcony of the library, field/lake, wooded area, student accommodation – living room, student

accommodation – bathroom, while walking around the campus roads, back of a building, Te Pā, lakes and next to a spot with a smoke-free sign. In this question, participants were allowed to choose more than one response option. After this question, participants were asked to provide more information in an open-ended question: “Are there other locations where you vape on campus apart from the list above?”

Experience of Being Asked to Stop Vaping

A dichotomous question was used to determine if participants had experience being told to stop vaping: “When vaping on campus, did anyone ask you to stop?” with yes and no response options. And a multiple-choice question: “If so, who was the person?” with five choices: student, staff member, security guard, visitor and other. Participants were allowed to choose more than one response option. After this, the last question asked: “If yes, did you stop vaping on campus?” with yes / no response options.

Intention of Vaping on Campus

Intention towards vaping on campus in the future was measured by a 5-point Likert-style statement (strongly disagree = 1, strongly agree = 5): “I intend to vape on campus in the future.”

Demographic Questions

Participants were asked to report demographic information, including age, gender and ethnicity.

Final Comments

A question at the end of this questionnaire asks participants to share more information: “Is there anything else you want to share about vaping on campus?”

Procedure

Participants who were elicited via the SONA system and posters had the same link to the questionnaire on Qualtrics. (See Appendix B). First, they were asked whether they vape as an eligibility check. Then they were asked to complete sections on vaping habits, attitudes, subjective norms and PBC. Next, participants were separated into a non-vaping on campus group and a vaping on campus group based on their response to whether they ever vaped on campus. Participants who vaped on campus were asked to provide locations on campus where they had ever vaped, report if they ever had anyone requiring them to stop vaping, who asked them to stop vaping, and if this stopped them from vaping on campus from that time. After this, all participants were asked to report their intention to vape on campus in the future and demographic information. In the final section, participants had the opportunity to share more information. At the end, an email address was provided for them to contact if they had any questions, and support links were provided if completing the survey raised any issues.

Data Analysis

Collected data was exported from Qualtrics to IBM SPSS Statistics. The internal consistency of questions within each TPB construct was checked to ensure they have acceptable internal consistency (Cronbach’s $\alpha \geq .7$). The subjective norms questions were had low Cronbach’s alpha, so data from three of the five questions were deleted. Afterwards, the means of each TPB construct (attitudes, subjective norms, and PBC) were calculated. Then correlation and regression were used to explore the

associations between TPB constructs and intention to vape on campus.

To compare TPB constructs between those who vape on campus and those who do not, an independent *t*-test was used. To evaluate if there is a relationship between vaping habits and whether participants vape on campus, a chi-squared test was used. To analyse where vapers choose to vape, and the frequency of selection for each location, descriptive statistics were used.

Ethical Considerations

This study was approved by the University of Waikato Human Research Ethics for Arts, Law, Psychology and Social Sciences (ALPSS) (FS 2025-58).

Because the target behaviour in this survey – vaping on campus – violates the University of Waikato’s smokefree policy, the confidentiality of the survey needed to be considered. The key ethical issue considered in this research project is as follows:

Participants may face disciplinary action or a fine for their honest responses. Therefore, considerations for protecting participants’ personal information were taken into account, and this was ensured by making our survey anonymous through (a) using an automatic crediting function of SONA to avoid collecting participants’ student IDs; (b) enabling “Anonymous link” function on Qualtrics, so liking data, ID numbers and IP addresses were not collected; (c) adding an anonymous link on SONA and the poster, so participants’ URLs and email addresses were not collected; (d) providing a contact email in the information sheet, post-survey information and a debriefing sheet if participants wanted to contact us; (e) adding a link to the smokefree policy at the end of the survey if participants were harmed. (f) providing a list of supporting links at the end of the survey.

Chapter 3 -Results

This chapter presents the outcomes of the analysis. The chapter presents findings in the following sections: demographic data, relationship between TPB constructs and intention to vape on campus, PBC differences in participants who vape on campus and those who do not, relationship between vaping habits and vaping behaviour, vaping locations, experience of being asked to stop vaping and final comments from participants.

Demographic Information

The demographic characteristics of the participants are summarised in Table 1. The majority of participants were female, and the majority ethnic group was New Zealand Europeans. This table also shows the vaping habits of participants; most participants have vaped for less than ten years, and most participants vaped 0-4 times per day.

Table 1*Table of Demographic*

Characteristic	<i>n</i>	%
Gender		
Female	68	79%
Male	18	21%
Ethnic Groups		
New Zealand European	61	71%
Māori	18	21%
Other	27	12%
<i>Vaping Habits</i>		
How long did you vape?		
Less than one week	8	5%
Less than one month	6	5%
Less than six months	12	5%
Less than one year	22	5%
Less than ten years	38	5%
More than ten years	2	1%
vaping time per day		
0 - 4 times	34	22%
5 - 9 times	16	11%
10 - 14 times	16	11%
15 - 19 times	4	3%
20 - 29 times	10	7%
30 + times	8	5%

Note. *N* = 88. Participants were on average 22 years old (SD =6.6)

Correlations Between Intention to Vape on Campus and TPB Constructs

The Pearson correlation presented in Table 2 shows that attitudes and intention to vape on campus are positively correlated, $r(84) = .54$, $p < .001$. Subjective norms are

positively correlated with the intention to vape on campus, $r(84) = .37, p < .001$. PBC is negatively correlated with the intention to vape on campus, $r(84) = -.40, p < .001$.

Attitudes and subjective norms are positively correlated, $r(84) = .42, p < .001$.

Table 2

Correlations for intention to vape on campus and TPB constructs

Variable	<i>n</i>	<i>M</i>	<i>SD</i>	1	2	3	4
1. Intention to vape on campus	86	1.98	1.19	—			
2. Attitude	88	2.00	0.91	.54**	—		
3. Subjective norms	87	2.37	0.96	.37**	.42**	—	
4. Perceived behavioural control	86	3.72	1.25	.40**	-.11	-.16	—

Note. *n* = sample size; *M* = mean; *SD* = standard deviation. Values in columns 1-4 represent Pearson correlation coefficients (*r*). ** $p < .01$.

Predictors of Intention to Vape on Campus

A multiple linear regression was used to measure the relationship between TPB constructs and intention to vape on campus. The results show two of the TPB constructs significantly predicted the intention to vape on campus, $F(3, 82) = 19.52, p < .001, R^2 = .40$. TPB constructs explained approximately 40% of the variance in intention to vape on campus. The results shown in Table 3 indicate that attitudes towards vaping on campus ($\beta = .45, p < .001$) significantly and positively predicted the intention to vape on campus, and PBC ($\beta = -.31, p < .001$) significantly and negatively predicted the intention to vape on campus. However, subjective norms did not ($p = .15$).

Table 3*Regression results of intention to vape on campus and TPB Constructs*

Variable	Beta	SE	95%CI		β	<i>p</i>
			<i>LL</i>	<i>UL</i>		
Attitude	.58	.12	.34	.81	.45	<.001
Subjective	.17	.12	-.06	.40	.14	.152
Norms						
Perceived	-.31	.08	.15	-.47	-.15	<.001
Behavioural						
Control						

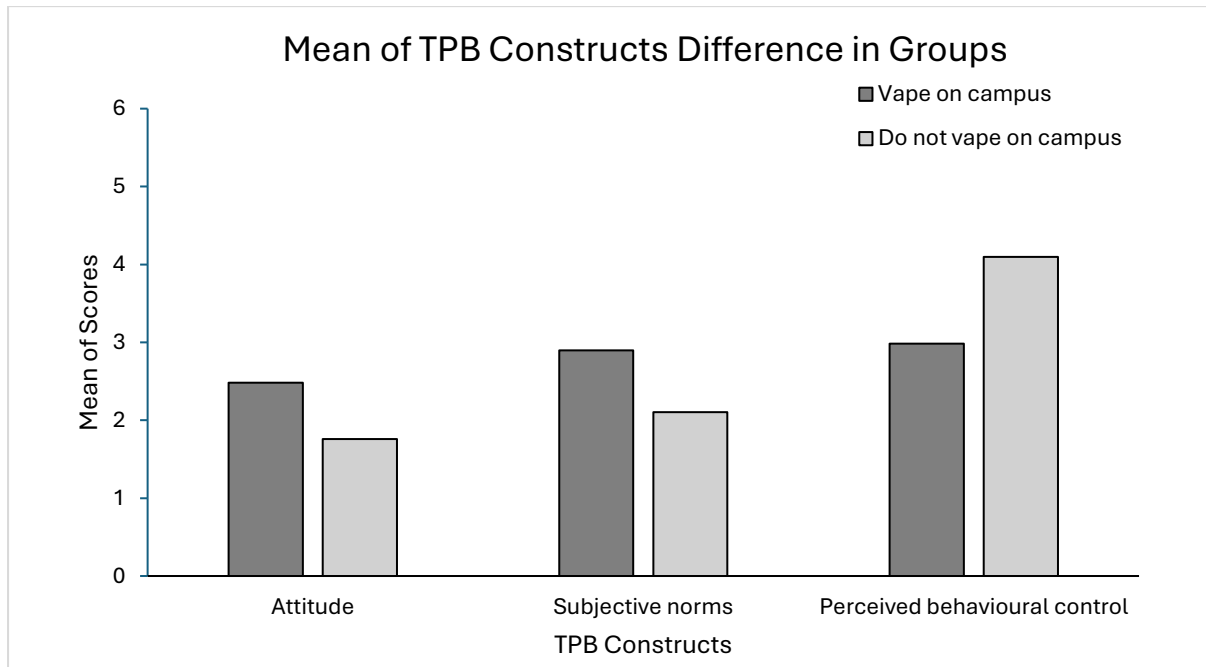
*Note. * $p < .05$* **Differences in TPB Constructs Between Those Who Vape and Those Who Don't****Vape on Campus**

To evaluate whether there were differences between participants who vape on campus and those who do not on TPB constructs, the mean scores of each TPB construct were compared in an independent sample t-test. 29 participants reported vaping on campus, and 57 reported not vaping. The results show there is a significant difference between the TPB constructs of those who vape on campus and those who do not. Figure 1 shows that those who vape on campus had a more positive attitude, $t(84) = 3.69, p < .001, 95\% \text{ CI } [0.3, 1.1]$, and subjective norms $t(84) = 3.88, p < .001, 95\% \text{ CI } [0.4, 1.2]$ than those who do not vape on campus. Participants who vaped on campus have a significantly lower mean PBC score than those who do not, $t(84) = -4.30, p < .001^{***}$,

95% CI [-1.6, -0.6].

Figure 1

Mean of TPB constructs in Groups



Note. This figure shows the mean scores for each TPB construct among participants who vape on campus and those who do not.

Relationship Between Vaping Duration, Daily Vaping Frequency, and Vaping Behaviour

A Chi-square test was used to evaluate whether there is a relationship between vaping habits and intention to vape. Table 4 shows there is a significant relationship between vaping duration and whether participants vape on campus, $\chi^2(5, N = 86) = 15.51, p = .006$. Table 4 also shows a significant relationship between daily vaping frequency and whether participants vape on campus, $\chi^2(5, N = 86) = 23.16, p < .001$. Participants who vape on campus have a longer vaping duration and more frequent daily vaping than those who do not vape on campus.

Table 4*Number of vaping duration and daily vaping frequency in groups*

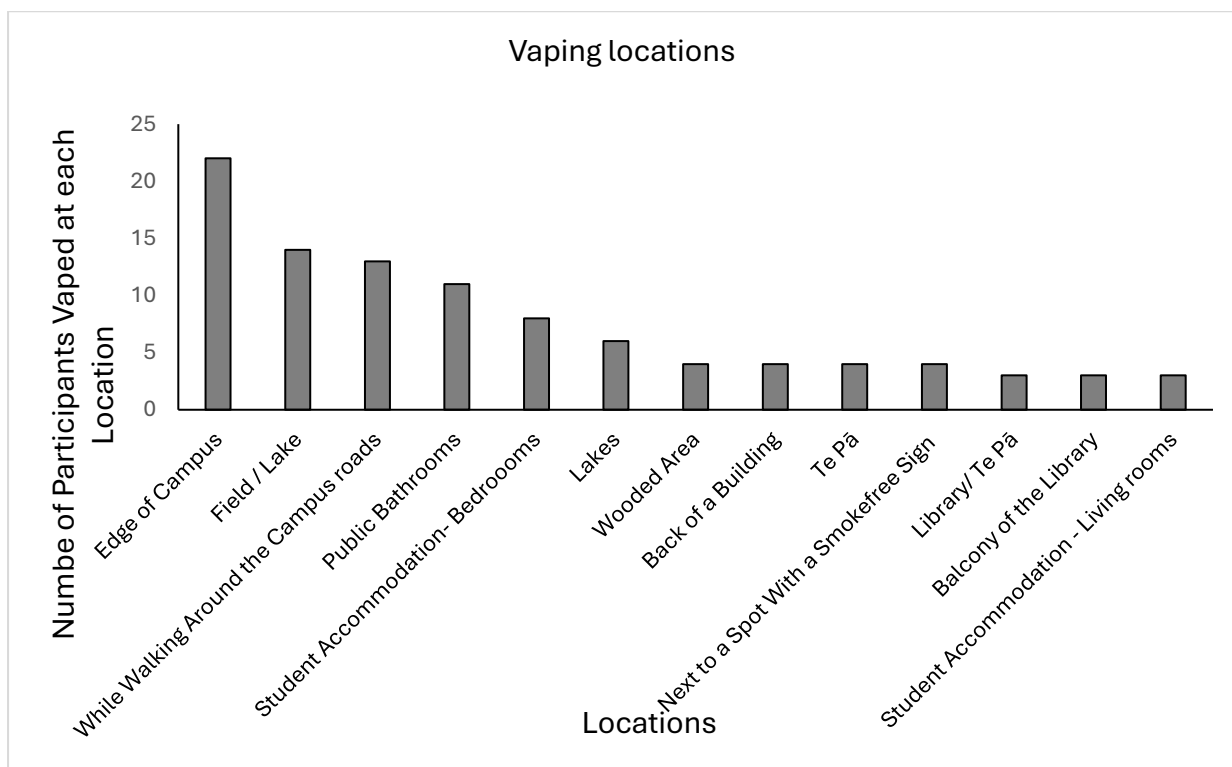
	Have you ever used any vaping devices on campus?			
	Yes.		No.	
	N	%	N	%
Vaping duration				
Less than one week.	0	0%	8	14%
Less than one month.	0	0%	6	11%
Less than six months.	4	14%	8	14%
Less than one year.	5	17%	17	30%
Less than ten years	18	62%	18	32%
More than ten years.	2	7%	0	0%
Daily vaping frequency				
0–4 times.	2	7%	32	56%
5–9 times.	9	31%	7	12%
10–14 times.	6	21%	9	16%
15–19 times.	1	3%	3	5%
20–29 times.	6	21%	3	5%
30 + times.	5	17%	3	5%
Total	29	100%	57	100%

Vaping Locations

Figure 2 shows the locations on campus where participants vaped. The location with the most selection was the edge of the campus (76%), followed by the field / lake (48%) and walking on the campus road (45%). Another two indoor locations with more selection than other locations are the public bathrooms (38%) and student accommodation - bedrooms (28%). Locations with low response rates included the car park (n=3), in the car (n=1), lecture buildings (n=1) and while studying alone in the management school buildings (n=1).

Figure 2

Vaping locations



Note. This figure shows how many participants vaped at each location, ordered from highest to lowest.

Experience of Being Asked to Stop Vaping

Among the 29 participants who have used vaping devices on campus, only three had been asked to stop vaping, and the people who asked them to stop vaping were one staff member, one security guard and one “other” that is not either a student, visitor, security guard, or staff member.

Final Comments

The last question of the survey asked participants to share their thoughts about vaping on campus, and eight participants responded.

Two participants showed their acceptance of the smokefree policy. Participant 1 stated: “I have no problem going down the road to vape. I don't mind not being able to vape around campus...”. Participant 2 mentioned “... myself as a vaper know that not everyone supports it, and walking through clouds of vaping is not pleasant. If it's normalised on campus, it may also encourage more people to start. Restricting this also helps vapers restrict their vaping while at uni.”

Participant 3 raised his/her doubts about the smoke-free policy: “It would be interesting to read the rationale for banning vaping on campus. Air pollution is a non-issue, especially when compared to cars!”

Participant 4 provided more information about what vapers do when they want to vape on campus: “Some vapers avoid vaping around many people; they vape around areas like the back of the building, or on the field, or just somewhere around campus that isn't easily exposed to people.”

Three participants rationalised their rule-breaking behaviour with the excuses. Participant 5 mentioned that “Vaping is odourless and doesn't affect anyone not vaping. It is more addictive than smoking and helps me to concentrate and focus.”

Participant 6 noted that “Vaping on campus isn't ideal, but there are ways to be discreet about it.” Participant 7 reported that “As long as you are respectful, as in don't do it in someone's face and inside specific buildings, I've found most people don't really care if I vape.”

Participant 8 suggested the university should set up vaping/smoking locations on campus: “...I believe there should be locations available for students and staff alike to smoke or vape, lowering the likelihood of persons participating outside of these locations.”

Chapter 4 –Discussion

Currently, the vaping rate is increasing while the smoking rate is decreasing. The University of Waikato banned smoking and vaping as part of the plan in NZ to reduce the vaping rate and protect people from the harm of smoking and vaping. However, vaping behaviour still occurs on campus. To understand why people vape on campus, a questionnaire based on TPB was designed.

There are three aims in this study: (a) to investigate the relationship between TPB constructs (attitudes, subjective norms and PBC regarding campus vaping) and intention to vape on campus in the future; (b) compare the difference in attitude, subjective norms and PBC between e-cigarette users who don't vape on campus and vapers who do vape on campus; (c) identify the specific campus locations where e-cigarette users choose to vape.

The first five sections of this chapter provide a detailed discussion of our results: (1) the relationship between TPB constructs and intention to vape on campus in the future; (2) the difference in TPB constructs between e-cigarette users who don't vape on campus and vapers who do vape on campus; (3) the relationship between vaping habits and participants' on-campus vaping status (i.e., whether they vape on campus or not); (4) vaping spots; (5) final comments from participants. The chapter then addresses the limitations of the present research, outlines future research and provides a brief conclusion to summarise important information in this study.

There are five key findings of the present research. First, attitude and PBC were significant predictors of intention to vape on campus. Second, participants who vape on campus had more positive attitudes and subjective norms, lower capability to not vape

on campus. Third, participants who vape on campus have longer vaping durations and more daily vaping frequency than those who don't. Fourth, the most selected vaping spots were away from large groups and from other people/staff and students. Fifth, participants' comments included doubt about the smokefree policy and the use of "respecting others" to rationalise their non-compliance.

Relationship Between TPB Constructs and Vaping on Campus

The results show that attitude and PBC are significant predictors of intention to vape on campus. Specifically, when e-cigarette users have a more positive attitude toward vaping on campus, there is a greater intention to vape on campus. This result is consistent with the findings in the study by Yang et al. (2022), which suggested that e-cigarette users with more positive attitudes toward regulating on-campus tobacco use were less likely to practice vaping on campus, and those with higher perceptions of campus vaping among other students were more likely to vape on campus more frequently. Our result is also consistent with Record's (2017) study, when students were more supportive of the policy, they had a higher intention to follow the smokefree policy. Additional findings in the article by Lupton et al. (2014) were also consistent with our results: the more support students and staff provide for the smokefree policy, the less smoking.

Another significant predictor of the intention to vape is PBC. When e-cigarette users believe they can avoid vaping on campus, they have a lower intention to vape on campus. This result is consistent with the finding from Record's (2017) study, which reported that students who were confident or believed it was easier to refuse to smoke on campus, had a higher intention to follow the smokefree policy.

Our results suggest that subjective norms do not significantly influence intention to vape on campus, but there is a significant positive correlation between them. This differs from Record's (2017) study, when students' social groups were more supporting the police, they had a higher intention to follow the smokefree policy.

According to the meta-analysis review on TPB by Armitage and Conner (2001), subjective norms are not a significant predictor, as reported in multiple articles using TPB. The subjective norms construct is generally found to be a weak predictor of intentions when a study has weaknesses in measurement (Armitage & Conner, 2001).

In addition to including injunctive norms as part of subjective norms, adding descriptive norms could improve the predictive function of subjective norms (Fishbein & Ajzen, 2010). Injunctive norms refer to what others want you to do, for example, asking the question: "My friends want me to vape on campus." Descriptive norms refer to what others are doing (Fishbein & Ajzen, 2010), for example, asking the question: "I see my friends vape on campus". According to Ravis and Sheeran (2003), adding a descriptive norm significantly increases the amount of variance explained in intentions, especially for health-related behaviours and among younger populations. In this research, the questionnaire had only two injunctive norms questions ("Most of my friends think I should be allowed to vape on campus. and "People on campus (strangers) think I should be allowed to vape on campus.").

The second finding of this study is that the participants who vape on campus have a more positive attitude and social group's attitude toward campus vaping, and less behavioural control than those who don't vape on campus. Specifically, people who reported vaping on campus previously are more supportive of allowing vaping on

campus than people who vape but have never vaped on campus. People who vaped on campus are also more likely to believe that their friends or family are supportive of their vaping on campus.

This result is connected with how youth start and continue vaping as highlighted in the Chapter 1: youth's first try of vaping was introduced to them by friends or peers, seeing many vapers occurring in their social groups makes them think vaping is acceptable and normal, which encourages them to continue vaping (Dubé et al., 2023; Graham-DeMello et al., 2024). In the families that see vaping as unacceptable, young vapers think vaping behaviour is more likely to be approved by friends (Lee et al, 2021), and when vaping on campus is normalised in a social group, it may lead vapers to vape on campus in a group (Graham-DeMello et al, 2024).

Vaping Habits and Vaping on Campus

Results from this study show that participants who vape on campus have a longer vaping duration and more frequent daily vaping than those who do not. This result may be explained by nicotine addiction. As outlined in Chapter 1, addiction is one of the major factors that drives new vapers to continue vaping (Dubé et al., 2023; Graham-DeMello et al., 2024). When nicotine is activated in e-cigarette users' brains, it releases a brain chemical (dopamine) to make them feel good ("Vaping – The Facts," 2024). The more e-cigarette users vape, the more their bodies get used to nicotine, which leads to a stronger addiction to nicotine (Australian Government Department of Health and Aged Care, 2024; Kundu et al., 2025). Therefore, vapers who were more likely to initiate stealth vaping and vape more frequently were the vapers with higher nicotine dependence (Yang et al., 2023). This finding in our research indicates that the target

type of vapers for vaping prevention plans and educational campaigns is those who have longer vaping durations and more frequent daily vaping.

Vaping locations

This study provides information on campus locations where participants have vaped, indicating where the University of Waikato should promote the smokefree policy or provide smokefree promotion information. The most chosen locations were the edge of campus, the field/lake, while walking on the campus road, the public bathroom and the bedroom in student accommodation. The edge of campus is the most popular place to vape because it is an area with hazy limitations of smokefree policy boundaries, as it includes both the inside and outside of the campus, which makes it challenging to determine whether vaping is permitted or not. This finding may indicate that most of vapers who vaped on campus know that vaping on campus is violation, and vaping at the edge of campus could reduce possibility of being in trouble for it.

Wider research on vaping behaviour indicates that there are many reasons for vapers to find a place that is away from people or a place with high privacy. Many vapers believe they should respect other people or consider other people's wellbeing when they want to vape on campus, some think it is shameful to be seen for concern over reputational harm, and do not want to deal with people confronting them (Yang et al, 2022). This finding explains why high privacy locations like public bathrooms, bedrooms, and locations with fewer people, like fields or lakes, are the choice for participants to vape on campus.

Another factor influencing the choice of location may be the acceptance by vapers and other people on campus. According to Do et al. (2020), vaping indoors was more acceptable than smoking indoors, and was reported inside campus buildings, such as dorms and the library. This finding indicates that people think vaping is more acceptable than smoking, which provides an excuse for vaping indoors on campus.

Our research shows a slightly different result from the study of Russell et al. (2022): common on-campus stealth vaping locations included bathrooms, libraries, parking garages and classrooms. Classrooms, libraries and parking garages were not common vaping spots in this study.

Final Comments from Participants

The last finding of this thesis is the qualitative information reported by participants. One participant suggested that the university should have dedicated smoking and vaping areas on campus, and another challenged the reason for a smoke-free policy, arguing that outdoor environments did not need to be smokefree. According to Do et al. (2020), students expressed scepticism about a tobacco-free campus policy due to perceived violations of personal rights and challenges with enforcement. This result may reflect one of the factors that influence the effectiveness of smokefree policy, as discussed in Chapter 1: the more support students and staff provide for the smokefree policy, the less smoking and second-hand smoke exposure (Lupton et al., 2014).

Some participants reported that vapers should show respect or avoid vaping around people, and that they do. This belief was also reported in the study by Yang et al. (2022), and these efforts to vape in ways to reduce harm were identified as a way of

rationalising non-compliance. This non-compliance could also be viewed as an act of resistance for instance. When people feel their freedom of choice is being threatened, they experience an unpleasant emotional state. To get rid of this feeling, they perform the forbidden behaviour to prove they are still in control (Brehm, 1966). This psychological resistance could be another factor that encourages e-cigarette users to vape on campus.

Limitations in This Study

There are some limitations with this study. Firstly, the study had a small sample size, most participants were students from psychology papers, and it was gender-imbalanced, with 79 % of participants identifying as female. These limitations decrease the robustness of the statistical techniques and limit the generalizability of the results to a larger population.

Secondly, this study was designed based on the Theory of Planned Behaviour, which may miss the influences of other factors, such as mental health issues and environmental changes. Thirdly, the data for this study were collected at a university with a smokefree policy, but the policy's influence was not measured. Fourthly, because vaping on campus violates the campus smoke-free policy, participants may report information in line with socially acceptable norms rather than their true opinions (Bispo Júnior, 2022), thereby influencing results with social desirability bias. Fifthly, this study has a limitation in the design of the subjective norms measurement. The subjective norms section of the survey omitted descriptive norms questions, thereby reducing the predictive value of subjective norms and limiting the variables

that could be predicted. Therefore, a different result would likely occur if descriptive and injunctive norms questions were used.

Finally, the influence of social media was not measured in this study. Based on prior literature, social media influence is suggested as one of the more important variables to include in the VAPeS scale developed by Barakat et al. (2024). However, our study did not measure the impacts of social media on decision-making.

Future Research

These limitations suggest future research directions. Firstly, because of weaknesses in measuring subjective norms, future research should include both injunctive and descriptive norms, which may yield different results. Secondly, social media should be included in future research. Thirdly, because this research was conducted on a campus with a smokefree policy, the policy's influence was not investigated. Future research could investigate the relationship between vapers' opinions and perspectives (how much they know about the policy) regarding smokefree policy.

Conclusion

The study suggests e-cigarette users who vape on campus have a more positive attitude and more positive social support for vaping on campus, and less behavioural control to not vape on campus than those who do not. The unique results identified in this study are that vapers with longer vaping duration and higher daily vaping frequency could be the target group for promoting smokefree policy; and locations like the edge of campus, field/lake, campus road, public bathroom, and bedroom in student

accommodation could be where the University of Waikato should promote smokefree policy.

Findings from this study could be useful to the University of Waikato to develop strategies to reduce vaping on campus. Recommendations are that the university conduct a series of educational and awareness campaigns on e-cigarette use. The context of campaigns should focus on the TPB constructs: attitude that includes health risk, ingredients in e-cigarettes and risk of nicotine addiction and risk of second-hand vaping; social influence that teaches how to deal with social influence and social pressure; and behaviour control that includes skills to control not to vape on campus and improve confidence to stop vaping on campus. Additionally, the university could provide additional or clearer anti-vaping posters and smokefree policy signage at the most popular vaping locations.

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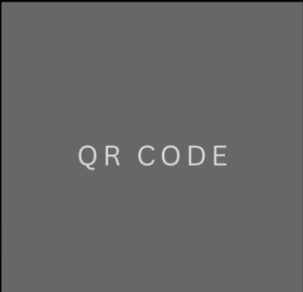
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**RESEARCHING VAPING
BEHAVIOUR AT THE
UNIVERSITY OF
WAIKATO WITH THE
THEORY OF PLANNED
BEHAVIOUR.**

LOOKING FOR VAPERS!!!

We are trying to understand
why people vape on campus.

Please tell us your opinion
here:



QR CODE

This survey:

- Is entirely voluntary
- Takes 10-15 minutes to complete

The Human Research Ethics Committee of the Division of Arts, Law, Psychology and Social Sciences has approved this research project. If you have any questions about the ethical conduct of this research, you may send them to the Secretary of the Committee at alpss-ethics@waikato.ac.nz.

For more information, please contact: JL607@students.waikato.ac.nz

Appendix B: Information Sheet for Online Survey for IPRP participants

Researching vaping behaviour at the University of Waikato with the Theory of Planned Behaviour.

I am Jiaqi Liu, a Master of Science (Research) student in Psychology, conducting research on vaping behaviour under the supervision of Professor Gemma Piercy-Cameron (gemma.piercy- Cameron@waikato.ac.nz) and Professor Nicola Starkey (nicola.starkey@waikato.ac.nz). This study aims to understand vaping behaviour on campus by exploring vapers' thoughts and experiences.

You are eligible to take part in this study if you use any electronic cigarettes.

This survey will take 10–15 minutes to complete and includes questions about your own and other people's attitudes toward vaping on campus, how easy and comfortable it is to vape on campus, and common locations for vaping on campus. You can withdraw at any time during the survey. Once you submit the survey, you will no longer be able to change, remove, or withdraw your answers. If you would like to continue the survey, please tick the boxes in the consent form.

The data will be anonymous, and it will not be linked to your personal information. The data will be used for my thesis research. Upon completing my Master of Science (Research) in Psychology, I may publish my thesis in a peer-reviewed journal. Once I have completed my study, my research supervisor, Professor Gemma Piercy-Cameron, will securely store the data for a period of five years.

Students who complete the survey through SONA will receive 1% course credit toward their final grade in psychology papers. There are no known direct risks

associated with this study; however, we will provide supporting resources at the end of the survey for anyone who feels concerned.

If you would like to receive a summary of this study or have any questions, please contact Jiaqi Liu at JL607@students.waikato.ac.nz.

The Human Research Ethics Committee of the Division of Arts, Law, Psychology and Social Sciences has approved this research project. If you have any questions about the ethical conduct of this research, you may send them to the Secretary of the Committee at alpss-ethics@waikato.ac.nz.