

Does Acculturation Influence Immigrants' level of Environmental Engagement?

The case of Vietnamese in New Zealand

by

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Abstract

Within the current global context, research on human-environment interaction has extended its scope to examine environmental concern and pro-environmental behaviours across cultures. Although few studies have considered acculturation as a determinant of environmental concerns, attitudes, and pro-environmental behaviours, its role in human-environment interaction remains unanswered. We conducted two studies to examine the role of acculturation for environmentalism in Vietnamese immigrants living in New Zealand. Since the New Zealand context is better regarding environmental quality and practices when compared to Vietnam, we predicted Vietnamese living in New Zealand would show greater pro-environmental concern and behaviours than Vietnamese in Vietnam due to their acculturation to the newer environmentalism-prone context. In Study 1, we tested our hypotheses by conducting an online survey with Vietnamese living in New Zealand ($N = 114$) and a propensity matching sample of Vietnamese living in Vietnam ($N = 114$). Rejecting our predictions, results indicated no differences in environmental concern and pro-environmental behaviours between Vietnamese in New Zealand and those in Vietnam. Partially supporting our predictions, however, regression results indicated that acculturation orientation towards New Zealand positively correlates with pro-environmental behaviours, but not with environmental concern. In Study 2 ($N = 12$), we conducted four focus groups with Vietnamese living in New Zealand to gather information about their acculturation experiences regarding environmentalism, and data were analysed thematically. We found that most participants have perceived influences of living in New Zealand on their pro-environmental behaviours and believe these acculturation influences would not last long if they went back to live in Vietnam. Findings indicate that context matters when examining human-environment interaction, but the effect of acculturation still needs further examination.

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Chapter 1: Introduction

The year 2020 has not only brought distress because of the COVID-19 pandemic but has also reminded us of an ever-increasing environmental crisis. The rise in extreme weather events, including wildfires, hurricanes, floods, typhoon, the melting of glaciers and polar ice caps cannot be ignored. Although carbon dioxide emissions dipped briefly following the onset of the pandemic, the world is still expected to experience a temperature rise of 3.2°C by the end of this century (United Nations Environment Programme [UNEP] report, 2020). These issues are threatening life across the world as they seriously affect health, economic prospects, and food and water supply. It is essential to find a feasible solution for these current environmental issues.

Humans interact with the natural environment every day, and some of their actions have caused harm. They pollute the land, water and air; they increase the CO² emissions into the atmosphere; they cut down trees to create farms and build houses. There is a growing concern to change human behaviour to mitigate environmental problems, as human is one of the main cause of unprecedented changes in the earth's climate (Steg et al., 2019). Hence, understanding the human mind and behaviours is essential to providing optimal solutions to save the Earth. As a result of deleterious environmental impact, research on the interplay between humans and the natural environment has attracted a lot of attention (Gifford, 2014). One of the main objectives of this research is to examine individuals' environmental engagement with the ultimate goal of helping to understand humans' environmental concern and how behaviours might help to remedy environmental problems.

Moreover, within the current global context, different groups of cultures are interconnected; therefore, research on environmental engagement must pay more attention to the differences, similarities, and changes among cultural groups. Researchers have extended their

research scope to examine environmental concern and pro-environmental behaviours across cultures (see Tam & Milfont, 2020). However, research which looks at how environmental concerns and behaviours may change when people immigrate from one culture to another is scarce despite recognition that acculturation might influence environmental engagement (e.g., Schultz et al., 2000; Romero et al., 2018;). Given the dearth of evidence on this topic, the current research explores the role of acculturation on environmental concerns and pro-environmental behaviours among immigrants, particularly Vietnamese immigrants in New Zealand.

National Context

New Zealand is a high-income country, with a gross national income (GNI) per capita of US\$ 42,760 (World Bank, 2019), and an estimated population of 5.1 million people (Statistics New Zealand, 2020). Located in the south-west Pacific, New Zealand consists of two main islands – the North Island and the South Island. Since New Zealand has a long and narrow shape with an oceanic climate, the country has a diversity of natural resources.

New Zealand is well-known for its rich diversity of ethnic groups. According to the 2018 Census (Statistics New Zealand, 2018a), of the 4.7 million people, approximately 70.2% are European, 16.5% are Māori, 15.1% are Asian, and 8.1% are Pacific Islanders. In 2018, there were 10,086 Vietnamese with a median age of 27.7 (Statistics New Zealand, 2018b). Among this population, 41.6% have lived in New Zealand for more than 10 years. Auckland, Wellington and Canterbury are the most common regions that Vietnamese communities settle within New Zealand (Statistics New Zealand, 2018b).

Beyond its ethnic diversity and richness of natural resources, New Zealand is often described as ‘clean and green.’ This description of New Zealand is possibly linked to the Rainbow Warrior incident in 1985 when New Zealand stance against nuclear energy as well as

the pass of the NZ Nuclear Free Zone, Disarmament, and Arms Control Act in 1987 (see Sanderson et al., 2003; Coyle & Fairweather, 2005). The ‘clean and green’ image has become an important part in New Zealand’s national consciousness (Coyle & Fairweather, 2005). In the book “Inventing New Zealand: Everyday Myths of Pākehā Identity”, Bell (1996) wrote that “As one grows up, a sense of identity is drawn at least in part from nature” (p. 28). In other words, the clean and green image is an integral part of New Zealander’s sense of identity (Milfont et al., 2020).

Furthermore, research by Hughley, Kerr, Cullen and MacLean (2002, 2013) confirmed that many New Zealanders believe that they live in a clean and green environment although the percentage of respondents either “strongly agreed” or “agree” on that statement was decrease from 66.2% (2002) to around 36% (2013).¹ Around half of respondents agreed that state of New Zealand’s natural environment was either “very good” or “good” in all waves of data. In sum, New Zealanders have integrated ‘clean and green’ image with their identity as well as they believe that they have lived in a ‘clean and green’ environment.

In contrast to New Zealand, Vietnam is a lower middle-income country located in Southeast Asia, with GNI per capita of US\$ 2,590 (World Bank, 2019). It ranked the 15th among the most populous countries in the world with estimated 96.46 million people (World Bank, 2019). Vietnam is located on the eastern Indochinese Peninsula, which shapes like the “S” with wide at two heads North-South, and long and narrow in the Central. Although similar to New Zealand, Vietnam has a rich biodiversity with several types of ecosystems, to date, Vietnam has

¹ Since 2000, Lincoln University has conducted survey on people’s perceptions of the State of the New Zealand environment. The survey asked respondents directly if they believe New Zealand is ‘clean and green.’ The aim of this ongoing research was to measure New Zealand’s perceptions, attitudes, and preferences towards a range of environmental issues.

experienced (and is still experiencing) severe environmental issues and natural resources shortage.

According to the Environmental Performance Index (EPI, 2020) which ranks 180 countries on 32 performance indicators across eleven issue categories indicating environmental health and ecosystem vitality, Vietnam ranked 141st among 180, while New Zealand ranked 19th. In terms of plastic production, Vietnam is also one of the five countries (i.e., China, Indonesia, the Philippines, Thailand and Vietnam) that contribute up to half of all of plastic waste in the oceans (UNEP, 2018). The “take-away” street food culture in Vietnam contributes to the extensive use of single-use plastics, as inexpensive plastic bags can be found at all shops and markets. Purchasing food or anything covered by plastics has become extremely common in Vietnam. Furthermore, the widespread use of motorbikes in Vietnam also contributes to the decrease in air quality, which, in turn, contributes to the increase in climate issues. A vast majority of families in Vietnam own at least one motorbike regardless of their economic status.

Based on these socio-cultural distinctions between New Zealand and Vietnam, we proposed that individuals who have moved from Vietnam to live in New Zealand would experience a change in their environmental concern and pro-environmental behaviours due to the different cultural norms associated with environmental protection. We conducted two studies to address this possibility. Study 1 aimed to test hypotheses relating to acculturation orientations, environmental concern, and pro-environmental behaviours. A mean comparison between Vietnamese living in New Zealand and a matched sample of Vietnamese living in Vietnam, and a series of regression analyses were conducted to test our hypotheses. In Study 2, a focus group approach was used to supplement the first study’s results and explore further Vietnamese migrants’ experiences about changes in their environmental engagements.

This thesis is structured into five chapters. This first chapter provides a brief introduction covering the research background of the research. Then, we will present the theoretical elements and main concepts used in this research. Next, the two studies are presented with a brief introduction and discussion for each. Finally, we will conclude with the general discussion presenting the key findings of both studies and discussing the limitations as well as the strengths of this research and proposing potential future directions.

Chapter 2: Literature Review

To explore the influence of acculturation on immigrants' environmental engagements, we examine three main concepts in this thesis: environmental concern, pro-environmental behaviours, and acculturation orientations. In this chapter, we discuss these concepts and existing research. Additionally, we also discuss the theoretical frameworks relating to Individualism-Collectivism and Survival-Traditional values that help us to explain why we expected the change in immigrants' environmental engagements.

Environmental concern and Pro-environmental behaviours

The definition and measurement of Environmental Concern vary across studies. To illustrate, it has been proposed as representing either specific attitudes towards one's own behavior, or others' behavior relating to the environment; or general attitude or value orientation towards the environment (Fransson & Gärling, 1999). Alternatively, Dunlap and Jones (2002) stated that environmental concern refers to people's awareness about the environment and their support of efforts to solve environmental problems. Several instruments have been developed to measure general attitude based on different environmental concern's definitions (e.g., the Ecological Attitude Scale, Maloney & Ward, 1973; the New Environmental Paradigm Scale, Dunlap & Van Liere, 1978). However, these scales have also been used to measure specific attitudes toward specific behaviours. This might be problematic with the validity of the findings relating to environmental concern.

Fransson and Gärling (1999) suggested that environmental concern should be measured as a construct that includes both general and specific attitudes regarding one's own and other's contributions to solve environmental issues. Following this view, Kilbourne and Pickett (2008) suggested an integrative approach to understanding environmental concern. They assessed

environmental concern at both individual and social perspectives. The first perspective relates to individual's actions on the environment, and the second relates to people's perception on the need for social, political and legal changes to mitigate the environmental problems. This study adopted this integrative view to understanding immigrants' environmental concern.

Pro-environmental behaviours can be defined as “any action that enhances the quality of the environment” (Steg et al., 2014, p. 104). A part of research on pro-environmental behaviour has studied behaviours relating to conserving environmental resources such as saving energy, water consumption, and recycling. Conservation behaviours are key in developing a sustainable and effective solution for current environmental issues. However, Nguyen et al. (2016) argued that few studies had analyzed conservation behaviour as a composite construct. Pickett et al. (1995) proposed and refined a scale named ENVIROCON which measured conservation behaviours as a composite construct. The ENVIROCON scale measures various conservation behaviors, including dispositional activities, recycling, and preservation of public resources (Pickett et al., 1995). Thus, this present research will examine immigrants' pro-environmental behaviour by using the ENVIROCON scale.

Environmental concern is considered a psychological determinant of pro-environmental behaviours in many studies, but researchers have found inconsistent findings regarding this relationship. Some have found that the relationship between environmental concern and pro-environmental behaviour was positive, but it was often either weak or insignificant regardless of the measure used (e.g., Bamberg & Moser, 2007; McDonald et al., 2015). Furthermore, Tam and Chan (2017) found that the relationship between concern and behaviour varied across cultures and was affected by other social factors (i.e., distrust, belief in external control, present orientation, individualism-collectivism, tightness-looseness). Due to the inconsistency and

complexity of the concern-behaviour relationship, in this study, we analyzed each variable separately given our focus on participants' levels on these variables.

Acculturation orientations

Due to the increase in the interaction among cultures, studies on environmental concern and pro-environmental behaviours have extended their scope across cultures. Within the globalization and migration, different cultural groups which hold different social practices interact and influence each other. Particularly, these interactions of cultural traits are likely to influence different attitudes toward nature or the environment (Johnson et al., 2004; Tam & Milfont, 2020). By comparing between two or more cultural groups, researchers have examined differences and similarities in environmental engagement among those groups. Several studies examine the differences and similarities between immigrant groups and the majority groups in terms of their environmental concern, attitude and behaviour. Acculturation has been considered as a potential explanation for the findings of these studies.

Acculturation is defined as “the dual process of cultural and psychological change that takes place as a result of contact between two or more cultural groups and their members” (Berry, 2005, p. 698). It is important to explicitly clarify the acculturation occurring at the group level and the individual level as the changes in acculturating process at the two levels are different. The changes at the group level might be profound, while individuals' changes can vary greatly (Berry, 1997). At the group level, acculturation involves changes in the culture of the group, namely social structures, institutions, and cultural practices. Meanwhile at the individual level, it involves changes in the psychology of the individual (Berry, 1997, 2005). In the present research, we focused on acculturation occurring at the individual level or “psychological acculturation” (Berry, 1997).

Furthermore, there are variations in how groups and individuals undergo acculturation, which has been termed acculturation strategies (Berry, 1997) or acculturation orientations (Demes & Geereart, 2014). To align with these variations, Berry (1997, 2003) proposed a framework presenting two main orientations which acculturating individuals face, namely their orientation towards the cultural heritage while in the host society and their orientation towards the host society. Four acculturation strategies have been derived from these two orientations for ethnocultural groups, namely assimilation, integration, separation, and marginalization. If individuals hold high orientation toward both the host culture and the home culture, they are integrated. In contrast, if they have little interest in both cultures, then their strategy is marginalization. If they have a low orientation toward their heritage culture while seeking daily contact with the host culture, it means they have chosen the assimilation strategy, and the reverse of this strategy is the separation (Berry, 1997).

Researchers have different approaches to assess acculturation orientations. They have used the bipolar method which measures participants' preference for either the home or host culture in some areas; or the bidimensional approach which measures the preference for home and host culture independently; or the four-scale method which measures each of the four orientations with different items (Demes & Geereart, 2014). Among these, the bidimensional method is preferred (see Arends- Tóth & Van de Vijver, 2007; Rudmin, 2009). Bearing this in mind, we decided to use the bidimensional approach to assess Vietnamese participants' acculturation orientations. Demes and Geereart (2014) proposed a scale named the Brief Acculturation Orientation Scale (BAOS) which measures individuals' acculturation orientation toward home and host country independently, yielding two continuous variables. Additionally, the scale was conducted on both student and migrant sample in United Kingdom, as well as

conducted on ten different populations ranging from Western to Asian countries. Hence, we used the BAOS to measure participants' acculturation orientation towards Vietnam and towards New Zealand.

The influence of acculturation on environmental concern and pro-environmental behaviours

Human-environment interaction is culture-bound (Tam & Milfont, 2020). For decades, researchers have recognized acculturation's role in human-environment interaction. However, scientific evidence to confirm the role of acculturation in environmental engagements remain debatable. Previous research has found evidence of the predicting role of acculturation on immigrants' environmental concern and behaviours. Research by Carol and Ewert (1995) found that levels of acculturation had effects on individuals' concern on a group of environmental issues among Hispanic participants in the United States. Previous research showed that acculturation partially predicts immigrants' environmental engagements. Research by Schultz et al. (2000) on Latino immigrants found the non-significant relationship between acculturation and self-report pro-environmental behaviours, but that acculturation was significantly related to environmental concern. Specifically, it negatively predicted the score on the New Ecological Paradigm (NEP) Scale - a measured indexing environmental concern (Schultz et al., 2000). In contrast, research by Leung and Rice (2002) conducted with Chinese immigrants in Australia found that the longer that Chinese immigrants stay in Australia, the more likely they are to exhibit pro-environmental behaviours, but at the same time, the less concerned they are for the environment.

Nevertheless, a few studies also found the non-significant relationship between acculturation and environmental concern and pro-environmental behaviours. A study conducted

by Deng et al. (2006) on Chinese in Canada and Anglo-Canadians was conducted to examine to environmental attitudes and environmental values among these cultural groups. The authors only found a significant difference in social-altruistic values and anti-anthropocentrism between Chinese and Anglo-Canadians in the low-acculturated Chinese group, whereas there were no differences compared to the Anglo-Canadians in the high-acculturated Chinese group. The results from this study indicates that ethnicity played a more important role than acculturation in predicting environmental attitudes and values. Aligned with the Deng et al. (2006) findings, Lovelock et al. (2013) found no significant relationship between acculturation and environmental values among immigrants in New Zealand. Length of stay, the use of English and social connections of immigrants was not connected to their NEP score. Their results also revealed that there were no differences in environmental worldviews between New Zealand-born and immigrants in New Zealand regardless of ethnicities.

Besides quantitative approaches to assess the relationship between acculturation and environmental engagements, a few studies have used qualitative methods to obtain insight into the cultural influence on individuals' environmentalism. A recent qualitative study conducted by Ma (2019) on Chinese immigrants in the US context confirmed the significant difference in household environmental behaviours between the US-born Whites and the Chinese immigrants. The authors conducted face-to-face interviews with US-born Whites and Chinese immigrants in the US to explore the cultural differences in pro-environmental behaviours among these groups. The strong pro-environmental behaviours of the Chinese immigrants were related to their Chinese cultural values; however, during the process of assimilation, their pro-environmental behaviours faded away (Ma, 2019). This study confirmed the role of culture and context on immigrants' environmental engagements.

Similar to our research, Romero et al. (2018) performed a mixed-method research with Brazilians living in Canada to identify the cultural influence of Canadian environmental attitudes on Brazilians' sustainability attitudes and behaviours. They compared the environmental knowledge, attitudes and pro-environmental behaviours of Brazilian immigrants before and after they move to Canada. The results indicated that context did not have influence on participants' environmental attitudes but had influence on their recycling behaviours. Participants already had positive attitude and were willing to act in environmentally friendly ways while they were in Brazil; hence, moving to Canada did not influence their environmental attitude. However, due to the lack of infrastructure in Brazil, participants did not actually act in an environmentally friendly manner. Immigrating to Canada, however, changed their pro-environmental behaviours as Canada has good infrastructure and a system of norms (Romero et al., 2018).

In summary, the role of acculturation in understanding environmental concerns and pro-environmental behaviours among immigrant groups is still unclear. Furthermore, acculturation's definition and measurement vary across environmental studies. Researchers have measured acculturation by length of residence and arrival age (Carol & Ewert, 1995; Leung & Rice, 2002; Lovelock et al., 2013), by language usage (Schultz et al., 2000; Lovelock et al., 2013), by friendships within and outside ethnic group (Lovelock et al., 2013). It can be seen that there is no consistent in conceptualization and measurement of acculturation across studies.

Moreover, these studies also only made comparisons between immigrant societies and host societies, except the study by Romero et al. (2018). Research on the differences and the changes of immigrant groups compared to their original societies is scarce, especially research on Vietnamese immigrants. Most of the focus involves comparing groups who are living within one country. Researchers compared native-born group with ethnic groups in one country or

compared among ethnic groups within countries. Thus, by adapting Berry's (1997) acculturation model, this research aims to investigate whether acculturation orientations predict the differences in environmental concern and pro-environmental behaviours among Vietnamese immigrants in New Zealand.

Theoretical Frameworks

Although the focus of the present research is at the individual level, investigating the extent to which psychological acculturation influences pro-environmental concerns and behaviours of Vietnamese who immigrated to New Zealand, it is important to highlight cultural distinctions as well. As reviewed above, New Zealand and Vietnam differ on several indicators of environmental protection. These countries also differ in dimensions of cultural variability, and this matter because the extent to which individuals have concerns and engage in behaviours toward the environment is influenced by cultural variables (Tam & Milfont, 2020). Indeed, scholars have proposed several theoretical models for understanding interactions between humans and the environment across cultures (for a review, see Milfont, 2012). One of the most widely mentioned models is Inglehart's (1997) theory of materialist and post-materialist values.

Survival/Self-expression and Traditional/Secular-rational values. Based on data from the World Values Survey, Inglehart and Baker (2000) identified two main dimensions of cultural value variations across cultures: (1) Traditional versus Secular-rational values and (2) Survival/Material versus Self-expression/Post-material values. These values have been measured over the last 35 years via the Values Surveys (Inglehart, 2018). The results show these two dimensions are robust and stable over time. The first dimension contrasting Traditional versus Secular-rational values emphasizes religious beliefs and gender roles, while the second dimension contrasting Survival versus Self-expression values is related to a society's level of

economic development. Societies that place greater emphasis on Traditional values are generally more strongly religious, have high levels of national pride, have strong ties in the parent-child relationship, emphasize authority and traditional family values. These societies remain near the survival level, and their culture is mainly oriented toward ensuring physical survival, materialist values such as personal and national security, and economic well-being. Meanwhile, societies that hold stronger Self-expression values (as in the second dimension of Survival/Material versus Self-expression/Post-material values) emphasize quality of life and self-expression. According to Inglehart (2018), high-income societies (e.g., New Zealand) rank high on both Secular-rational values and Self-expression values; conversely, low-income and lower-middle-income societies (e.g., Vietnam) tend to hold Traditional values and Survival values.

Importantly for the context of the present proposal, these values correlate with environmental items (Inglehart & Baker, 2000; Inglehart, 2018). Inglehart (2018) showed strong positive correlations between Self-expression values and items relating to environmental protection activities. Inglehart and Baker (2000) also found a positive correlation between Traditional values and an item expressing that national environmental problems can be solved without any international agreements. This means that those who hold Traditional values might have less concern for the environment and less willing to protect it.

Moreover, previous studies have found empirical links between cultural values and environmental engagement at both social and individual level. At the country level, Self-expression/Post-materialist values lead to higher environmental engagement; similar findings were also found at the individual level. Individuals who are female, hold Post-materialist values, and higher-income individuals have a higher score on environmental engagement (Milfont, 2012). At the country level, in Oreg and Katz-Gerro's (2006) study, environmental attitudes

positively related to Post-materialist values or changed to Self-expression values (Inglehart & Baker, 2000). Additionally, Post-materialist values show stronger links to environmental concerns than other value groups (Olofsson & Öhman, 2006). At the individual level, those who have Self-expression values with higher levels of education and income have higher scores on environmental protection (Kemmelmeier, Krol, & Young, 2002).

Survival/Self-expression values and Collectivism/Individualism. According to Inglehart (2018), the Survival/Self-expression values dimension also links with another dimension of cultural variability which has been widely studied across cultures: “Collectivism/Individualism”. Collectivism and Individualism dimension relating to how individuals integrate with a given society (Hofstede, 2001). The author defined Individualist societies as those that emphasize rights above duties, self-concern and immediate family, personal autonomy and self-fulfillment; while collectivist societies focus on groups and collectivist goals (Hofstede, 1980; as cited in Inglehart, 2018). Analyzing data from the World Values Survey, Inglehart (2018) indicated countries that rank high on Self-expression tend to rank high on Individualism. As mentioned above, societies that rank high on Self-expression have higher scores on environmental engagement; therefore, societies that rank high on Individualism potentially hold higher scores on environmental engagement.

Furthermore, Triandis (1990) pointed out the differences in social behaviors occurring in in-groups and out-groups in collectivist and individualist cultures. Collectivist societies behave more differently toward in-groups and out-groups compared to their counterparts, tending to have more concern about their in-group members than other people outside their in-group (Triandis, 1990). Subsequently, people in collectivist cultures often show a lack of concern or care toward out-groups as they spend most of their energy towards their in-groups. Thus, if

environmental issues are considered as belonging to out-groups, collectivist societies will pay less attention and have less concern with conserving the environment, compared to individualist societies. Also, Stern et al. (1995) pointed out that people who hold higher Individualism values (rather than collectivism) will be more likely to criticize or to take actions against environmentally harmful practices.

In summary, cultures that rank higher on Self-expression and Individualism tend to hold greater concern about the environment and be more likely to take mitigating actions to protect the environment. Vietnam has lower scores on both Self-expression and Secular-rational values compared to New Zealand on the global cultural map (Inglehart, 2018). In addition, according to Individualism Index Values (IDV), the Vietnamese culture also holds stronger collectivism values compared to the New Zealand culture (Hofstede et al., 2010). Furthermore, based on the cultural distance tool proposed by Muthukrishna et al. (2020), we found a huge cultural distance on the environmental conservation dimension between Vietnam and New Zealand. Muthukrishna et al. (2020) developed this tool by using the combined data from the 2005-2009 and the 2010-2014 waves of the World Values Survey to generate a cultural metric. Figure 1 illustrated the cultural distance in terms of environmental conservation of other countries from Vietnam. We can see that New Zealand has a great distance from Vietnam on environmental conservation. This means that the differences in environmental conservation between Vietnam and New Zealand is considerable huge.

this difference. Although the relationship between acculturation and environmental engagement is not identical across the extant literature, we anticipated that in this study, acculturation would be an indicator of the differences in environmental concern and pro-environmental behaviours.

This research adopted a mixed-method sequential explanatory design to capture the research goal. The research consists of two phases: quantitative followed by qualitative (Creswell, Clark, Gutmann, & Hanson, 2003). Study 1 aims to test hypotheses relating to acculturation, environmental concern and pro-environmental behaviours. Then, in Study 2, we conducted focus group interviews with Vietnamese immigrants in New Zealand to supplement the quantitative results obtained in the first study by using qualitative data. The rationale for this research design is that the quantitative data from Study 1 would provide a general understanding of the research problem. Then, qualitative data gained in Study 2 would explain the statistical results from Study 1 by exploring participants' experiences (Creswell et al., 2003).

Reflexivity and Positioning

Before presenting and discussing the research's findings, I will discuss my reflexivity process while I conducted this research. Reflexivity is about unpacking researchers' partial and positioned perspectives in their research. It is essential in qualitative work as it involves in the research development process and affects the interpretations of their qualitative work (see Lazard & McAvoy, 2020). I am going to explain my position in relation to this research and how I positioned myself. As a Vietnamese currently living and studying in New Zealand, my natural position is similar to the target population of this research, and this experience led me to the main research question as I experienced cultural shock regarding environmental protection and awareness when moving here. As an insider of the group, I have a deeper insight on participants'

experiences and can naturally involve in the discussion with participants in Study 2 as we speak the same language and share similar cultural values and experiences.

However, this closer connection can also be considered as a disadvantage. Given that I have personally experienced the acculturation process and the personal change in my environmental engagements, I have my own biases relating to this research and its outcomes. I have attempted to minimize these biases by acknowledging my natural position and collaborating with participants throughout the research process. I ensure that participants, especially those in Study 2, can check over transcripts as well as make any comments or feedback on the dataset and the findings. Additionally, I also questioned my research process when answering questions adapted from Lazard and McAvoy (2020): Why research that topic? Why ask those particular research questions? How do my choices about the methods shape knowledge production? How does the relationship between researcher and researched contribute to this process? How does this impact my analytic interpretations? These questions were all carefully considered during my research development, data analyses and interpretations.

Chapter 3 (Study 1): The effect of Acculturation on Environmentalism

Previous research has not yet confirmed the determinant role of acculturation in predicting environmental engagements. The influence of acculturation on individuals' environmental concern and pro-environmental behaviours also differs across cultural groups. In this study, we focused on the influence of acculturation orientations on Vietnamese immigrants' environmental concern and pro-environmental behaviours in New Zealand. According to the past literature, Vietnamese society is more collectivist, with less emphasis on Self-expression and Secular-rational values than New Zealand society. Additionally, compared with Vietnam, New Zealand has good reputation on its 'clean and green' environment. Based on the difference in context between Vietnam and New Zealand, and the link between collectivism/individualism and environmental engagements, we proposed these hypotheses:

Hypothesis 1: Vietnamese New Zealanders will have higher scores on measures of environmental concern and pro-environmental behaviours compared to matched Vietnamese living in Vietnam.

Hypothesis 2: Vietnamese New Zealanders who have been living in New Zealand longer will also have higher scores on measures of environmental concern and pro-environmental behaviours compared to matched recent arrivals.

Hypothesis 3: Orientation towards New Zealand culture will positively predict the level of environmental concern and pro-environmental behaviours among the group of Vietnamese New Zealanders.

Hypothesis 4: Length of stay of Vietnamese New Zealanders will moderate the relationship between orientation towards New Zealand and scores on measures of environmental concern and pro-environmental behaviours.

Acculturation has two dimensions, and Hypothesis 3 examines the direct effect of the main dimension (i.e., orientation towards New Zealand), but it is possible that the acculturation dimensions interact in predicting the environmental outcomes. This research will also examine this possibility and the following exploratory hypothesis is proposed.

Hypothesis 5 [exploratory]: The acculturation orientations (Orientations toward Vietnam and New Zealand) will interact so that environmental concern and pro-environmental behaviours will be lower for individuals who have more orientation towards Vietnam.

Method

Participants

Participants were Vietnamese born in Vietnam, older than 18 years old either currently living in New Zealand or in Vietnam. We ran a power analysis with G*Power to ensure sufficient power for the statistical analyses comparing mean differences and moderated regressions. Assuming a medium effect size (Cohen's $d = .50$) with a 95% confidence interval, the optimal total sample size for the study was 176, with 88 participants for each country. We oversampled participants ($N = 430$), with 121 Vietnamese living in New Zealand and 309 Vietnamese living in Vietnam.

Table 1 reports the sociodemographic characteristics of participants in each country. Overall participants had a mean age of 31.2 ($SD = 9.1$) and 64.9% were female, and most participants had acquired a bachelor's degree or above (73.5%). Participants' mean score on self-reported English proficiency was 3.1 ($SD = 1.1$) on a 5-point scale. As expected, the independent samples' t -test result of English proficiency indicated that Vietnamese living in New Zealand had a significantly higher mean score on English proficiency ($M_{NZ} = 3.9$, $SD = 0.7$) compared to Vietnamese living in Vietnam ($M_{VN} = 2.8$, $SD = 1.1$), $t(418) = 10.84$, $p < .001$, $d = 1.19$. A large majority of respondents resided in an urban area (77.9%) at the time of the survey. For the New

Zealand sample, most participants lived in either Auckland (43%) or Wellington (25.6%). For the Vietnam sample, most participants lived in the South of Vietnam, particularly in Ho Chi Minh city (36.9%) and Binh Thuan province (27.5%).

Table 1

Sociodemographic Characteristics of Vietnamese Participants in Vietnam and New Zealand

Characteristics	Vietnam		New Zealand	
	n	%	n	%
Sample size	309		121	
Gender				
Female	193	62.5	86	71.1
Male	115	37.2	32	26.4
Other	1	0.3	0	0
Highest educational degree				
No schooling completed	10	3.2	0	0
Secondary school	9	2.9	1	0.8
High school graduate	64	20.7	11	9.1
Technical/Vocational training	13	4.3	0	0
Bachelor's degree	185	59.9	49	40.5
Postgraduate degree	24	7.8	48	39.7
Doctorate	3	0.9	7	5.8
Current neighborhood				
Rural	40	12.9	6	5
Urban	247	79.9	88	72.7
Suburban	19	6.1	26	21.5
Other	2	0.6	0	0

Measures

The questionnaire included sections on demographic information, acculturation orientations scales, and environmental engagement scales (i.e., pro-environmental behaviour and environmental concern). The full questionnaire is included as Appendix A.

Demographic Information. A section on background information gathered demographic variables relating to participants' age, gender, citizenship, educational level, residential area, length of stay (for the New Zealand sample), ethnicity, religion, and self-reported English proficiency.

Acculturation orientations. We used the Brief Acculturation Orientation Scale (BAOS) adapted from Demes and Geeraert (2014) to measure two acculturation orientations: orientation towards host country and orientation towards home country. The scale was translated into nine different languages, including some Asian countries: Chinese, Thai, and Japanese with good scale reliability, α 's > .65 (Demes & Geeraert, 2014). Respondents' acculturation orientations toward the home country and toward the host country were measured independently. For each type of orientation, four items capturing the value of cultural friendship, traditions, characteristics, and actions were measured (e.g., "I have Vietnamese friends", "I have New Zealand friends"). Participants rated their agreement with all eight items on a 7-point Likert scale, ranging from 1 (*Strongly disagree*) to 7 (*Strongly agree*). A higher score on the orientation towards the home country indicated a stronger will to maintain the cultural heritage while in the host society. In contrast, a higher score on the orientation towards the host country indicated a stronger will to participate in the host society's culture.

Pro-environmental behaviour. We used the CONSERV scale (Nguyen et al., 2016) to measure pro-environmental behaviour. The scale had nine items which were refined and adapted from the ENVIROCON scale (Pickett et al., 1995) to investigate Vietnamese' conservation

behaviour. Nine items were related to conservation activities such as recycling and preservation of natural resources (e.g., “How often do you conserve water while washing dishes?”).

Participants indicated how often they engaged in each activity on a 5-point Likert scale, ranging from 1 (*Never*) to 5 (*Always*). A higher score indicated a greater frequency in conducting more conservation behaviors.

Environmental concern. We used a six-item scale measuring environmental concern adapted from Nguyen et al.’s (2016) study. Based on an environmental concern scale developed by Kilbourne and Pickett (2008), Nguyen et al. (2016) adapted six items to capture environmental concern within the Vietnamese context. These items captured respondents’ views on protecting the environment by reducing consumption activities and enforcing strict anti-pollution laws (e.g., “Anti-pollution laws should be enforced more strongly”). Participants rated their agreement with each item on a 5-point Likert-type scale, ranging from 1 (*Strongly disagree*) to 5 (*Strongly agree*). A higher score indicated a higher level of concern for the environment.

Procedure

Participants were recruited primarily through Vietnamese community groups on social media and via the researcher’s networks. Participants were invited to complete the questionnaire via the online survey tool “Qualtrics,” (<https://www.qualtrics.com>) which allowed the anonymous participation. For the Vietnam sample, the questionnaire was in Vietnamese. For the New Zealand sample, the questionnaire was provided in both Vietnamese and English for the New Zealand sample, with 66 participants answered in Vietnamese and 55 answered in English. They were also asked to indicate whether they would be interested in taking part in the second phase of the study, which was used for participant recruitment in Study 2. Our study was pre-registered (<https://osf.io/pb4yd>). Ethical approval was obtained from the Victoria University of

Wellington School of Psychology Human Ethics Committee (#28141, approval date: 15 November 2019).

As there was no available Vietnamese version of BAOS and environmental scales at the time of the survey was conducted, all the scales were translated into Vietnamese. This research adapted the committee approach (Furukawa et al., 2013) to translate measurements. In contrast with back translation, the committee approach reduced the cultural bias inherent in the native language (Furukawa et al., 2013). The process began with collaborative and parallel translation work of three translators to translate the questionnaire from English into Vietnamese. The translator group included the researcher and other two psychology graduates who are fluent in both Vietnamese and English. Subsequently, an adjudicator who is a Vietnamese psychologist oversaw and established consensus after the various translations were reviewed by individual translators. We used the consensus measurements to collect data in Vietnam and New Zealand.

Results

Preliminary analyses

Data Imputation. The initial data set had missing values across each of the measurement scales and some demographic variables (i.e., age, gender, educational level, English proficiency, and length of stay). Because we used age, gender, and educational level in the propensity score matching to have matched samples, we excluded 10 participants who had missing information on these items. Before the imputation, we conducted Little's MCAR test which indicated that missing data did not deviate from randomness, $\chi^2(149) = 175.460, p = .068$. This means that the imputation did not significantly alter the structure of the data or any of the scale means. Subsequently, we used 'Amelia' (Honaker et al., 2011) in R to impute missing values in acculturation orientations, pro-environmental behaviour, environmental concern, and length of stay variables.

Psychometric Properties of the Scales. We conducted a confirmatory factor analysis (CFA) on the three scales (i.e., acculturation orientations, pro-environmental behaviour, and environmental concern) to check their psychometric properties. Maximum-likelihood estimation procedures were used. Models with a χ^2/df in the range of 2 to 3; CFI values higher than 0.95; RMSEA values ranging between 0.06 and 0.08; and SRMR values less than 0.08 has good fit (McIver & Carmines, 1981; Hu & Bentler, 1999). Table 2 shows the results of the fit statistics.

Table 2

Fit indices of the acculturation orientation, pro-environmental behavior and environmental concern scales

Measures	χ	df	χ^2/df	CFI	RMSEA	SRMR
Acculturation orientation	38.765	19	2.04	0.86	.096 [.051, .139]	0.084
Acculturation orientation (New Zealand)	2.566	2	1.28	0.99	.050 [.000, .200]	0.030
Acculturation orientation (Vietnam)	1.242	2	0.62	1	.000 [.000, .161]	0.023
Pro-environmental behaviour	89.062	27	3.30	0.76	.142 [.110, .175]	0.100
Pro-environmental behaviour (modified*)	46.006	26	1.77	0.92	.082 [.041, .120]	0.065
Environmental concern	19.452	9	2.16	0.98	.101 [.037, .163]	0.032

Note. CFI = Comparative fit index, RMSEA = The root mean square error of approximation, SRMR =

The standardized root means square residual.

*Item EB3 and EB5 were correlated.

As the BAOS was constructed bidimensional which means that acculturation orientation toward the home country and the host country were measured independently (Demes & Geereart, 2014). Hence, we performed CFA for each subscale separately. The scale reliability of acculturation orientation towards New Zealand subscale was low; the omega for scale on

acculturation orientation towards New Zealand was $\omega = .57$ [.45, .69] and for the scale towards Vietnam was $\omega = .69$ [.60, .78]. Hence, we further checked the factor loadings of this subscale. The CFA results indicated that in this subscale, item 5 (“I have New Zealand friends”) non-significantly loaded on the factor. Hence, we deleted item 5 in BAOS. Table 3 presents the factor loadings and the Cronbach’s alpha, omega of the two subscales of BAOS after deleting item 5.

Table 3

Factor loadings and Cronbach’s alpha, Omega of BAOS after eliminating item 5.

Items	Loadings	α	ω
Acculturation orientation towards New Zealand		.616	.661
I take part in New Zealand traditions	0.481		
I develop my New Zealand characteristics	0.998		
I do things the way New Zealand people do	0.704		
Acculturation orientation towards Vietnam		.670	.693
I have Vietnamese friend	0.671		
I take part in Vietnam traditions	0.703		
I hold on to my Vietnam characteristics	1.071		
I do things the way Vietnam people do	0.508		

Note. All the items load on factor significantly ($p < .001$).

The CFA results indicated that the pro-environmental behaviour model did not fit well, and inspection of the modification indices recommended item 3 (“How often do you conserve water while washing dishes?”) and item 5 (“How often do you conserve water while brushing your teeth, shaving, washing your hands, bathing, etc.?”) should covariate. Hence, after correlating item 3 and item 5, the model for pro-environmental behaviour scale had acceptable fit ($\chi^2/df = 1.77$, CFI = .92, RMSEA = .082 [.041, .120], SRMR = .065). In this study, the scale had acceptable reliability on both Vietnamese living in New Zealand and Vietnamese living in Vietnam, with $\omega = .75$ [.67, .82] and $\omega = .77$ [.71, .84], respectively.

The CFA results indicated that the environmental concern model had good fit ($\chi^2/df = 2.16$, CFI = .98, RMSEA = .101 [.037, .163], SRMR = .032). The scale had good reliability in this study, with $\omega = .92$ [.90, .94] for sample living in New Zealand and $\omega = .94$ [.92, .95] for sample living in Vietnam.

Sample selection. To reduce the alternative explanation of research findings due to differences of age, gender, and educational levels, we used a matching strategy to get a matched sample of Vietnamese participants living in New Zealand or Vietnam before examining our main hypotheses.

We ran propensity score matching using the package ‘MatchIt’ (Ho et al., 2011) in R to get the matched sample based on age, gender, and educational level. We calculated standardized differences (i.e., differences in means) between the two groups (i.e., Vietnamese in Vietnam and Vietnamese in New Zealand) before and after matching to assess whether the matching was successful in balancing the covariates. Notably, after matching with three covariates, there were still statistically significant differences in age ($p = .013$) and educational levels ($p = .005$) across the groups. As educational level varied across seven levels, it was difficult to get matched education levels between the two groups. Further matching interactions indicated that having only age as the covariate in the analysis yielded a matched sample with no significant differences in age and gender. Table 4 presents the comparison between before-matched and after-matched samples. The final matched sample was used for subsequent analyses.

Table 4

Standardized differences between two groups before and after matching.

	Unmatched sample			Matched sample with Age + Gender + Education			Matched sample with Age		
	NZ	VN	<i>p</i>	NZ	VN	<i>p</i>	NZ	VN	<i>p</i>
N	114	306		114	114		114	114	
Mean Age	32.17	30.19	.211	32.17	29.56	.013	32.17	32.16	.993
(SD)	(7.51)	(9.66)		(7.51)	(8.18)		(7.51)	(7.50)	
Gender* (%)	72.8	62.1	.11	72.8	76.3	.648	72.8	65.8	.315
Educational level (%)			<.001			.005			<.001
No schooling completed	0	3.3		0	0		0	2.6	
Secondary school	0.9	2.9		0.9	0.9		0.9	4.4	
High school graduate	9.6	20.6		9.6	9.6		9.6	17.5	
Technical/Vocational training	0	4.2		0	0		0	7.9	
Bachelor's degree	42.1	60.1		42.1	65.8		42.1	61.4	
Postgraduate degree	41.2	7.8		41.2	21.1		41.2	5.3	
Doctorate	6.1	1.0		6.1	2.6		6.1	0.9	

Note. NZ = New Zealand, VN = Vietnam. *Female was reported.

The final sample comprised 228 participants with 114 participants in each country. Their ages ranged from 18 to 51 years old ($M = 32.2$, $SD = 7.5$). At the time of the study, participants living in New Zealand had a mean residential length of 3.6 years ($SD = 4.2$).

Descriptive Statistics and Correlations. Descriptive statistics and bivariate correlations for acculturation orientations, pro-environmental behaviour, and environmental concern variables were calculated for each sample (see Tables 5 and 6).

Table 5*Descriptive Statistics and Correlations for Study Variables (New Zealand)*

Variables	<i>M</i>	<i>SD</i>	1	2	3	4	5
1. Pro-environmental behavior	3.65	0.65	—				
2. Environmental concern	4.38	0.81	.18	—			
3. Acculturation orientation (Vietnam)	5.28	0.89	.19*	.19*	—		
4. Acculturation orientation (New Zealand)	5.14	0.81	.11	-.06	-.10	—	
5. Length of stay	43.69	50.92	.05	-.01	-.10	.36**	—
6. Age	32.17	7.51	.18*	-.11	.00	.15	.29**

Note. $n = 114$ * $p < .05$, ** $p < .01$.**Table 6***Descriptive Statistics and Correlations for Study Variables (Vietnam)*

Variables	<i>M</i>	<i>SD</i>	1	2
1. Pro-environmental behavior	3.35	0.79	—	
2. Environmental concern	4.30	0.98	.28**	—
3. Age	32.16	7.50	-.04	-.08

Note. $n = 114$ * $p < .05$, ** $p < .01$.

In the New Zealand sample, there was a nonsignificant correlation between pro-environmental behaviour and environmental concern ($r = .18$). In contrast, there was a significant positive correlation between these two environmental variables ($r = .28, p < .01$) in the Vietnamese sample. In line with the result in Demes and Geereart (2014), the two acculturation subscales were non-significantly negatively correlated. Length of stay and acculturation orientation towards New Zealand were significantly positively correlated ($r = .36, p < .01$).

Measurement Invariance. To ensure the pro-environmental behaviours and environmental concern scales were operating equivalently across the two groups, we conducted a Multigroup-Factor Analysis Alignment in Mplus (Asparouhov & Muthén, 2014). The alignment method simplifies the test for measurement invariance by incorporating a simplicity function like the rotation criteria used in Exploratory Factor Analysis (Asparouhov & Muthén, 2014). It began with the configural model where all factor loadings and intercept parameters were freely estimated, and then established the most optimal measurement invariance pattern. If less than 25% of noninvariant measurement was found (as suggested by Asparouhov & Muthén, 2014), the measurement can be considered as invariant and the estimated latent mean was trustworthy to use for hypothesis testing. There are two types of alignment optimization: FREE alignment and FIXED alignment. The FREE approach estimated the factor mean of Group 1 as an additional parameter, while the FIXED approach assumed that Group 1's factor mean is fixed to 0.0 and then served as the reference group. (Asparouhov & Muthén, 2014)

Initially, we performed the alignment process based on the FREE alignment approach for each environmental scale. The Mplus output yielded a warning message (i.e., "Standard error comparison indicates that the free alignment model may be poorly identified. Using the fixed alignment option may resolve this problem.") and we proceeded with the FIXED approach as recommended by Asparouhov and Muthén (2014). The Vietnam group's factor mean value was

set to 0.0 for the pro-environmental behaviour scale, and the New Zealand group's factor mean value was set to 0.0 for the environmental concern scale using the FIXED alignment approach.

Table 7 summarizes the fitting functions of factor loadings and intercepts for each item in the pro-environmental scale and environmental concern scale. As the alignment method assumed that there was a pattern of only approximate invariance in the data, analyses focused on the fitting functions of the simplest model having the largest amount of noninvariance (Byrne & van de Vijver, 2017). Our noninvariant findings were well within the 25% cut-point proposed by Asparouhov and Muthén (2014). The FIXED alignment results of pro-environmental behaviour and environmental concern measures showed that there was no significant measurement non-invariance. Hence, both pro-environmental behaviour and environmental concern scale were considered as invariant across both groups.

Table 7

Alignment fit statistics for the Pro-environmental behavior and Environmental concern scale in Vietnam and New Zealand

Items	Factor loadings		Intercepts		Loadings + Intercepts
	Fit function contribution	R ²	Fit function contribution	R ²	Total contribution
Pro-environmental behaviour					
EB1	-0.319	0.991	-1.281	NA*	-1.601
EB2	-0.659	0.000	-0.492	0.622	-1.151
EB3	-0.324	0.976	-0.342	0.648	-0.666
EB4	-0.369	0.604	-0.607	0.000	-0.976
EB5	-0.551	0.696	-0.316	0.952	-0.868
EB6	-0.643	0.000	-0.660	0.451	-1.302
EB7	-0.335	0.968	-0.326	0.885	-0.661
EB8	-0.464	0.799	-0.763	0.000	-1.227
EB9	-0.609	0.633	-1.354	NA*	-1.963
Environmental concern					
EC1	-0.362	0.925	-0.317	0.189	-0.680
EC2	-0.340	0.882	-0.317	0.890	-0.657
EC3	-0.429	0.000	-0.332	0.545	-0.760
EC4	-0.534	0.000	-0.333	0.000	-0.867
EC5	-0.346	0.949	-0.408	0.254	-0.754
EC6	-0.376	0.906	-0.397	0.000	-0.772

*. Approximate invariance was not found for this parameter.

Latent mean values for each scale were estimated by the FIXED alignment method. We saved the factor mean scores of pro-environmental behaviour and environmental concern calculated from the alignment for the main hypotheses testing.

Comparing environmental factor mean scores

To test our first hypothesis that participants living in New Zealand would have higher scores on both pro-environmental behaviour and environmental concern scales compared to those living in Vietnam, we compared the factor mean values obtained from the previous alignment analysis.

The alignment result found that factor mean scores of pro-environmental behaviour were non-significantly different across the two groups. Although Vietnamese New Zealanders had higher factor mean score on pro-environmental behaviour scale compared to matched Vietnamese living in Vietnam (the difference in factor mean at the 5% significance level being 0.156), the results indicated that there was no significant difference in term of score on pro-environmental behaviour in both groups.

Similarly, the alignment result indicated that factor mean scores of environmental concerns were non-significantly different between two groups. Although Vietnamese New Zealanders had higher factor mean scores on environmental concern compared to matched Vietnamese living in Vietnam (the difference in factor mean at the 5% significance level being -0.024), the result indicated that there was no significant difference in term of score on Environmental concern scale in both groups.

We found no support for our first hypothesis. There is no statistically significant difference on pro-environmental behaviour and environmental concern between matched Vietnamese living in New Zealand and those living in Vietnam.

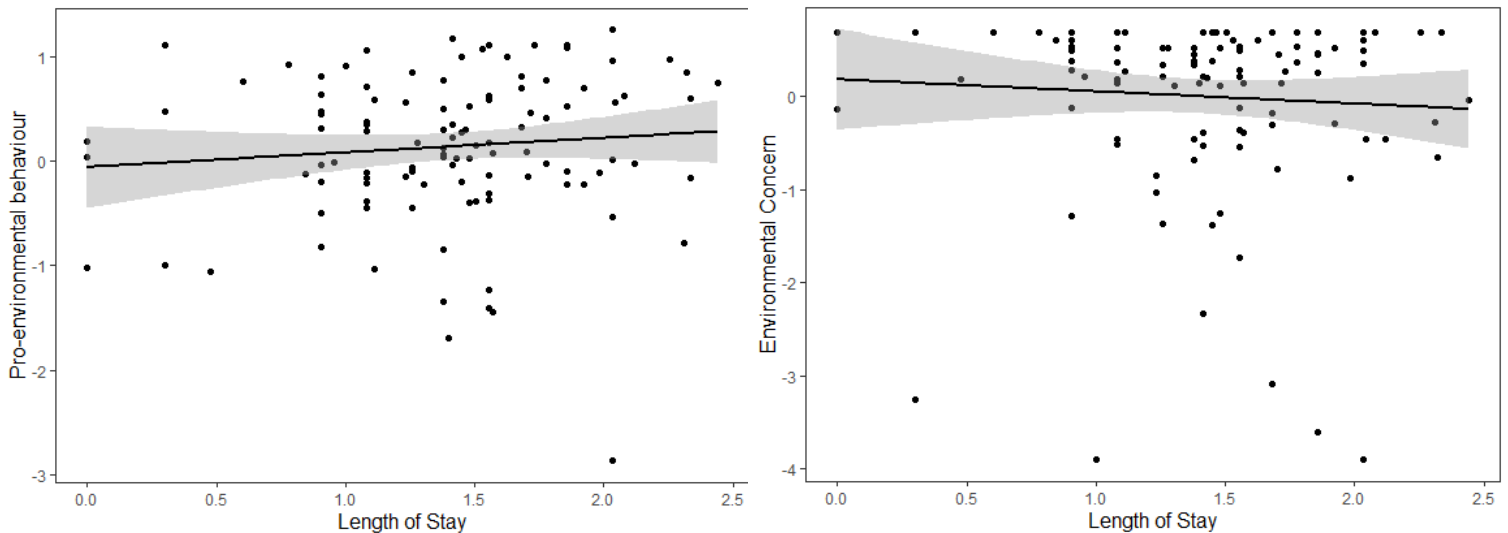
Length of stay and environmental engagement

We performed scatterplot along with regression analyses with the New Zealand sample to test the second hypothesis that participants who have been living in New Zealand longer would have higher scores on both environmental engagement scales. Figure 1 illustrates the scatterplot

of each scale with length of stay measured in months. We calculated two separate regressions using the latent means of two environmental scales. Pro-environmental behaviour was statistically non-significantly correlated to length of stay, $F(1,112) = 0.973$, $b = .00$, $SD = .00$, $p = .326$, adjusted $R^2 = .00$. Environmental concern was also statistically non-significantly correlated to length of stay, $F(1,112) = .11$, $b = .00$, $SD = .002$, $p = .736$, adjusted $R^2 = -.01$. Our second hypothesis was rejected.

Figure 2

Association Between Environmental Engagements and Length of Stay



Acculturation orientation towards New Zealand and environmental engagement

We conducted two separate regression analyses to test the third hypothesis predicting that orientation towards the host country would be positively correlated with pro-environmental behaviour and environmental concern among the participants living in New Zealand. We found that pro-environmental behaviour positively correlated with acculturation orientation towards New Zealand, $F(1,112) = 7.302$, $b = .15$, $SD = .06$, $p < .01$, adjusted $R^2 = .05$, though the effect

was small. By contrast, environmental concern was non-significantly correlated to orientation towards host country, $F(1,112) = 0.453$, $b = -.05$, $SD = .08$, $p = .502$, adjusted $R^2 = -.01$.

Our third hypothesis was partially supported. We found a marginal significant positive relationship of length of stay with pro-environmental behaviour, but not with environmental concern.

Length of stay as a moderator

We conducted separate regression analyses in which pro-environmental behaviour and environmental concern were predicted by participant's acculturation orientation towards New Zealand, adding length of stay as a moderator to test our fourth hypothesis. We used the main effect models (i.e., acculturation orientation towards New Zealand associated with pro-environmental behaviour and with environmental concern) as the basic models, with length of stay subsequently added. Length of stay did not significantly predict both pro-environmental behaviour and environmental concern. Next, the interaction between length of stay and acculturation orientation towards New Zealand was added. We found statistically non-significant moderating effect of length of stay on the relationship between acculturation orientation towards New Zealand either with pro-environmental behaviour or with environmental concern. Table 8 shows the results of the hierarchical regression analyses.

Table 8*Hierarchical Regression Results of AO_NZ interacts Length of stay*

	B	SE B	<i>t</i>	Adjusted R ²	ΔR ²
Pro-environmental behaviour					
Step 1				0.05	
AO_NZ	0.15**	0.06	2.70		
Step 2				0.04	-0.01
AO_NZ	0.14*	0.06	2.50		
Length of stay	0.00	0.00	0.19		
Step 3				0.04	0.00
AO_NZ	0.18*	0.07	2.49		
Length of stay	0.00	0.00	0.76		
AO_NZ_Length	0.00	0.00	-0.85		
Environmental concern					
Step 1				0.00	
AO_NZ	-0.05	0.08	-0.67		
Step 2				-0.01	-0.01
AO_NZ	-0.05	0.08	-0.59		
Length of stay	0.00	0.00	-0.14		
Step 3				-0.01	0.00
AO_NZ	-0.08	0.13	-1.21		
Length of stay	0.00	0.00	-0.99		
AO_NZ_Length	0.00	0.00	1.21		

Note. AO_NZ = acculturation orientation toward New Zealand; Length of stay was measured in months; AO_NZ_Length = interaction term of acculturation orientation toward New Zealand and

Length of stay (in months).

* $p < .05$, ** $p < .01$.

We found no support for our fourth hypothesis. There is no statistically significant moderation effect of length of stay on the relationship between acculturation orientation towards host country and the environmental variables.

Exploratory analysis: Acculturation orientation towards Vietnam as a moderator

Beside the independent influences of each acculturation orientation on the outcome variables, it is possible that the interaction term between the two orientations interact with each other and predict the environmental outcomes. Hence, to examine this possibility, we conducted separate regression analyses in which pro-environmental behaviour and environmental concern were predicted by participant's acculturation orientation towards New Zealand, adding acculturation orientation towards Vietnam as a moderator. Acculturation orientation towards Vietnam was added to the main effect models (i.e., acculturation orientation towards New Zealand correlated with pro-environmental behaviour and with environmental concern). Table 9 reports the results of the hierarchical regression analyses.

Table 9*Hierarchical Regression Results of AO_NZ interacts AO_VN*

	B	SE B	<i>t</i>	Adjusted R ²	ΔR ²
Pro-environmental behaviour					
Step 1				0.05	
AO_NZ	0.15**	0.06	2.70		
Step 2				0.10	0.05
AO_NZ	0.18**	0.05	3.34		
AO_VN	0.19**	0.07	2.74		
Step 3				0.10	0.00
AO_NZ	0.19***	0.06	3.43		
AO_VN	0.21**	0.07	2.85		
AO_NZ_VN	-0.05	0.07	-0.79		
Environmental concern					
Step 1				0.00	
AO_NZ	-0.05	0.08	-0.67		
Step 2				0.01	0.01
AO_NZ	-0.02	0.08	-0.25		
AO_VN	0.18	0.10	1.76		
Step 3				0.01	0.00
AO_NZ	-0.03	0.08	-0.42		
AO_VN	0.16	0.11	1.46		
AO_NZ_VN	0.07	0.10	0.72		

Note. AO_NZ = acculturation orientation towards New Zealand; AO_VN = acculturation orientation towards Vietnam; AO_NZ_VN = interaction term of acculturation orientation toward New Zealand and Vietnam.

* $p < .05$, ** $p < .01$, *** $p < .001$.

When added the orientation towards Vietnam in the regression for pro-environmental behaviours, we obtained statistically significant effects of both acculturation orientation towards

New Zealand ($b = .18, SE = .05, p < .01$) and Vietnam ($b = .19, SE = .07, p < .01$). This means that being more willing to orientate toward New Zealand or toward Vietnam was associated with being more willing to engage in pro-environmental behaviour. Next, we added the interaction term between acculturation orientation towards New Zealand and towards Vietnam. The moderating effect of acculturation orientation towards Vietnam between acculturation orientation towards New Zealand and pro-environmental behaviour was not statistically significant ($b = -.05, SE = .07, p = .43$).

When added the orientation towards Vietnam in the regression for environmental concern, we found nonsignificant effects for both acculturation orientations which means that being more willing to orientate toward New Zealand or toward Vietnam did not associate with becoming more concern for the environment. Next, we added the interaction term between acculturation orientation towards New Zealand and towards Vietnam, the moderating effect of acculturation orientation towards Vietnam between acculturation orientation towards New Zealand and environmental concern was not statistically significant ($b = .07, SE = .10, p = .48$).

We found no support for our exploratory hypothesis. There is no statistically significant moderation effect of acculturation orientation towards home country on the relationship between environmental variables and acculturation orientation towards host country.

Chapter 4 (Study 2): Vietnamese Immigrants and the Environment

The goal of Study 2 was to have an in-depth understanding of environmental engagement by identifying some of the key issues relating to pro-environmental concern and behaviour of Vietnamese immigrants living in New Zealand using a qualitative approach. The following research questions guided this study: (a) what are the environmental concerns and behaviours of Vietnamese immigrants in New Zealand? and (b) what are the perceived differences in their environmental concern and pro-environmental behaviour since moving to New Zealand?

This study used a qualitative focus group design to gather information from a sample of the Vietnamese community in New Zealand. Focus group design refers to a series of planned discussions with a group of five to ten people sharing common characteristics in a permissive, nonthreatening environment. The purpose of conducting a focus group is to listen and gather information from participants' discussions (Krueger & Casey, 2009). As with any other methodology, there are limitations regarding focus groups. For example, participants who are reluctant to voice up their opinions might be quieter during the focus group as they just want to go along with the group (Roller & Lavrakas, 2015). Additionally, focus groups cannot offer deep and detailed understanding of each participant as in individual interviews. Despite there are some limitations to the focus groups approach, this method brings many advantages while conducting research with a community sample. The interaction among focus group participants can bring a range of different thoughts and perspectives which are valuable sources of insights into participants' behaviours (Morgan, 1997). Furthermore, Vietnamese living in New Zealand might be keen to interact with people from their home country. Hence, pulling this eagerness to interact, together with the above-mentioned strengths of focus group, means this data collection method is suitable for working with Vietnamese immigrants in New Zealand.

Method

Participants

Participants in Study 1 who indicated their willingness to take part in a follow-up study were contacted via email to take part in the focus groups. Snowball sampling was also used to recruit more participants. As the current study took place during the COVID-19 pandemic, we changed the focus groups from face-to-face to an online setting. Due to the potential technology issues (i.e., lag, internet dropout) in online focus groups, we aimed to recruit a maximum of five participants for each as this would reduce the likelihood of problems occurring during the discussion (Daniels et al., 2019).

The final sample size comprised four online focus groups with 12 Vietnamese participants (4 males, 8 females) who have been either working or studying in New Zealand for at least one year. Participants ranged from 20 to 40 years of age. Most were living in Wellington at the time of the study; four participants were residing in Auckland and one participant was living in Dunedin. One participant was in Vietnam unable to return to New Zealand due to closed borders during the pandemic. This participant had lived in New Zealand for more than 3 years previously, so they met the criterion to participate in this study. Participants were given the option to fill in a short online survey on Qualtrics asking their age, gender, educational levels, and length of stay in New Zealand before the group meeting.

Materials

The discussion in the focus groups was guided by a list of prompts in the form of open-ended questions (e.g., “*Do you think that moving to New Zealand has influenced your level of environmental concern and pro-environmental behaviours?*”). There were English and Vietnamese versions of the focus questionnaires, but the Vietnamese version was the one preferred by participants in the meeting. Zoom, a cloud-based video conferencing service, was

used to carry out the focus groups. All focus groups were recorded using the “record” function in Zoom after participants gave their consent.

Procedure

After receiving approval of ethical amendment from the Victoria University of Wellington Human Ethics Committee (#28141, approval date: 31 August 2020), we sent an electronic letter inviting potential participants to join in a focus group. The invitation was sent using a Doodle pool, a free online meeting scheduling tool, to identify the availability of the participants to arrange each focus group; the Doodle pool was anonymous to the study participants. When participants accepted and filled out the Doodle form, a confirmation email was sent to them with the Informed Consent form, a Zoom invitation link, and an offer to have a test call for those who were unfamiliar with the software or wanted to test their hardware.

We transcribed the recorded focus groups into Microsoft Word documents with the assistance of the transcription package in the Wreally website (<https://transcribe.wreally.com/>). Data transcribed by Wreally were then checked against the original recordings to ensure accuracy. This transcription and accuracy check align with the familiarization stage outlined by Braun and Clarke (2012) as an important first step in thematic analysis.

Four focus groups were conducted in total. Focus groups were moderated by the researcher who is Vietnamese living in New Zealand. The first group of Vietnamese migrants comprised of one female graduate student, one male Master student and one male worker (lasting 90 min); the second group comprised of four female post-graduate students (lasting 120 min); the third group included two male graduate students (lasting 120 min); and the fourth group included three female post-graduate students (lasting 120 min). The participant who was unable to come back to New Zealand when this study was conducted took part in the fourth group. Across all focus group, participants were prompted with the following topics: (a) their views about New

Zealand's and Vietnam's natural environments; (b) their pro-environmental behaviour and concerns when they were in Vietnam and when they are in New Zealand;² (c) their views about pro-environmental behaviour and environmental concerns of New Zealanders and Vietnamese; (d) the influence of living in New Zealand on their concerns and behaviour; and (e) their opinions about Study 1's result. In some groups, these questions were followed up with further questions by the researcher. The full list of prompts can be found in Appendix B.

In each focus group, participants were provided with a one-page document with focus group rules (see Appendix C) with a consent form (see Appendix D) and were asked to fill out an online form with demographic information before the meeting was recorded. The online form gave the option for participants to request a full transcript, and/or a report of the research findings. After the focus group, a debriefing sheet was sent to all participants along with an eGift card via email. Before analysing the data, we sent a transcript to participants who requested it to consult their opinions. After consultation, we excluded some parts in the transcription which were minor and not related to the research questions. Names were replaced by pseudonyms and other identifying features were changed. All the quotes used in this thesis have been translated from Vietnamese to English and edited to improve readability. All emphases were made by the participants' themselves, unless indicated otherwise.

Data Analysis

All recordings were transcribed verbatim. The transcriptions were analysed using NVivo version 12, a qualitative data analysis computer software package. We followed a reflexive thematic analysis developed by Braun and Clarke (2006, 2012) to analyse the focus group data.

² Although one participant was in Vietnam as she could not return to New Zealand due to pandemic border restrictions, inspection of responses indicating her answers to this question were comparable to those of participants in New Zealand.

Reflexive thematic analysis is a flexible method that can be used to analyse almost any kind of data (Braun & Clarke, 2013). It can be used inductively which means the analysis is grounded in the data, or deductively which means the analysis is based on existing theory. An inductive thematic analysis refers to an approach that generates codes and themes organically; or in other words, the analysis is not shaped by existing theory (Braun & Clarke, 2013). The idea of a flexible method and the analysis from a bottom-up approach was believed to be crucial in not limiting participants' experiences regarding environmentalism. Hence, inductive reflexive thematic analysis was found to be suitable for this study.

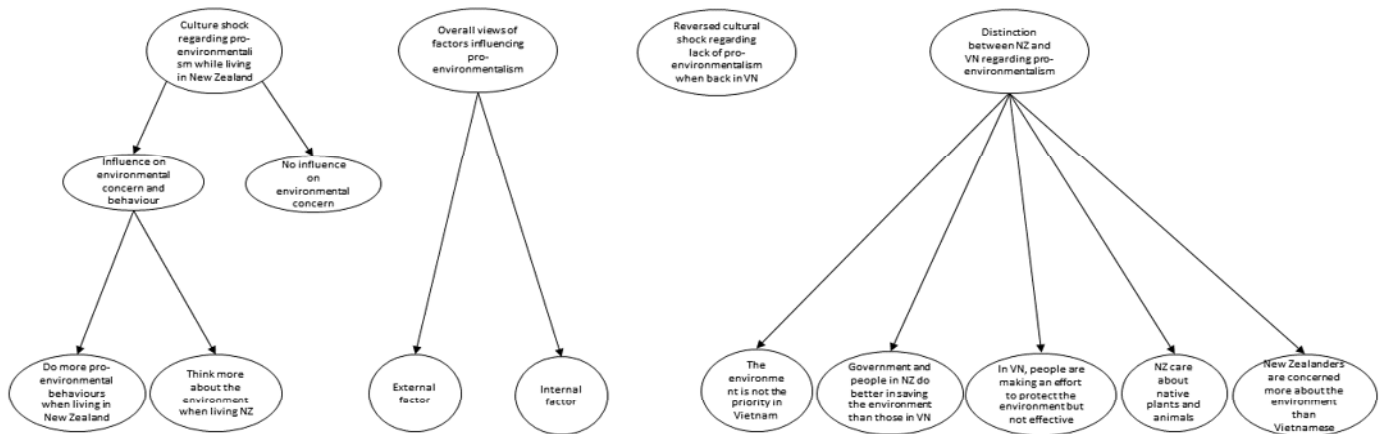
In thematic analysis, themes are the outcome after doing an iterative theme development process, as explained by Braun and Clarke (2006, 2012, 2013). Themes are the cluster of codes, which are conceptualised as patterns of shared meaning which capture the central concept or central idea of the data. Codes are the individual label of a feature of data which is potentially relevant to the research question (Braun & Clarke, 2012). We followed the six phases of reflexive thematic analysis developed by Braun and Clarke (2006, 2012) to analyse the focus group data.

The first phase was familiarisation of the data which began during data collection and active engagement in the focus group discussion. It then incorporated the transcription process and constant accuracy checks of the produced transcription and the original recordings. The second phase involved generating codes systematically and thoroughly. Afterward, we repeated the coding process a few times until the data were fully coded with relevant extracts. Then the codes were scrutinised in order to reduce the number of codes. All codes were reviewed and re-read several times to ensure that the created codes accurately described the coded data. Subsequently, these codes were organised into a 'parent-child' relationship, which is a term used in NVivo to refer to the hierarchical organisation of codes. The purpose of this organisation is to

sort and gain a deep insight into the data before generating themes. After further analysing relationships among parent codes and child codes, we constructed themes which involved a cluster of codes sharing meaningful patterns in the data. At this third stage, we created a thematic map with these potential themes to illustrate the relationship between themes and to consider how these themes would work together (Braun & Clarke, 2012). The early thematic map is depicted in Figure 2.

Figure 3

Draft thematic map of the potential themes and subthemes.



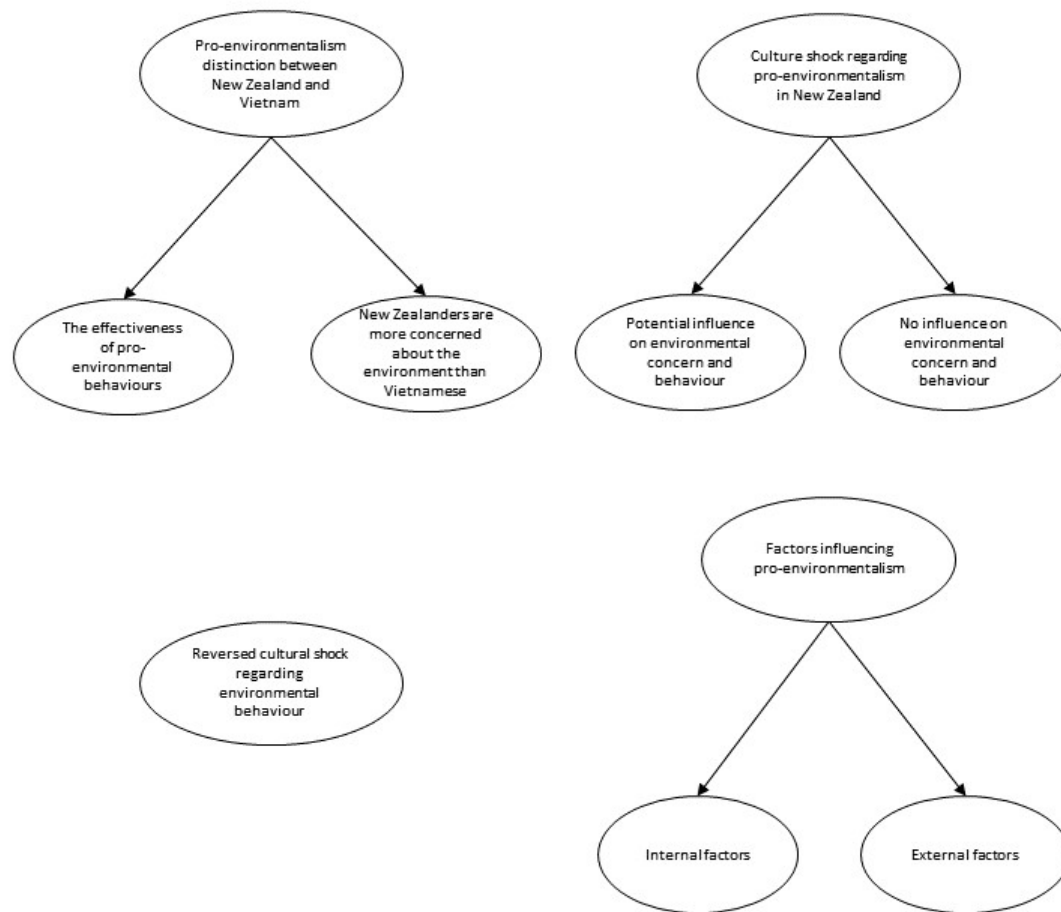
The next three phases were reviewing, defining themes, and producing the report (Braun & Clarke, 2006, 2012). The reviewing phase was about quality checking which required checking whether the candidate themes capture the meaning in the coded data, as well as exploring whether these themes work well with the entire dataset. Furthermore, it was essential to set boundaries between the themes while ensuring that these themes still related to each other. After identifying a set of distinct themes, we moved to the last two phases which were defining

themes and writing up the results. The main goal was to ensure clarity, cohesion, precision, and quality of the thematic analysis (Terry et al., 2017). It involved writing the analysis; selecting the extract to quote; naming the themes which were informative, concise, and catchy; and telling a compelling story about the data through the writing (Braun & Clarke, 2012).

For each theme, a file of transcript extracts was created. Each transcript was re-read to determine whether new themes captured the previous coded sections. Any coded items which were not relevant to the research questions were removed from the broader themes.

Results

There were four broad themes identified across all focus groups, with each of the four broad themes containing several subthemes. The four broad themes were named pro-environmentalism distinction between New Zealand and Vietnam, culture shock regarding pro-environmentalism in New Zealand, reversed cultural shock regarding environmental behaviour, and factors influencing pro-environmentalism. The initial coding round yielded 570 extracts in 42 codes. After reviewing and clustering, we excluded some codes which were not relevant to the research topic. Finally, 348 data extracts were identified in 24 codes resulting in four main themes. Figure 3 illustrated the finalised thematic map of the themes and subthemes.

Figure 4*Thematic map for Study 2****Theme One: Pro-environmentalism distinction between New Zealand and Vietnam***

The theme “distinction” was categorised as differences related to pro-environmental behaviours and environmental concerns between New Zealanders and Vietnamese. At the beginning of the discussion, when participants were asked about the differences between New Zealand and Vietnam, beside the most common comparison that New Zealand is not as overpopulated as Vietnam, they also said that New Zealand is cleaner, greener, and less polluted. They felt that living in New Zealand has made them become closer to nature, as there are many green spaces with fresh air. While in Vietnam, all participants had been living in modern cities

(i.e., Ho Chi Minh, Ha Noi, and Da Nang) which have been witnessing a rapid development as well as industrial pollution and the significant loss of green corners. Thus, first impressions of participants while living in New Zealand are absolutely its cleaner and greener natural environment than that of Vietnam.

Regarding environmental engagement, particularly environmental concern and pro-environmental behaviours, most participants agreed that there are many distinct differences have emerged through observations while their living in Vietnam and New Zealand. These included the differences of environmental concerns and the effectiveness of pro-environmental behaviours between Vietnam and New Zealand. In this theme, the sub-themes identified were: (1) New Zealanders are more concerned about the environment than Vietnamese; and (2) The effectiveness of pro-environmental behaviour. In some instances, the distinction of environmental concerns and pro-environmental behaviour between Vietnamese and New Zealanders was straightforward.

New Zealanders are more concerned about the environment than Vietnamese

Generally, most participants strongly agreed that people in New Zealand had higher environmental concern than Vietnamese. Some mentioned particularly European New Zealanders have more concern about the environment than Vietnamese.

Tuyet: it's clear that people in New Zealand care about the environment more than ones in Vietnam. Even, it could be said that New Zealand is one of the countries that have concern about the environment the most, except for Nordic countries. (FG4)

Truong: regarding environmental protection here, I feel that they are concern about the environment more than Vietnamese, as well as they have more knowledge (relating to the environment) than us (Vietnamese) in general (FG3)

During the conversation, participants used the terms “environmental concern” and “environmental awareness” interchangeably. Here, “concern” was observed through participants’ daily life experiences. It was mostly expressed through observed actions such as not littering, restricting plastic bags use, and appreciating environmentally friendly products and ideas.

Han: Thinking about creative products in start-up competitions which received awards, they would be usually related to environmental issues. There are some products that I think they are not completely innovative or unique and nobody would care about them when they appear in Vietnam. But in New Zealand, if these products with only slight innovation that can be helpful for the environment, they will often get a high appreciation. This proves that their environmental concern/awareness (in New Zealand’s) is very high, that means they (New Zealanders) care about the environment.
(FG2)

Additionally, one of the highlighted observations illustrating that New Zealanders really concern about the environment is that they care about native plants and animals. In contrast to caring about native plants and animals, Vietnamese prefer things that have foreign origin rather than local origin.

Ngoc: As you say, people here are keen on native things. Once I remembered that my professor asked me to go to see a bird, I had to hide in a bush to see a yellow-eyed bird. For me, a bird with yellow eyes or blue eyes or any colour does not make sense, I don’t care, it doesn’t make sense with my meaning of life, but for the people here, specifically for my professor, it’s very interesting. I also remembered at the botanic garden here (New Zealand) they also often have a session to watch the birds, it is called bird walk.
(FG2)

Furthermore, in Vietnam, although people have concern and are aware of current environmental issues, protecting the environment is not their priority. According to participants, as a developing country, Vietnam needs to take care of its economic and social issues rather than the environment. At an individual level, Vietnamese need to meet their basic needs (i.e., foods, security, education) before thinking of saving the environment.

Quy: Currently, while Vietnam is still developing, meaning that people are still thinking more about food, everyone here has already developed, which means people don't need to worry about food. So, people will pay more attention to other matters such as individual needs, environmental issues, issues such as personal needs, environmental protection related stuff. But in Vietnam, I think the economy is still the first priority currently, so people will concern about that more. (FG2)

In sum, participants believed that New Zealanders care more about nature and about the environment than people living in Vietnam. This can be shown through their daily behaviours such as recycling, using reusable bags, and encouraging eco-friendly products. Additionally, one impressive observed behaviour is that people in New Zealand are proud of their native plants and animals, which is the opposite to people in Vietnam.

The effectiveness of pro-environmental behaviours

Another aspect of the distinction was the effectiveness of pro-environmental behaviours. In various ways, New Zealand was framed as the country that has a more effective way to protect the environment compared to Vietnam. First, most participants agreed that New Zealand's policies to protect the environment are more transparent and stronger than that of Vietnam. As a result of clear rules and regulations, people in New Zealand follow it rigidly which leads to accumulative actions to protect the environment. For instance, here Nhung mentioned how

specific fishing and hunting rules were proposed in New Zealand, while in Vietnam, fishing rules are general rather than detailed.

Nhung: For example, if snails or clams are small or medium, you cannot catch them, you can only catch the ones that are big, leave the small ones; but if you were in Vietnam, people would be like using electric shock to stun the whole area, then the whole area would die, both the mother and the children (clams or snails), there is no need to classify like in New Zealand, and here (New Zealand) they also have regulations. FG2)

In addition, New Zealand government has also proposed rules and regulations relating to tourism industry to mitigate its effects on New Zealand's ecosystem and the environment. In comparison, Vietnam's tourism industry has introduced regulations to mitigate the impact on the natural environment, but these regulations do not work effectively. In Vietnam, tourism is one of the important components of the economy, which has caused monumental environmental effects. Due to the large number of tourists every day, the tourism industry has pushed Vietnam's natural sites beyond their capacity and produced human-created pollution at these sites. Additionally, as mentioned above, environmental protection is not the priority in Vietnam so that is one of the reasons that economic benefit is still prioritized in Vietnam's tourism industry.

Tuyet: the fact that (New Zealand) government has introduced laws to sanction such as require extra fee for tourists or ban using plastic bags is a way to help its country (New Zealand) to maintain clean and beautiful, while in Vietnam we have laws on the environment, but they are too weak, even absent, or just happen at a regional level. (FG4)

Ngoc: I think their environmental concern is that they have a plan that there are areas need to be preserved, no sacrificed for financial benefits. I heard that some Chinese investors asked the city council for land so that they can build hotels and some projects,

but that was denied as there were so many problems, one of the problems brought up- the city council said it was an environmental problem, they did not want to over-build that affect the environment. (FG2)

Second, in Vietnam, despite the efforts of some individuals and organisations to protect the environment, the overall result is not significant. There were some environmental movements happening this decade to mitigate negative impacts on the environment in Vietnam. There are some individuals who deny visiting certain tourism places as these places caused negative effects on the nature environment. Additionally, some individuals have tried to create eco-friendly products such as grass straw and biodegradable bags. Unfortunately, these movements did not last long and did not have a desired effect on mitigating environmental issues in Vietnam.

Thanh: Vietnam also has some organizations trying to save the environment and they are also very opposed to using the natural landscape as a tourist resort, and having a big impact like building a cable car or building a road to visit the caves. (FG4)

Truong: what do we have now, uhm, a bag made of flour, grass straw, straws made of grass, now do you see – whether it is popular or not, or it is just something trendy for Vietnamese people, everybody just follows without knowledge. (FG3)

Witnessing these little effects from individuals, participants believed that in Vietnam, it is necessary to have strict rules to force people rather than ask for people's awareness to protect the environment. However, as mentioned above, policy relating to protecting the environment in Vietnam is not strong and lacks transparency. As a result, people in Vietnam do not follow the rules and regulations rigidly.

Nhu: I think that in Vietnam, they also have laws and punishment, but people keep breaking the laws.

Tuan: it's not clear, law (in Vietnam) is not clear (to follow) (FG1)

In sum, beside the difference in environmental concerns, New Zealand has acted more effectively than Vietnam in terms of pro-environmental behaviours. This can be seen through New Zealand's regulations which try to conserve nature sites and save the environment. In Vietnam, despite individuals' efforts on protecting the environment, monumental environmental issues are still present. Thus, a strong force on environmental laws is essential to effectively solve current environmental issues in Vietnam.

Discussion of Theme One

When asking focus group participants questions relating to their perceptions about environmentalism in New Zealand and Vietnam, a common answer is that New Zealand has greener space and more natural resources compared to Vietnam. Although Vietnam has beautiful and pristine nature according to participants, it has been losing its beauty due to economic and tourist development. Additionally, participants highlighted that in comparison to Vietnamese, New Zealanders are strongly concerned about their natural environment as well as properly protecting it. Participants' perceptions about New Zealander's environmental concern and pro-environmental behaviours are mainly derived from observable behaviours relating to obeying the rules and regulations, and follow social norms such as not littering, recycling, and fishing responsibly.

Through the focus group discussions, participants did not express strong opinion against any individual or organisation which might account for the increase of environmental issues in Vietnam. They tended to accept what is happening with Vietnam's environment rather than trying to protect it. This tendency could be explained by the fact that the natural environment is not the priority for Vietnamese. They prioritize their family, their society, and their career more than the environment which might not have immediate and direct impact to their life now. Hence, they also did not criticize the Vietnamese government or organizations for not trying to

protect the environment, because according to them, Vietnam's government needs to focus on economic development rather than the environment.

Theme Two: Culture shock regarding pro-environmentalism in New Zealand

Focus group participants frequently produced an account of New Zealand as a green and clean country with effective pro-environmental actions; at the same time, New Zealand has had a cognitive and behavioural influence on Vietnamese's immigrants. The theme of "culture shock" was identified as the influence of living in New Zealand on immigrants' thinking and behaviours. Two sub-themes were identified within this broader theme: (1) Potential influence on environmental concern and behaviour, and (2) No influence on environmental concern and behaviour.

Potential influence on environmental concern and behaviour

Since moving to New Zealand, there has been some changes in participants' thoughts and behaviours regarding environmental protection. Participants' perceptions of changes varied. A few said that living in New Zealand has influenced their environmental concern and pro-environmental behaviours. Han was one of few participants that clearly perceived the strong influence of living in New Zealand on both concern and behaviour. She moved to New Zealand over three years ago and has been strongly influenced by living in the country.

Han: I also agree that I do, it means, moving to NZ have affected the degree of my environmental concern and protection actions. For myself, it really does, even, it made a strong impact. I see that my concern degree has decreased, plus, I have also paid more attention to people around. So, I got some lessons. "Lessons" is quite an exaggerated claim, I would say. To be more exact, there are good things I should learn from then reflect back on myself and get myself improved. (FG2)

Others were more likely to separate the change in their concern from the change in their behaviour. Furthermore, it seems like for those participants, they did not see a huge impact of living in New Zealand on their thinking as well as their concern.

Quy: I did have change, but only in terms of thinking, and I think in the future I will have to – when I do something relating to environmental issues, I have to think about the consequences – whether I have any impact on the environment or not (FG3)

While the change in environmental concern of most participants were little, the obvious change that most of them noticed were their pro-environmental behaviours. They do recycle and bring their own bags when going for shopping, but it is not a major change according to some of them. Recycling is a must in New Zealand and bringing your own bags is necessary, so they are more of law-abiding rather than actually aware of or concerned about the environment.

Minh: behaviours that I find different when I came here is the garbage classification, in Vietnam, we dump all types of trash into one rubbish bin, while here (New Zealand), we have to sort them out, which one can be wasted, which one can be recycled or reusable. In general, I am more aware of my garbage and garbage classification, so I can know which rubbish bin to throw trash into properly and that is good as that action protects the environment (FG1)

No influence on environmental concern

Not all participants experience similar influences. Some did not experience the change in their concern about the environment as well as their behaviours. One of the reasons is that they already have high concern for the environment since living in Vietnam. Nhung has been living in New Zealand for more than ten years and she clearly stated that she has not changed either her concern or her behaviours.

Nhung: I haven't had many changes, in fact, before I came to New Zealand, I participated in the environmental protection in Vietnam. (FG2)

Furthermore, in some cases participants just followed the rules in New Zealand. Although their behaviours in New Zealand was different from what they used to do while living in Vietnam, they did not perceive that as a change neither in their concern nor behaviours.

Thanh: I think no, I don't have much more passion for the environment than before, it's just because I understand the law and obey the law, but if we talk about my passion for the environment or love for nature so that I try my best to protect the environment, I do not, really I do not (have that passion), to be honest. (FG4)

Discussion of Theme Two

Participants' perception of their own changes in term of environmental concern and pro-environmental behaviours are varied. Some are clear about their changes, while others are not. However, a general trend is that the influence of living in New Zealand on participants' thinking and behaviour is not profound, especially on their concern for the environment. The changes on their behaviours are mostly related to the rules and regulations. In New Zealand, participants follow the rules and norms for a period, which might lead to a perception of behavioural change in some participants.

We found little difference in terms of staying time of Vietnamese immigrants to see the impact of length of stay on their environmental engagements. No link was observed between participants' length of stay in New Zealand and a resulting increase in their environmental engagement. Vietnamese participants can stay in New Zealand for a short period (i.e., three years) and experience a profound change in their concern and behaviour, while other might stay longer (i.e., ten years) and find no effect on theirs. A possible explanation is that their previous

concern and behaviours while living in Vietnam might be more critical than acculturation process regarding environmentalism when living in New Zealand.

Theme Three: Reversed cultural shock regarding environmental behaviour

The “reversed cultural shock” theme was generated by the potential change when participants went back to Vietnam. When asking about maintaining the same pro-environmental behaviours if they were to go back to Vietnam, most participants were uncertain about it. Some were clear that they would not keep the same behaviours such as recycling or bringing their own bags, or reusable cups to the coffee shop. Specifically, length of stay in Vietnam was mentioned as a determinant for their behavioural adaption. If they stay in Vietnam for a short time, they might maintain their pro-environmental behaviours; reversely, if they would stay longer or permanently, this would affect their behaviours.

Tuan: Although like now, if I go back to Vietnam, for example, one day or two days, it's okay, but if (go back to Vietnam) more than a few months or a year (pause), I am not sure I will-like I will maintain- follow this lifestyle like here (in New Zealand) (FG1)

According to participants, Vietnam does not provide proper facilities for recycling as well as not many people are doing it there. They also feel being excluded from the society when they recycle and classify/separate their garbage. In Vietnam, it is scarce to see people classify their garbage before throwing it away as well as see someone bring their reusable bags or cups when go shopping. Meanwhile in New Zealand, participants have all the support to recycle, use reusable bags or coffee cups. Participants feel easy and motivated to engage in pro-environmental behaviours in New Zealand more than in Vietnam. Additionally, these behaviours are more likely to be considered as social norms in New Zealand, so participants also do not want to be excluded from the society by not doing these behaviours.

Ngoc: but I am not sure if this one will last longer or not, because when I was in New Zealand, I found there were more convenient options for me to do it, for example, everywhere has recycle bins so we can do it. By the time we go back to Vietnam, there are things are inconvenient, for example, there are not many rubbish bins, or recycle bins. Then it will be more difficult for me to throw garbage in the bin or classify the garbage, that is what I think at first. Everyone have a habit like that but to maintain that habit when we return to Vietnam is unsure, it depends on many factors. (FG2)

Notably, although the influence of living in New Zealand on participants' concern and pro-environmental behaviours are not strong as mentioned in Theme Two, they said that it is easier for them to adapt pro-environmental behaviours since moving from Vietnam to New Zealand than re-adapt behaviours when moving from New Zealand to Vietnam. Thanh is a special case because she was living in Vietnam while the focus group happened due to the New Zealand border restriction. She experienced the difficulty in adapting to Vietnamese' lifestyle. She could not maintain her pro-environmental behaviours which she adapted when staying in New Zealand. She went back to riding the motorbike, utilizing plastic bags and tended not to focus on recycling and reusing as she deemed it inconvenient and difficult to resume those pro-environmental practices in Vietnam.

Thanh: I feel like I didn't have culture shock when I came to New Zealand, but I experienced culture shock when I came back to Vietnam, it likes moving from a normal environment (Vietnam) to a more modern environment (New Zealand), I can adapt very fast (FG4)

Discussion of Theme Three

During discussion, participants are unsure about whether they can maintain the same pro-environmental behaviours which they have been practicing in New Zealand when returning to

Vietnam. Participants proposed two probable explanations for this change. Firstly, Vietnam do not have facilities and procedure to assist participants to practice pro-environmental behaviours. According to them, it is inconvenient and discouraged for them to maintain their behaviours. Secondly, the predominant reason for not doing the same pro-environmental behaviours is that participants do not want to be excluded from the society. People in Vietnam do not usually recycle garbage or bring reusable cups or bags with them when being out for shopping. As a result, by doing these uncommon behaviours make participants feel being excluded from their community. This reason can also be used to explain why participants practice pro-environmental behaviours in New Zealand. They all want to follow the social norms of the place they are living in and do not want to be excluded. This second explanation also aligns with a common Vietnamese' characteristic which is a strong willing to belong to a group.

Theme Four: Factors influencing pro-environmentalism

During focus group discussions, Vietnamese participants mentioned many factors affecting individual's environmentalism engagement, from their point of view. These factors included both external and internal factors.

Internal factors

Internal factors mentioned in the group discussion were age, length of stay (in New Zealand) and individual's motivation. According to participants, the younger you are, the easier you adapt to a new culture and the environment. The young might also receive New Zealand education which have strong focus on protecting the environment. Additionally, while in New Zealand with the assistance of education, the young can also observe and adapt pro-environmental behaviours from people around them. However, participants did not mention how young people should be to be easier in adapting.

Tuan: if the age is young, you can say – the change is fast, they adapt quicker and easier, the older is gets, the harder it is hard to change (FG1)

Second, the length of stay in New Zealand also might be an important factor as people need time to adapt to a new lifestyle. To acquire pro-environmental behaviours and provoke environment-related thoughts, people need to have a long-term exposure to the New Zealand's culture. Interestingly, although in previous themes – Culture shock regarding pro-environmentalism in New Zealand, there was no clear link between length of stay in New Zealand with the influence of New Zealand culture on participants' concern and behaviours, length of stay was still a common factor that participants mentioned.

Minh: it is also a matter of time, people need time to adapt to a new lifestyle, time is also important, as Tuan also said that concern and behaviour cannot be changed in one or two days. (FG1)

Finally, another internal factor which participants discussed was motivation. Participants highlighted the important of the positive result of their actions. They felt discouraged and stopped practicing some environmental protection behaviours as they did not see their influence on either the environment or the community. There was no reason for them to keep doing actions which they did not see the outcome.

Trung: it must be effective, and we have to have enough information, no need to be scientific or academic, just enough and we must see the result. Now we try to do something, but we cannot see the good result, you will be discouraged, you will feel tired, everybody will feel like that, then everything just come back to where it is (nothing changes), and then people keep saying without doing (FG3)

External factors

External factors were mentioned as having a stronger impact on Vietnamese's environmental engagement than internal factors mentioned above. These external factors consisted of the influence of surroundings, the policy, financial rewards, and the accessibility of information. The influence of people around factor also included the effect of social norms. Participants did not want to be isolated so that they copy and do what people in New Zealand are doing. At the same time, participants also observe, adapt, and learn actively from people around them while living in New Zealand. Particularly, people were affected by the passion for environmental protection and love for nature from their friends, neighbours or their colleagues.

Tuan: The Crowd Effect in this situation is that you have to follow what is going on here, in NZ when you moved to here. If I do something differently, it's like, I will be isolated. (FG1)

Han: but since I came here, I've have observed people around me, and there are also a lot of campaigns and programs (protect the environment). And then, when I joined in a few voluntary programs, I listened to everyone sharing, it feels great and interesting, then I have developed interests in the surrounding plants, flowers, and birds. (FG2)

The government policy was thought, by most of participants to play a predominant role in mitigating environmental issues. Here, policy factors including the introduction of laws and punishments to mitigate the environmental issues as well as the procedure or system to classify and recycle rubbish from the government. In comparison to Vietnam, it is obvious that New Zealand government introduced more effective policy to protect the environment. In Vietnam, there are not many strong environmental laws to force people to follow. Furthermore, there is no procedure to assist citizens in recycling or classifying the garbage. Participants believed that a strict law with strong financial punishment is a must to force people reduce their negative impact on the environment.

Quy: I think the first factor- the first factor is the policy, yes about the government policy, that is the biggest impact, because in Vietnam, we don't have (policy) (FG3)

Thanh: I have concern (for the environment) and I am willing to cooperate if there is a law in Vietnam, but since there is no law, it is difficult to classify garbage for example. I think everything must become the law, if it only depends on human consciousness, it is difficult to become a habit. (FG4)

Other external factors were giving financial rewards and being provided with proper information about what is happening with our nature and our environment. The reward for practicing pro-environmental behaviours such as using reusable cups, not using plastic bags or containers could be little but it makes people feel that they gain some benefits. Participants argued that a small discount on the bill would encourage people to do more environmentally friendly behaviours.

Trang: like some shops, for example, they will discount 5% on the total bill of you bring your own cup, it is the benefit that is practical, so there should be practical policy so people can easily follow then can gradually become a habit (FG4)

Some participants also think that having a proper knowledge about current environmental issues is essential. Besides getting information from the Internet or from schools, information relating to current environmental issues should be provided by the government, or city council properly to educate citizens. Vietnam government did not provide proper and transparent information about current environmental issues. That leads to a lack of understanding current environmental issues of people in Vietnam, which in turn leads to a lack of interest in involving environmental protection movements of Vietnamese.

Trung: nobody transmits information to me, the problem is transmitting information, I can't expose (to the information), the frequency (getting information) is low, and I don't

have much interact with the information, that means when it comes to a certain trend, I only understand a little, I do not understand to profound story of the problem (FG3)

Discussion of Theme Four

Factors influencing people's environmental engagement were discussed through the focus group discussion since the beginning of the focus group. Participants are interested in discussing these factors because they want to figure out a feasible solution for the significant increase in environmental issues in Vietnam. Internal factors mentioned in the focus groups also align with findings from previous research on environmental concern and pro-environmental behaviours (Gifford, 2011; Kerr et al., 2016; Schwartz et al., 2019). Notably, although both internal and external factors were discussed, participants discussed more external rather than internal factors. When proposing possible solutions to mitigate environmental problems, most participants agreed that external factors such as policy, rewards or the accessibility of information would play a key role in influence human's behaviours.

Furthermore, policy is the most mentioned factor across four focus groups. All participants agreed that policy is the one that should be focused when proposing solutions for the current environmental issues, especially in Vietnam. Participants have a strong belief on the power of the government regarding environmental protection. Individual factors or internal factors do have impact on individuals' environmental concern and pro-environmental behaviours. However, to make a profound and have everybody involve in environmental protection movements, participants agreed that government should introduce more transparent and strong policy to guide people.

Chapter 5: General Discussion

It is undeniable that human activities have threatened the Earth and the balance of the world's ecosystem. In particular, the process of globalisation has placed increasing pressure on the natural environment (Nagla, 2018). Although humans are a major cause of current environmental issues, we are also the key to mitigating these problems (National Research Council, 2020). Facing up to globalisation challenges, there are opportunities for investigating and understanding environmental concern and pro-environmental behaviours. Since there is a growing movement of people across nations and resulting interaction of different cultural values, there has been a call to incorporate culture and context in research dealing with environmental issues (Tam & Milfont, 2020). It is of interest to understand whether moving to a new cultural context influences people's environmental engagement.

The current thesis used a mixed-method approach to investigate environmentalism in an acculturative context. As there are mixed findings on the role of acculturation on immigrants' environmental concern and pro-environmental behaviours (Schultz et al., 2000; Deng et al., 2006; Lovelock et al, 2013; Romero et al., 2018; Ma, 2019), this thesis aimed to explore and clarify the role of acculturation process, particularly acculturation orientations and length of stay in the host country, on immigrants' environmental concern and pro-environmental behaviours. As reviewed in the introductory chapters, New Zealand and Vietnam differ in a number of dimensions of cultural variability and pro-environmental indicators (e.g., collectivism versus individualism, self-expression versus secular-rational value, environmental sustainability index) and such differences might potentially have effects on Vietnamese immigrants. We thus investigated whether there are differences in terms of the level of environmental concern and the frequency of conducting pro-environmental behaviours between Vietnamese immigrants in New

Zealand and matched Vietnamese living in Vietnam, and whether acculturation functions as an explanation for these differences. We also examined qualitative responses of Vietnamese who live in New Zealand about these acculturation questions.

In particular, we employed a mixed-method explanatory design with a quantitative method, followed by a qualitative method (Creswell et al., 2003). In Study 1 ($N = 228$), using self-report questionnaires, we expected there would be differences in both environmental concern and pro-environmental behaviours between Vietnamese living in New Zealand and matched Vietnamese sample in Vietnam (*Hypothesis 1*). Additionally, the longer the length of stay in New Zealand and the more likely to be oriented towards New Zealand would be linked with higher concern for the environment and more likely to do conservational behaviours in Vietnamese immigrants (*Hypothesis 2 and 3*). We further explored the moderation effects of length of stay in New Zealand and acculturation orientation towards Vietnam in the relationship between orientation towards New Zealand and immigrants' environmental engagements (*Hypothesis 4 and 5*). To have further understanding about experiences of the influence of acculturation on individuals' environmental engagements, we conducted four online focus groups with Vietnamese immigrants in New Zealand in Study 2 ($N = 12$). We investigated participants' perceptions about their change in environmental engagements and the role of acculturation in that change into four main themes.

The findings presented in this thesis offered new insights into the role of acculturation in immigrants' environmental engagements. In this chapter, we will summarise the key findings of the two studies and draw a big picture of how the two studies captured the research's goal. Then, we will discuss the implications of these findings as well as future research inspired from this research.

Key research findings

In Study 1, we predicted that there would be differences in both environmental concern and pro-environmental behaviours between Vietnamese living in New Zealand and matched Vietnamese sample in Vietnam, but that was not the case. There were no statistical differences between Vietnamese immigrants in New Zealand and matched Vietnamese sample in Vietnam in terms of their environmental concern and behaviours. The observed mean scores of both groups were high on both the environmental concern and pro-environmental behaviour scales. This suggests that Vietnamese already have high concern towards the environment and a will to act environmentally friendly, consistent with Romero et al. (2018). This ceiling effect might have impacted on the failed prediction that Vietnamese who moved to New Zealand would have higher scores than their matched peers in Vietnam.

Furthermore, we anticipated that the acculturation process could explain the differences in environmental engagements between two groups. Although this is not the case as there is no difference across two groups, we still expected that the process of acculturation would influence Vietnamese immigrants' environmental engagements. We measured both length of stay and acculturation orientations to investigate the acculturation process of Vietnamese immigrants. Contrary to Leung and Rice's (2002) finding, we found no correlation between length of stay in New Zealand with either immigrants' environmental concern or pro-environmental behaviours in Study 1. However, our study aligns with that of Lovelock et al. (2013), who in their study of immigrants in New Zealand found length of stay in New Zealand was not connected to immigrants' environmental values.

Additionally, we found that acculturation orientation towards New Zealand positively correlated to immigrants' pro-environmental behaviours, but we found non-significant

relationships between acculturation orientations and environmental concern. Our results contrasted with Schultz et al. (2000), in which Latino immigrants in United States only revealed negative significant relationship between acculturation and environmental values, but not pro-environmental behaviours. These contrast findings could be explained by the difference in the state of the environment of the host country. People seem to think that New Zealand is a “green and clean” country and has better reputation on protecting the environment compared to the United States. According to EPI (2020), New Zealand ranked higher in both air quality, waste management, and wastewater treatment than the United States. Due to the difference in these environment performances, people potentially have different perceptions in terms of the environment in New Zealand and the United States.

A further key finding of Study 1 is that neither length of stay nor acculturation orientation towards Vietnam moderated the relationship between acculturation orientation towards New Zealand and immigrants’ environmental engagements. Interestingly, we found a positive correlation between acculturation orientation towards Vietnam and immigrants’ pro-environmental behaviours, but not with environmental concern. Despite the fact we were unable to confirm whether acculturation orientation towards the home country would dampen the effect of acculturation towards the host country on immigrants’ environmental engagements or not, we found that the more willingly orientated to the home country, the more likely Vietnamese immigrants act pro-environmentally. This finding aligns with Ma’s (2019) finding that pro-environmental behaviours of Chinese immigrants in the United States positively linked to their Chinese cultural values. However, previous studies (Schultz et al., 2000; Leung & Rice, 2002; Romero et al., 2018) did not explore further the effect of the willing to maintain cultural heritage

on immigrants' environmental engagements. It would be interesting to explore the role of home country in immigrants' environmentalism in the future.

The qualitative approach in Study 2 shed further light beyond the survey responses from Study 1. Focus group participants agreed with our intuition that environmental engagement of Vietnamese immigrants differed from Vietnamese living in Vietnam. Indeed, participants in Study 2 mentioned that there are differences in environmental concern and pro-environmental behaviours between native-born residents and immigrants. This finding is in line with previous research that found the difference in the perception of human-nature relationship (Schultz et al., 2000) as well as in the perceptions of nature (Kloek et al., 2018), and in the household environmental behaviours (Ma, 2019) between non-immigrants and immigrants. However, participants' perceptions do diverge from Lovelock et al.'s (2013) whose study of immigrants in New Zealand revealed no difference in environmental worldview across different ethnicities, including New Zealand-born participants.

Interestingly, even though Study 1 found that Vietnamese scored high on both concern and behaviour scales, Vietnamese in Study 2 indicated that they have lower concern and do not often engage in pro-environmental behaviours compared to New Zealanders. This raises a question about perception of self and others (and similar/dissimilar others) regarding environmentalism: how participants see themselves and others in terms of environmental concern and pro-environmental behaviours? Would there be a downgrade of participants themselves in terms of environmentalism while they perceive others (i.e., New Zealanders) as being more environmentalism than them? This could inspire future research considering this aspect in investigating humans' environmental engagements.

Beyond discussing perceived differences at the individual level, focus group participants also mentioned country-level differences. They thought that New Zealand is a cleaner and greener place than Vietnam as well as has better infrastructure and waste management to encourage pro-environmental behaviours. These perceptions of Vietnamese about New Zealand fits with empirical data on the difference between New Zealand and Vietnam. New Zealand ranked higher than Vietnam regarding environmental performances including air quality, waste management, pollution emissions and ecosystem services (see EPI, 2020). New Zealand also has a great distance from Vietnam on environmental conservation (see Figure 1). This perception of New Zealand as a beautiful country brings into question how much the place identity transfer to group membership? In another word, how much do the green and clean of New Zealand transfer to Vietnamese immigrants' identity so that they feel belonging to New Zealand. Previous research has reported mixed results on the association between place identity and environmental engagement (for a review, see Korpela, 2012). Hence, future research can examine how this transfer of place identity will influence immigrants' environmental engagements?

Notably, consistent with Study 1's findings, in Study 2 we found that the more likely immigrants to orientate to New Zealand culture, the more likely to act environmentally friendly. However, acculturation orientation towards New Zealand did not influence immigrants' environmental concern in both studies. In Study 2, theme Two, '*Culture shock*' regarding *pro-environmentalism*, participants' perception of their environmental engagements and their changes varied. On the one hand, more than half of participants in Study 2 mentioned that their concern and behaviours have not significantly changed. This supports the first finding in Study 1 that Vietnamese already had concern and a good will to act environmentally friendly, consistent with Romero et al. (2018). On the other hand, for those admitted the changes, it is clearly seen

that participants perceived changes in their behaviours but not their concerns. This perceived change in behaviours confirmed what we found in Study 1. However, we need to be cautious while interpreting these findings. Study 2's participants did not clearly state that they, Vietnamese immigrants in New Zealand, have differences in environmental engagements compared to Vietnamese living in Vietnam. They linked the difference in observable behaviours between New Zealanders and Vietnamese and the difference in nature and the living condition between two countries to conclude that Vietnamese immigrants' concern and behaviours would have changed and be different to Vietnamese living in Vietnam.

Most of the behavioural changes of participants relate to social norms and regulations in New Zealand. This could be explained by the fact that New Zealand government has introduced environmental regulations and rules following with financial penalty as well as monetary incentives. Participants bring their own shopping bags not only because of social norms but also because of monetary incentives. If they forget to bring their own bags, they pay extra for paper or reusable bags. Here, by adding negative consequences from an undesirable behaviour, the New Zealand government provides an extrinsic motivation (i.e., money charge) for desirable behaviours (i.e., using reusable bags) (Schwartz et al., 2019). The monetary incentive might motivate participants to act more environmentally friendly, but it is less likely to create long-term impact on the change in pro-environmental behaviours (Jakovcevic et al., 2014). This could explain why participants said that they would not maintain their pro-environmental behaviours in Vietnam.

Moreover, Vietnamese immigrants do not want to be excluded from the community by breaking the rules or act opposite with what New Zealand society is doing. Again, the sense of belonging to a community is strong for Vietnamese, so they want to follow social norms in order

to not be excluded by the host society. This is also aligned with previous research which demonstrated that norms are a driver of conservation behaviours (Farrow et al., 2017), especially regarding subjective norms. Subjective norms or injunctive norms refer to individuals' perceptions of others' belief in how a particular behaviour is supposed to be performed (Niemiec et al., 2020). Individuals' behaviours are influenced by subjective norms which means they pick up key references from subjective norms to guide their actions (Rimal & Real, 2005). In this research, it could be seen that Vietnamese immigrants observed and followed New Zealand social norms. In other words, these individuals believe that they should perform pro-conservation behaviours while living in New Zealand (e.g., not littering, recycling, and using reusable shopping bags).

Similar to Romero et al.'s (2018) research on Brazilians in Canada, these perceived changes in pro-environmental behaviours of Vietnamese immigrants in Study 2 might also be due, at least in part, to the infrastructure in New Zealand. Participants in Study 2 clearly stated that they would not keep doing similar pro-environmental behaviours if they return to live in Vietnam. They blamed the lack of infrastructure, regulations as well as waste management in Vietnam. Compared to Vietnam, New Zealand provides infrastructure and services of waste treatment to enable people to conduct those behaviours. Taken together, while living in New Zealand, Vietnamese immigrants found a system of social norms, rules and regulations, and infrastructure that encourage and enables them to follow and as a result, change their behaviours.

Beside these key findings, we found an interesting explanation for why Vietnam did not perform well in terms of environmentalism compared to New Zealand in Study 2. According to participants, the natural environment is not the priority for Vietnamese as well as the Vietnamese government. Vietnamese government feels the need to prioritize economic development over

solving environmental issues – and these two goals are often in opposition. Furthermore, in line with Shibai and Yoshino's (2013) statement, participants mentioned that as the domestic economy has not developed yet, Vietnamese want more material (e.g., money) rather than nonmaterial wealth (e.g., nature). It seems that participants, like their government, see a trade-off between economic progress and environmental protection. However, in fact, those basic needs that participants mentioned can only be fully fulfilled with natural resources and if these are depleted, the situation can economically become even worse. This interesting finding can be important to Vietnam government to reconsider their priority and move to sustainable development. In addition, this finding can be applied in campaigns which aim to promote pro-environmental behaviours in Vietnam by educating Vietnamese regarding the interactive relationship between the environment and economy as well as linking the negative impact of environmental degradation to personal financial interests.

Notably, there is a marked difference regarding the role of friendship in the findings of both studies. In Study 1, item relating to friendship in the host country did not load significantly on the scale assessing acculturation orientation towards the host country. Meanwhile, Study 2's participants believed that friendship in the host country is an important factor influence their environmental engagements. During focus group discussions, participants agreed that their friends and colleagues have long-term influences on their environmental concern and pro-environmental behaviours, though it takes several years to see the effect. In addition, previous work by Ballew et al. (2019) showed that friends and family influence Latino American's pro-environmental engagement. Hence, it seems like there is a complex process happening between friendship, acculturation, and environmentalism. Future research can further explore the

interrelationship among friendship, environmentalism, and acculturation in an acculturative context.

Implications

This research highlights the role of context in examining immigrants' environmental engagements, especially in their pro-environmental behaviours. Although we found little statistical support for our hypotheses relating to the influence of acculturation orientation on immigrants' environmental engagement, our findings showed that Vietnamese living in Vietnam already have concern towards the environment and a good will to act environmentally friendly, but they do not actually conduct pro-environmental behaviours. Since moving to New Zealand, the cultural context and social norms influence immigrants' environmental and enforce their pro-environmental behaviours. Here, we emphasize the important of considering context into environmental psychology. Furthermore, beyond testing the statistical relationship among variables, we suggest conducting more qualitative approach combine with quantitative approach to perceive participants' real-life experiences, their underlying process of acculturating and changing their environmental engagements, and the important role of context in human-environment interaction.

One of the most significant implications of this research is that it informs the important role of government in promoting pro-environmental behaviours and mitigating environmental issues. For New Zealand government, Vietnamese immigrants are willing to obey new rules of the host country to comply with laws. This willingness could be applied to wider immigrant communities in other countries. Host countries should bear in mind that although immigrants exhibit unique characteristics of their heritage culture that reflect on their behaviours, they are willing to accept the new rules of the host country.

Importantly, the present findings also point to a recommendation that Vietnam government should adapt what New Zealand is doing in term of introducing rules and regulations to mitigate environmental problems. Participants' behavioural changes are relating to the host country policy which enforce participants to act pro-environmentally. Additionally, participants stated clearly that if there were strict laws regarding environmentalism in Vietnam, they would follow. It is essential to have the government play as main role in environment movement to mitigate environmental issues. Additionally, Kalamas et al. (2014) underlined the important of government accountability for environmental sustainability, even if people are also willing to act pro-environmentally as individuals. Particularly Vietnamese, our research findings indicated that they prefer to have their pro-environmental behaviours motivated by laws and regulations rather than by the love of nature or concern for the environment. Policy with financial incentives is a potential efficient and immediate solution to solve to environmental issues, although this might not be a long-term solution because individuals' behavioural change may not persist by extrinsic motivation.

Beyond suggestions related to policy, we also hope that our findings can contribute to the development of campaigns or programmes that promote pro-environmental behaviours and mitigate negative impacts on environmental problems. We should focus on educating and teaching people the importance of their behaviours in preserving the nature. Education can lead to changes in pro-environmental behaviours (Varela-Candamio et al., 2018). It is important that people know small actions like using reusable bags when going shopping or putting the right waste in the right garbage bin can mitigate some environmental issues (e.g., floods, water pollution, wildlife extinction) (Romero et al., 2018). If they understand that, they are more willing to comply. Hence, combining the environmental education with the policy can enforce

and promote people's pro-environmental behaviours; consequently, it can increase environmental concerns, and attitudes, and improve the nature. Policy makers can influence the practice of pro-environmental behaviours by influencing environmental education through regulation and information (media) (Varela-Candamio et al., 2018).

Strengths, Limitations and Future directions

To our knowledge, our study is among the first to explore Vietnamese immigrants' environmental engagements and compare it with matched Vietnamese living in Vietnam. Although much research has paid attention to Asians as respondents when investigating immigrants' environmental engagements (e.g., Leung and Rice, 2002; Lovelock et al., 2013; Ma, 2019), there was no research looking at Vietnamese population. Additionally, we cannot treat Asians as a homogenous group demonstrating homogenous environmental behaviours (Whittaker et al., 2005). Thus, the present study is an attempt to represent environmental engagements of a specific ethnic immigration groups.

Moreover, regarding the research methodology, by using propensity score matching to achieve a matched sample, we ruled out some potential explanations for our findings in Study 1. Propensity score matching allowed us to achieve valid comparison between a treatment group (i.e., Vietnamese immigrants) and a matched control group (i.e., Vietnamese in Vietnam) when random allocation to condition is not possible (as we cannot allocate people into a specific cultural group). Additionally, we conducted a mixed-method approach with an explanatory design (Creswell et al., 2003). It enriches the meaning of quantitative data by capturing immigrants' perceptions, beliefs and opinions on environmental issues as well as capture the cultural messages in a meaningful context (Medina et al., 2019). Qualitative analyses help us have an in-depth understanding of Vietnamese immigrants' acculturative experiences and the

underlying process of how acculturation influences immigrants' environmental concern and pro-environmental behaviours.

This study has several limitations that should be considered while interpreting the results and could inspire future research. A limitation to consider while evaluating the results of this study is that the sample in both studies was not representative of the broader population. The majority of the participants were women who were well educated (i.e., have at least received bachelor's degree), and who were relatively young (age ranging from 20 to 30s). Women are known to hold stronger pro-environmental attitudes, concern and behaviours than men (Milfont, 2012; Scannell & Gifford, 2013; Milfont & Sibley, 2016). Also, previous research has showed that individuals with higher education level tend to have higher environmental concern (see Gifford & Nilsson, 2014). Additionally, existing research has shown that older people engage more in pro-environmental behaviours than younger people, while younger people have more environmental concern than older people (for a review, see Gifford & Nilsson, 2014). This sampling bias comes with inherent problems such as generalizability due to gender, education level, and age.

As a result, future should include larger and, importantly more diverse Vietnamese population. Researchers can consider reaching to more diverse groups through personal contacts and religious groups; as in this current research, we mainly recruited participants through online platform and personal contacts (i.e., snowball method) which affect the diversity of the sample. To achieve more representative sample, we need to find a gatekeeper who have access to minority groups such as the Vietnamese elder who could not use social media and who speaks little English. It is essential to build and develop relationships with the community to be able to get access and ask them to contribute to the research. Another potential development from the

current research is that researchers could conduct research with Vietnamese communities in different countries to compare and explore the effect of acculturation on immigrants' environmental engagements across host countries. It would be inspiring to examine whether the cultural values and context of the host country influence on individuals' environmental engagement and how it varies across host countries.

Another limitation is that we used cross-sectional data in Study 1, so the findings should be analysed cautiously. We cannot claim any change or long-term influence of acculturation on participants' environmental engagements. Although focus group complemented on that which asking about participants' experiences. There is a room for future research conduct longitudinal study to assess the actual changes of participants' environmental concern and pro-environmental behaviours and the influence of acculturation on it. Ward and Geeraert (2016) argued that acculturation is a dynamic process; thus, it is necessary to conduct longitudinal studies to reflect the acculturative changes. In addition, future studies could insightfully contribute to understanding immigrants' environmental engagements by exploring in depth, through qualitative interviews. Observations could also be conducted in community sample to capture more diverse behaviours.

Lastly, we also did not consider the possible factors that might influence environmental engagement such as extrinsic motivation and intrinsic motivation. We also excluded the concern-behaviour relationship in the current research. Future studies should delve into testing potential variables that might affect individuals' environmental engagement and testing the relationship between environmental concern and pro-environmental behaviours in a specific immigrant group.

Concluding remarks

Human-environment interactions are the key to figuring out solutions for our current, and rapidly worsening environmental problems. Bearing in mind that context involves in this interaction, this thesis offers another way of examining immigrants' environmental engagements by adapting a mixed-method to investigate the influence of acculturation in environmental engagements. The overall findings show that immigrants' behavioural changes are more likely to happen than their environmental concern. The context and the willingness to acculturate to the host country play a role in this behavioural change. The feasible implications of this research are relating to environmental policy in both host and home countries, which in turn, contribute to the mitigation of current environmental problems.

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Appendix A

Items for Study 1's measurements

Items for The Brief Acculturation Orientation Scale
<ol style="list-style-type: none"> 1. Have [home country] friends 2. Take part in [home country] traditions 3. Hold on to my [home country] characteristics 4. Do things the way [home country] people do 5. Have [host country] friends 6. Take part in [host country] traditions 7. Develop my [host country] characteristics 8. Do things the way [host country] people do
Items for The conservation behavior scale
<ol style="list-style-type: none"> 1. How often do you separate your household garbage (i.e., aluminium, glass, newspapers, etc.) for either kerbside pickup or to take to the nearest recycling centre? 2. How often do you use reusable containers to store food in your refrigerator rather than wrapping food in aluminium foil or plastic wrap? 3. How often do you conserve water while washing dishes? 4. How often do you conserve energy by turning off light switches when leaving a room, turning down temperature controls when leaving home, etc.? 5. How often do you conserve water while brushing your teeth, shaving, washing your hands, bathing, etc.? 6. When disposing of durables like appliances, furniture, clothing, linens, etc., how often do you either give/sell that item to someone else or donate the item to a charitable organization? 7. How often do you refuse to buy products that you feel have extensive packaging? 8. How often do you recycle your motor oil? 9. How often do you walk, ride a bike or carpool to work or school?
Items for The environmental concern scale
<ol style="list-style-type: none"> 1. I am very concerned about the environment 2. Humans are severely abusing the environment

-
3. I would be willing to reduce my consumption to help protect the environment
 4. Business and industry should take stronger actions to protect the environment
 5. Major social changes are necessary to protect the natural environment
 6. Anti-pollution laws should be enforced more strongly

***Vietnamese version**

Items for The conservation behavior scale	
1.	Anh/chị có thường phân loại rác thải sinh hoạt (ví dụ: đồ nhôm, thủy tinh, sách báo, v.v...) để được thu gom rác hoặc đem đến trung tâm tái chế gần nhất?
2.	Anh/chị có thường dùng hộp đựng (loại có thể tái sử dụng) để bảo quản thực phẩm trong tủ lạnh thay vì gói trong giấy bạc hoặc màng bọc thực phẩm không?
3.	Anh/chị có thường tiết kiệm nước khi rửa chén bát không?
4.	Anh/chị có thường tiết kiệm năng lượng bằng cách tắt đèn khi ra khỏi phòng, tắt điều hòa nhiệt độ/ quạt khi rời khỏi nhà?
5.	Anh/chị có thường tiết kiệm nước khi đánh răng, cạo râu, rửa tay, tắm rửa, v.v... không?
6.	Khi không còn nhu cầu dùng đến những vật dụng như các thiết bị gia dụng, đồ nội thất, quần áo, các loại khăn/ drap, v.v..., anh/chị có thường tặng/ bán vật dụng đó hay quyên góp cho các tổ chức từ thiện không?
7.	Anh/chị có thường từ chối mua những sản phẩm mà anh/chị cho là đóng gói bao bì quá nhiều hoặc dư thừa không?
8.	Anh/chị có thường tài chế dầu nhớt xe không?
9.	Anh/chị có thường đi bộ, đi xe đạp hoặc đi chung xe đến chỗ làm hay đến trường không?
Items for The environmental concern scale	
1.	Tôi rất quan tâm đến môi trường
2.	Con người đang lạm dụng môi trường một cách trầm trọng.
3.	Tôi sẵn sàng cắt giảm mức tiêu dùng cá nhân để góp phần bảo vệ môi trường.
4.	Các doanh nghiệp và khu công nghiệp nên thực hiện những hành động mạnh mẽ hơn để bảo vệ môi trường.
5.	Để bảo vệ môi trường tự nhiên thì những thay đổi về mặt xã hội là cần thiết.
6.	Các bộ luật về chống ô nhiễm môi trường cần được thực thi một cách mạnh mẽ hơn.

Appendix B

The focus group prompts

1. What is the first thing that comes to mind when you think of the differences between New Zealand and Vietnam?
2. How about the differences in the natural environment?
3. Before moving to New Zealand, what were your concerns about the quality of the natural environment?
4. Have you noticed any changes in your level of environmental concern and/or pro-environmental behaviour since moving to New Zealand? Please explain.
5. Do you think there are differences between New Zealanders and Vietnamese regarding environmental concern and pro-environmental behaviours? Please explain.
6. Do you think that moving to New Zealand has influenced your level of environmental concern and pro-environmental behaviours?
7. Summarise Study 1's results (and introduce the term "acculturation")
 - 7a) What do you think?
 - 7b) Is it in line with your initial thoughts?
 - 7c) What is your explanation for the results?
 - 7d) What factors do you think have influenced their concern and pro-environmental behaviour?

Appendix C

The focus group rules



Does acculturation influence immigrants' level of environmental engagement ?

FOCUS GROUP RULES

- The information shared in this meeting is confidential. You should not discuss the opinions and comments made by other focus group participants with anybody outside this room. We would like you and others to feel comfortable when sharing information.
- You do not need to agree with others, but you should listen respectfully as others share their views.
- We would like to hear a wide range of opinions: please speak up on whether you agree or disagree.
- You can speak in either Vietnamese or English.
- You can ask other participants repeat their talk if you cannot follow or would like to clarify.
- There are no right or wrong answers, every person's experiences and opinions are important.
- The meeting is video recorded, therefore, please one person speaks at a time.
- Please turn off your phones.

Appendix D

The focus group consent form



Does acculturation influence immigrants' level of environmental engagement?

CONSENT TO PARTICIPATE IN FOCUS GROUP*

This consent form will be held for 5 years.

Researcher: Tram Nguyen. School of Psychology, Victoria University of Wellington.

- I have read the Information Sheet and the project has been explained to me. My questions have been answered to my satisfaction. I understand that I can ask further questions at any time.
- I agree to take part in a video recorded focus group.

I understand that:

- I acknowledge that I am agreeing to keep the information shared during the focus group confidential. I am aware that after the focus group, I must not communicate to anyone, including family members and close friends, any details about the focus group.
- I can withdraw from the focus group while it is in progress; however, it will not be possible to withdraw the information I have provided up to that point as it will be part of a discussion with other participants
- The identifiable information I have provided will be destroyed on or before 31/12/2022.
- I understand that the results will be used for a Master thesis and academic publications and/or presented to conferences.
- My name will not be used in reports, nor will any information that would identify me.
- I understand that the [observation notes/recordings] will be kept confidential to the researcher and the supervisor.

Signature of participant: _____

Name of participant: _____

Date: _____

Contact details: _____

**Note.* This form will be written in both Vietnamese and English

