Arts, Culture and Recreation Participation and Wellbeing Amongst 12-Year-Olds

Bespoke Report for Manatū Taonga
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TE WĀNANGA ARONUI O TĀMAKI MAKAU RAU

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Glossary of Māori words and terms

Here tāngata	Social and familial ties*
Kapa haka	Traditional Māori cultural or performing group
Kī-o-rahi	Traditional Māori ball game
Mahi aroha	Activities or work you do for passion, love and service*
Mana	Authority*
Manu kōrero	Speech/oratory practice
Mātauranga Māori	Traditional and contemporary Māori knowledge
Matea	Core needs*
Mau rākau	Māori weaponry art
Ngākau	Inner-system or emotional wellbeing*
Ngā mahi a te rēhia	Arts, culture and recreation activities
Ngā toi Māori	Māori arts and cultural activities
Raranga	Traditional Māori weaving
Taonga tuku iho	Cultural treasures passed down through generations*
Te ao Māori	The Māori world
Te reo Māori	The Māori language
Te taiao	The environment
Tikanga Māori	Māori customs, protocols and ways of being
Tinana	Bodily health*
Waiata	Singing, song
Wairua	Spirit, identity*
Whakataukī	Proverb, saying
Waka ama	Traditional Māori outrigger canoe

*These translations come from Ngaruroro (2024). All other translations come from Te Aka Māori Dictionary (https://maoridictionary.co.nz/)

Glossary of Abbreviations

ACRs	Arts, culture and recreation activities
ECAs	Extracurricular activities
EDF	Effective degrees of freedom
FTAs	Free-time activities
GAM	Generalised Additive Model
GLM	Generalised Linear Model
GUiNZ	Growing Up in New Zealand
MEIM	Multigroup-Ethnic Identity Measure
NS	Not significant
OLS	Ordinary Least Squares
QoL	Quality of Life

E tio te tūī, e ketekete te kākā, e korihi te kōkako

It takes many instruments to make a symphony

- Whakataukī (Traditional Māori Proverb)

1.0 Executive Summary

Taking part in extracurricular and free-time activities is a core part of growing up in Aotearoa. Free-time activities are those activities young people choose to participate in, in their own time, such as reading, physical activity, arts and crafts, and listening to music. Extra-curricular activities refer to organised activities, including community groups, sports, art classes, and music or drama groups or lessons.

In the first report in this series, entitled *Arts, Culture and Recreation Participation in the Growing Up in New Zealand Cohort at 12-Years,* Evans, Redman and colleagues (2023) found that 97% of 12-year-olds in New Zealand regularly participate in these activities. The report added fresh insights into how young people participate overall in ngā mahi a te rēhia (arts, cultural and recreational activities).

Arts, Culture and Recreation Participation and Wellbeing Amongst 12-Year-Olds builds on the findings of the first report to explore the relationship between participation and wellbeing. This report also uses data from the Growing Up in New Zealand (GUiNZ) study – New Zealand's largest contemporary longitudinal birth cohort study with a cohort of over 6,500 children – and provides a diverse sample of 12-year-olds in terms of their experiences of gender, ethnicity, disability and other sociodemographic characteristics.

To measure participation, we looked at the number of free-time and extracurricular activities young people participated in regularly at age 12. To define young people's wellbeing, the report uses elements from the Ngaruroro model of wellbeing (Johnson et al., 2024), and includes four themes: 1) a young person's here tāngata (social and familial ties), (2) tinana (bodily health), (3) ngākau (balanced inner-system or emotional health), and (4) wairua (spiritual wellbeing). Additionally, we explore the relationship between engagement with specific ngā toi Māori (Māori arts and cultural) activities and wellbeing outcomes, and we also seek to determine if these outcomes differ by sociodemographic characteristics.

Overall, our research has found that young people who engage regularly with several arts, cultural and recreation activities are experiencing better wellbeing, in all of the areas studied. This report aligns with a growing body of international research highlighting the ways in which arts, cultural and sporting activities have wide-reaching effects on many aspects of young people's health and wellbeing (Fancourt et al., 2020; Fancourt & Finn, 2019). It also provides a strong evidence base that underscores the particular role and importance of ngā toi Māori in contributing to young people's wellbeing.

These findings align with our guiding whakataukī, recognising and cherishing the importance of diversity in arts, cultural and recreational experiences amongst young people in Aotearoa.

More specifically, the results showed that:

- Young people who engaged regularly in many different extracurricular activities reported better wellbeing and higher school engagement. Greater numbers of extracurricular activities were significantly associated with strong here tāngata (better peer relationships, parent-child relationships), tinana (better quality of life, and general health scores), ngākau (higher school engagement scores), and wairua (a stronger sense of cultural identity).
- Participation in a wide range of free-time activities was linked to better health and relationships. Higher numbers of free-time activities were significantly associated with strong here tāngata (better child-peer relationships, parent-child relationships), tinana (quality of life, general health), ngākau (lower depression scores, higher school engagement), and wairua (a stronger sense of cultural identity).
- Findings suggest that regularly 'getting involved' is linked to markedly better wellbeing. On average, young people with the strongest wellbeing scores participated in at least five extracurricular activities. This was also the case when young people participated in at least four regular free-time interests.
- Higher school engagement was significantly linked with engaging in more extracurricular activities and free-time activities.
- Most demographic characteristics did not change the relationship between participation in arts, cultural, and recreation activities and wellbeing, indicating a consistent positive association despite demographic differences.
- The strength of the relationship between free-time activities and wellbeing outcomes differed by gender and ethnicity for some aspects of wellbeing. The relationship between participation in free-time activities and both school engagement and health-related quality of life was found to be stronger for cisgender girls than for cisgender boys. The relationship between Health-related quality of life and free-time activities was

strongest for Pacific young people. For Parent-child relationships, the relationship was strongest for Pacific young people, with no association found for rangatahi Māori.

- Young people who experienced disability were found to have a different, more complex pattern of relationships with wellbeing outcomes. The relationships between participation in free-time activities and both Parent-child relationship and School engagement, was weaker (but still positive) for young people with self-perceived disabilities. There was no association between free-time activities and Peer relationships for those with a disability. In contrast, young people experiencing disability who participated in ngā toi Māori activities specifically showed a strong positive association between increased participation and better Parent-child relationships.
- Greater ngā toi Māori involvement was statistically associated with greater wellbeing and engagement at school. Across all studied demographic groups, participation was significantly associated with a young person's here tāngata (stronger child-peer relationships), ngākau (higher school engagement), and wairua (higher ethnic identity scores).

- An association was found for rangatahi Māori between participation in more ngā toi Māori activities and fewer symptoms of anxiety. Additionally, transgender and non-binary young people showed the strongest association between participation in more ngā toi Māori and higher school engagement scores. This emphasises the enhanced benefit for some young people in participating in ngā toi Māori. It should therefore be a priority to continue to develop and promote initiatives that cherish Māori arts and cultural activities.
- Importantly, this research describes associations and does not imply causality. However, as many key demographic characteristics did not change the pattern of results, we have strengthened our key finding of direct links between arts, cultural and recreation participation and wellbeing amongst youth in this sample.

Findings from this research have significant policy and practice implications, as all young people should have ready access to a variety of arts, culture and recreation activities. The research suggests that we should not be limiting participation to a few key activities. Instead, we have grounds to encourage involvement in a range of activities, particularly for this age group.

Whilst greater participation in extracurricular and free-time activities was beneficial, this research examines participation in ngā toi Māori activities specifically and demonstrates how they contribute positively to wellbeing across demographically different groups. Therefore, opportunities to engage in ngā toi Māori activities should be provided whenever possible.

It is also recommended that resources highlight the benefits of time spent engaging in extracurricular and free-time activities across settings for all young people. When provided in inclusive environments, these activities build a sense of belonging where young people are free to build relationships, extend their support networks, and develop a sense of who they are and their place in the world.

2.0 Introduction

A well-known whakataukī says: « E tio te tūī, e ketekete te kākā, e korihi te kōkako » This translates as “The call of the tūī, the chatter of the kākā, the singing of the kōkako”, and it is said to convey a sense that while the tūī, kākā and kōkako are all native birds, they each have their own distinctive voice and song, and are therefore unique and significant for their own reasons (Edwards, 2009). Furthermore, when these birds sing together, it is like the many instruments required for a symphony.

Guided by this whakataukī, through this research we seek to recognise and cherish the diversity of ngā mahi a te rēhia – arts, cultural and recreation activity experiences amongst young people in Aotearoa. We ask, how does participation in these activities benefit young people? How do diverse artistic, cultural and recreational experiences contribute to young people’s wellbeing, also in its broadest sense?

We know that there are many benefits to children who participate in arts, cultural and recreational activities either together with others or on their own. Research has shown that engagement in extracurricular activities (ECAs) has been associated with specific improved mental health outcomes in adolescence (LaForge-MacKenzie et al., 2022). Longitudinal literature has also indicated that young people who participate in ECAs in adolescence experience fewer depressive symptoms, lower reports of stress and higher reports of mental wellbeing in adulthood (Jewett et al., 2014), however little research to date has explored this association in the context of Aotearoa New Zealand. These benefits are often experienced in different degrees, so it was important for us to conceive of a research plan that recognised these differences.

Additionally, with this research we explore the broader context of wellbeing dimensions that may be associated with a diverse range of activity experiences. In the Ngaruroro model of Māori wellbeing (Johnson et al., 2024), wellbeing is considered as the embodied and active process of being well in relation to several elements that are dynamic, interconnected, and holistic. These elements include a person’s here tāngata (social and familial ties), tinana (bodily health), ngākau (inner-system or emotional health), as well as connection to other elements such as wairua (spirit) and te taiao (the environment). This model also acknowledges the importance and inclusion of ngā mahi a te rēhia (arts, cultural and recreation activities) as elements connected to and indicative of wellbeing. Māori models of health and wellbeing are crucial to frame an understanding of young people’s health if we are to consider Māori-centred relational models of education and care for our young people and their futures.

3.0 Ngaruroro – A Māori Model of Wellbeing

The Ngaruroro model (Johnson et al., 2024) was developed with members of Māori communities to identify key themes of Māori wellbeing. It describes wellbeing as comprising eight interconnected elements: (1) here tāngata (social and familial ties), (2) te taiao (the environment), (3) taonga tuku iho (cultural treasures) (4) tinana (bodily health), (5) wairua (spiritual wellbeing), (6) ngākau (balanced inner-system or emotional health), (7) matea (core needs) and (8) mana (authority), see Figure 1. Note that the words and phrases in te reo Māori here are cultural concepts and themes that have been translated and conceptualised as part of the Ngaruroro model (Johnson et al., 2024). This model illustrates the idea that wellbeing is dynamic, interconnected, and holistic. The scope and application of this model of health aligns well with a holistic view of wellbeing for young people in Aotearoa New Zealand.

Figure 1: Illustration of the eight themes that together form the Ngaruroro model of Māori wellbeing (Johnson et al., 2024)

The activities described and that young people have identified in the GUiNZ survey could fall under a number of themes or elements within the Ngaruroro model. For example, participating in culturally-relevant activities such as kapa haka (Māori performing arts) and

mau rakau (a Māori weaponry art) was described under the theme of tinana – living well in relation to one's tinana (body) and maintaining physical health. At the same time, the theme of wairua (spirituality) – living well in relation to one's spirit or connectedness – also encapsulates relational practices, including mahi aroha (activities or work you do for passion, love and service). Thirdly, some activities and in particular ngā toi Māori (Māori arts and cultural activities) can sit within the theme of taonga tuku iho – cultural treasures that are passed down from generation to generation, as they connect individuals to te reo Māori (the Māori language), mātauranga Māori (traditional and contemporary Māori knowledge) and tikanga Māori (Māori customs, protocols and ways of being).

Importantly, within this model, ngā mahi a te rēhia (arts, cultural and recreational activities) are considered as woven into and throughout the diversity of themes considered as being crucial to a person's wellbeing. Under this model, should one of these dimensions be missing or somehow damaged, people may become unbalanced and subsequently experience less wellbeing; but when all dimensions stand strong, people can experience well-rounded and complete wellbeing.

4.0 Methodology

4.1. The Growing Up in New Zealand Study

Our research utilises data from young people who were participants of the Growing Up in New Zealand (GUiNZ) cohort study, and who self-reported that they lived in New Zealand at the time of the 12-year data collection wave (n = 4,500). Whilst not all young people were 12 at the time of the data collection (mean age = 12.30 years, standard deviation = 0.27 years), all were between 11 and 13 years of age (Napier et al., 2023); therefore, for simplicity, they will be referred to as 12-year-olds throughout this report.

4.2. Ngā Mahi a te Rēhia: Arts, Cultural and Recreation Activities

This report focuses on ngā mahi a te rēhia (arts, cultural and recreation activities or ACRs), and are made up of two separate entities of engagement: free-time activities (FTAs) and extracurricular activities (ECAs).

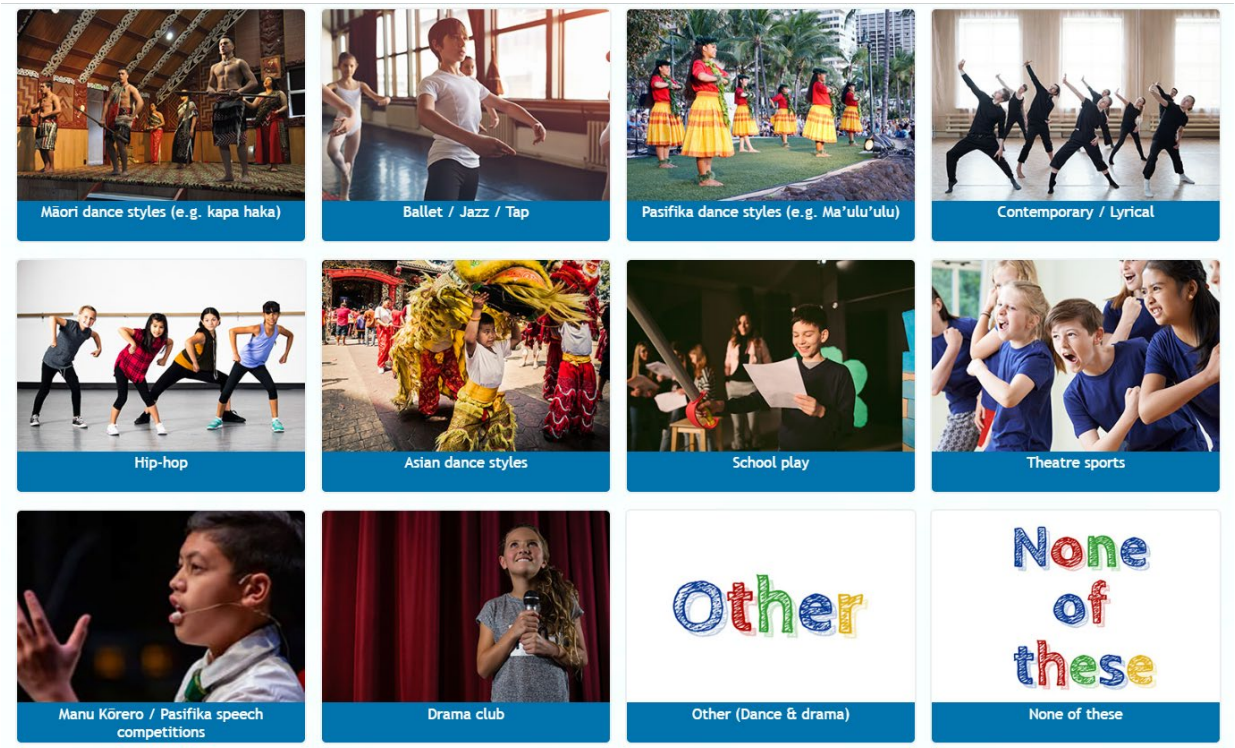
Free-time activities (FTAs): To operationalise this we have focused on activities that young people may choose to do in their free-time, rather than activities they are required to do. The items included were worded as follows: “How often do you: read books; listen to music; sing or play an instrument; do some art/craft or quiet activity (e.g. Lego, board games, drawing); active play (e.g. running around playing games, bike riding); spend time outdoors?”. Response options were: Never/ almost never; Once a week; Several times a week; Once a day; Several times a day. We have excluded engagement in homework, chores and caring duties, as these activities may come with different expectations and relationships to wellbeing outcomes.

The FTAs variable was created to quantify the number of free-time activities young people participated in regularly at age 12. This was created by summing the free-time activities that each participant engaged in several times per week or more. This meant each participant was given a score for free-time engagement on a scale from 0 to 6 activities that they regularly engage in.

Extracurricular activities (ECAs): With extracurricular activities, 12-year-olds were asked to reflect on ‘regular’ activities participated in over ‘the past year’. “Thinking about the past year, which of the following activities do you do, or have you done regularly (about once a week)?” Young people selected as many as needed from a list of activities, under each of 5

categories: 1. Community group or club, 2. Dance and drama, 3. Sports, 4. Music, and 5. Arts, crafts and technology (see full list of activities options in Appendix A, and for an example of the survey questionnaire on the 'dance and drama' page, see Figure 2).

Figure 2: Extract from the 12-year survey child questionnaire – extracurricular activities section – Dance and drama options.



The ECAs variable was created as a sum score using the number of extracurricular activities that young people said they regularly engaged in at age 12. Approximately 1% of participants engaged in 22-40 activities. This group was too small to consider statistically, and for many participants in this category, their responses suggested inaccurate reporting (e.g. ticking every activity within a category, suggesting they may not have responded to the questions thoughtfully). To increase the reliability of the results we removed all participants who reported engaging in more than 21 activities from these analyses; thus, the number of activities is presented on a scale from 0-21.

For both free-time and extracurricular ACR activities, only young people's participation outside of formal school hours was captured. In each set of questions, participants were asked to report the activities that they participate in 'before or after school, or at lunchtime, or in the weekend' (See Appendix B, Table 5).

4.3. Ngā Toi Māori: Extracurricular Māori Arts and Cultural Activities

In these analyses, consideration was also given to engagement in those ACRs that could be classified as ngā toi Māori activities. From the list of extracurricular activities, we created a variable that describes the number of ngā toi Māori activities that young people participated in at age 12 by summing together their participation in each of the following: 1) Māori dance styles (e.g. Kapa haka, Dance category) and Kapa Haka (Music category) were combined into a single response option; 2) Waka ama, rowing, mau rākau; 3) Weaving, raranga; 4) Manu kōrero, Pasifika speech competitions; and 5) Sculpture and carving. This provided a variable with 0 (no ngā toi Māori activities) to 5 activities. These particular activities were selected as they align with te ao Māori (the Māori world) and are acknowledged as important components of our taonga tuku iho (cultural treasures). Note: these are not solely 'Māori' activities as participants may have selected them based on engagement in the non-Māori components (e.g. rowing or alternative weaving activities such as macrame). Similarly, participants may have engaged in other activities, such as waiata (singing) groups, or kī-o-rahi (a traditional Māori ball game), that were not included in this analysis as they were not independent options available in the 12-year survey, due to time constraints of a large-scale survey.

Our inclusive framework was selected to ensure all participants who engaged in ACRs mentioned in the survey that align with te ao Māori were included, whilst the exclusion of the category "waiata/choir" was made so as not to overstate participation in Māori cultural activities. We acknowledge this as a limitation of our findings.

4.4. Sociodemographic Characteristics

The sociodemographic characteristics (enablers and barriers to participation) examined include:

- Child characteristics (i.e., ethnicity [externally prioritised] [1], gender [2], and disability [3])
- Household characteristics (i.e., household composition [4])
- Neighbourhood characteristics (i.e., area-level socioeconomic deprivation [5], and urban/rural geography [6])

Table 5 and Table 6 in Appendix B contain more information on the variables examined. This includes the data source (e.g., child or mother questionnaire), question wording, original response options, and the scales or categories used in the analyses.

4.5. Wellbeing Measures

Under the Ngaruroro model (Johnson et al., 2024), multiple aspects of a young person's life contribute to a holistic view of wellbeing. While we have some measures of wellbeing available to describe children's experiences, we acknowledge that we are not capturing the totality of themes that embody wellbeing from the Māori wellbeing perspective outlined in the Ngaruroro model. With the measures available in the dataset, we have been able to explore four themes from the Ngaruroro model of wellbeing:

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1 Ethnicity is represented in this report using externally prioritized ethnicity. Young people provided self-identified information on their ethnic identity through an ethnicity question taken from the Statistics New Zealand Census of Population and Dwellings. Participants were able to identify with multiple ethnic groups. Their choices were then prioritised using Statistics New Zealand prioritization categories of 1) Māori, 2) Pacific, 3) Asian, 4) Other, 5) Sole European. For a full description of the questions used and the derivations of ethnicity at 12-years, please see Neumann et al. (2023).

2 Gender is a derived variable determined by sex at birth and by responses to the question: *'Thinking about who you are, do you see yourself as a boy, a girl, or somewhere in between?'.* The derived variable is a categorical variable consisting of Cisgender girl, Cisgender boy and Transgender/non-binary/unsure. For a full description of the questions used and the derivations of gender at 12-years, please see Neumann et al. (2023).

3 To measure Disability, we used child self-reported Washington Group Short Set on Functioning (Washington Group on Disability Statistics, 2022). For a full description of the questions used and our derivations of Disability at 12-years, please see Marks et al. (2023).

4 For a full description of the questions used and our derivations of household composition at 12-years, please see Evans, Fletcher et al. (2023).

5 Area-level socio-economic deprivation was measured using the New Zealand Deprivation Index 2018 (NZDep18) (Atkinson et al., 2019), based on the participant's home address. Five groups (quintiles) were derived based on NZDep18 scores, ranging from NZDep 1-2 (least deprived 20% of neighbourhoods) to NZDep 9-10 (most deprived 20% of neighbourhoods).

6 Urban/rural classification (Statistics New Zealand, 2017) was created based on the participants home address.

1. Here Tāngata (social and familial ties)
    - Child peer relationships
    - Parent-child relationships

2. Tinana (bodily health)
    - Health-related quality of life
    - General Health

3. Ngākau (inner-system, emotional wellbeing)
    - Depression
    - Anxiety
    - School engagement

4. Wairua (spirit, identity)
    - Ethnic Identity

Here Tāngata (social and familial ties)

Under the Ngaruroro model (Johnson et al., 2024) a key theme of wellbeing is here tāngata which relates to the importance of social and familial ties. At age 12, young people were asked questions about their relationships with peers, parents, teachers and other significant adults. To investigate the relationship with here tāngata we have chosen to focus on the relationship of ACRs with child-peer relationships and parent-child relationships, from the perspective of the young person.

Child-Peer Relationships

Child-peer relationships were measured using a peer relationships tool from the 12-year data collection wave, provided by Growing Up in New Zealand (*Growing Up in New Zealand*, 2024). The tool consisted of eight questions that asked young people to consider their relationships with peers. This included items such as ‘My friends sense when I am upset about something’ and ‘I tell my friends about my problems and troubles’. Young people responded on a 5-point Likert scale from ‘1-Almost always true’, to ‘5-Almost never true’, or ‘don’t know’. With these eight questions, a sum score was created, where participants with missing data and responses of ‘don’t know’ were removed from the analysis. A lower score on the peer relationships scale indicates stronger and more positive peer relationships. This analysis included 4,460 young people who responded to all of these questions.

Parent-Child Relationships

A young person's relationship with their parent/s or primary caregivers was measured using the parent-child relationship score, provided by Growing Up in New Zealand. The GUiNZ *Data user Guide* (*Growing Up in New Zealand*, 2024) explains that this score is a sum score of eight questions which asked the young person to consider their relationship with their parent/s. Example items included 'My parent/s accept me as I am' and 'I trust my parent/s'. Young people responded on a 5-point Likert scale from '1-Almost always true' to '5-Almost never true' or 'I don't know'. The sum score was created after removing participants with missing data or a response of 'I don't know' to any of the questions. To interpret this tool, lower scores indicate stronger and more positive parent-child relationships. This analysis included 4,459 young people who responded to all of these questions.

Tinana (bodily health)

Under the Ngaruroro Model of Māori health, tinana refers to physical health and the actions one takes to maintain a healthy body. In this report, we consider the relationship between engagement in ECAs and FTAs and one's physical health using 1) a measure of 'health-related quality of life' using the Kidscreen-10 tool, and 2) a question concerning young people's view of their General health status.

Health-related Quality of Life

Quality of Life was measured using the young person's self-report to the Kidscreen-10 tool, which is a ten-item tool that evaluates health-related quality of life. Items asked participants to think about the past week and asked questions such as 'Have you felt fit and well?' and 'Have you felt lonely?'. Participants who had missing responses to these questions were removed from the analysis. This analysis included 4,488 young people who responded to all of these questions.

As recommended by the developers of the Kidscreen Tool (Child Public Health, 2023) we have utilised the T-score for our comparisons (norm-referenced to a European population). As this is a shortened version of the full Kidscreen tool, it is important to consider that some aspects of physical and psychosocial health were not included in this measure. A higher score represents higher health-related quality of life, centred around a mean of 50 and standard deviation ±10.

General Health

A single item was used to ask young people, "In general, how would you say your health is?". Participants responded on a 5-point Likert scale, ranging from Poor to Excellent; they could also choose 'I don't know' or 'I don't want to answer this question'; however, participants with

this response were removed from the analysis. This analysis included 4,491 young people who responded to this question.

Ngākau (inner-system, emotional wellbeing)

This theme refers to the need for one's inner system to be satisfied and working in harmony. It refers to thoughts, emotions, and attitudes that speak to emotional wellbeing. To consider the relationship with ACRs we utilised the questions that asked about 1) symptoms of depression, 2) symptoms of anxiety, and 3) school engagement (which included the components of emotional, cognitive and behavioural engagement in school).

Depression

Depression symptoms were measured using a 10-item Depression Scale score, derived by the Growing Up in New Zealand team and made available in the dataset. This derived variable was calculated as a 10-item sum score describing participants' reports of their own depressive symptoms – it is not a diagnostic tool (*Growing Up in New Zealand*, 2024). Young people were asked to think about the past week and answer ten questions, including "I felt like I couldn't pay attention to what I was doing" and "I didn't sleep as well as I usually sleep". They responded on a 4-point frequency scale from 0 - 'Not at all', to 3 – 'A lot', which was then converted into a sum score. The higher the score for symptoms of depression, the greater the number of symptoms a participant was experiencing. For this analysis, the number of participants with complete responses, all of whom were included in the analysis, was 4,437.

Anxiety

Experiences of anxiety can comprise another aspect representative of ngākau; for this we considered young people's self-reported symptoms of anxiety. The PROMIS Anxiety tool asks questions about feelings of fear, nervousness and worry. The GUiNZ *Data User Guide* (2024) reports that the items were taken from the PROMIS Anxiety tool Form 8a (Irwin et al., 2010). To interpret these results, a higher score represents more symptoms of anxiety. All participants with complete responses were included in the analysis (n = 4,437).

School Engagement

A measurement of a young person's engagement with school was evaluated using the Overall school engagement score, derived by GUiNZ and provided in the dataset for use (*Growing Up in New Zealand*, 2024). The Overall school engagement score was a composite score of 17 items encompassing questions related to emotional engagement, cognitive engagement, and behavioural engagement (Tait et al., 2023). This composite score provides a holistic view of engagement in school and represents one's feelings and overall engagement in the school context. A higher school engagement score indicates more

positive engagement in school across the domains of cognitive engagement, behavioural engagement and emotional engagement. This analysis included 4,421 young people who responded to all of these questions.

Wairua (spirit, identity)

Wairua, although often defined and experienced differently from person to person (Johnson et al., 2024), can be described as the feeling of connectedness, including connections to people, places, and everything around us, and therefore, also a sense of spiritual nourishment and belonging. To capture this aspect of wellbeing we have focused on the available measure of ethnic identity to identify the relationships with participation in ACRs.

Ethnic Identity

Ethnic identity is measured in the GUiNZ dataset using questions from the Multigroup-Ethnic Identity Measure (MEIM) (*Growing Up in New Zealand*, 2024; Phinney, 1992; Roberts et al., 1999). At age 12, GUiNZ asked young people to answer 12 questions related to ethnic identity, such as “I have spent time trying to find out more about my ethnic group, such as its history, traditions and customs” and “I have a lot of pride in my ethnic group”. Responses were given on a Likert scale ranging from 1 – ‘strongly disagree’ to 5 – ‘strongly agree’. The derived score utilised in this analysis is a sum score, created by adding together the responses from the 12 questions giving a possible range from 12 to 60. A higher score indicates that a participant has a stronger sense of ethnic identity. This analysis included 4,480 young people who responded to all of these questions.

4.6. Sample Characteristics

Table 1 shows the sample characteristics for the dataset (n = 4,500) utilised in this report.

Table 1: Summary of cohort numbers for each of our demographic characteristics.

Demographic characteristic	Grouping	n	% of Total NZ cohort (N = 4,500)
Ethnicity	Māori	979	21.8%
	Pacific	491	10.9%
	Asian	542	12.0%
	Other	91	2.0%
	Sole European	2,268	50.4%
Gender	Boy/mostly boy	2,055	45.7%
	Girl/mostly girl	1,683	37.4%
	Transgender/Non-binary/Unsure	725	16.1%
Disability	No disability	4,010	89.1%
	Some disability	437	9.7%
Household composition	Sole parent	567	12.6%
	Two or more parents	3,299	73.3%
	Living with extended family	499	11.1%
	Living with non-kin	83	1.8%
Area level deprivation	NZDep 1-2 (lowest deprivation)	1,067	23.7%
	NZDep 3-4	990	22.0%
	NZDep 5-6	858	19.1%
	NZDep 7-8	723	16.1%
	NZDep 9-10 (highest deprivation)	778	17.3%
Rurality	Urban	3,628	80.6%
	Rural	788	17.5%

Note: Percentages do not add to 100% to reflect missing data for each variable.

Across the analyses there were sufficient cell counts and distributions in each of the variables (free-time, extracurricular and ngā toi Māori) to create categorical variables, with the exception of ethnicity. In the case of ethnicity low cell counts were identified for 'Other' ethnicity in FTA analyses and, additionally, in 'Asian' ethnicity for ngā toi Māori analyses. For this reason, 'other' ethnicity is not visible in the analyses involving ethnicity; whilst both 'Asian' and 'Other' were removed from the ngā toi Māori analyses. Appendix C and Appendix D display the sociodemographic distributions for free-time activities and ngā toi Māori activities.

4.7. Data Analysis Methods

Ngā mahi a te rēhia (arts, cultural and recreation activities) and wellbeing

To identify potential associations between activity participation and each wellbeing outcome (for those treated as continuous) a regression analysis within the Generalised Linear Models (GLM) framework was conducted, estimated by Ordinary Least Squared (OLS). Following this, Spearman and Pearson correlation coefficients were calculated to verify the findings; these can be found in Appendix E, Table 19 and Table 20.

For each outcome, single interaction terms were then added to the linear regression models to determine the influence of these. Based on findings from Report 1 (Evans, Redman, et al., 2023) we explored several sociodemographic factors (gender identity, ethnicity, household structure, disability, rurality, and area-level deprivation) to consider their influence on the relationship between ECAs/FTAs and each wellbeing outcome. In other words, we wanted to identify whether factoring in each of the sociodemographic characteristics would change the relationship between young people's activity participation and the wellbeing outcome of interest.

Generalised Additive Models (GAM) were then used to test each wellbeing outcome for non-linear relationships with ECAs and FTAs. Since Free-time activities have few unique values, we added a small amount of random noise (jittering) to the values of the variable, making them slightly different while preserving the general structure of the data. Jittering allows the smooth function to estimate non-linear relationships more flexibly. Where a p-value <.05 was identified, and effective degrees of freedom were above 2, the relationship was reported.

As General health had fewer categories (and could not be treated as continuous), this wellbeing outcome underwent different statistical analysis. To determine the relationship with ECAs/FTAs a Kruskal-Wallis rank sum test, which is a non-parametric alternative to the one-way ANOVA, was used to test for statistically significant differences in the number of ECAs/FTAs between different health statuses. To investigate which specific groups were different from each other, a pairwise Wilcoxon test with Bonferroni adjustments was performed.

Note: Throughout this report, the Y-axis on graphs has often been stretched (or may not start at zero). This has been done to display the findings more clearly; this should be kept in mind by the reader when interpreting the results.

Ngā toi Māori extracurricular activities and wellbeing

To consider the relationship between ngā toi Māori activities and wellbeing outcomes, we created a variable that was a sum score of number of ngā toi Māori activities that young people engaged in. This comprised of ‘Kapa haka,’ ‘Manu kōrero,’ ‘Waka ama, rowing, mau rākau,’ ‘Weaving, raranga,’ and ‘Sculpture, carving’.

Whilst the number of ngā toi Māori activities young people participated in ranged from 0 to 5, too few participants reported taking part in 3 or more different activities regularly. Thus, we created a categorical variable for engagement in 0, 1, or 2+ activities (see Table 2).

Table 2: Number of participants engaging in 0-2+ ngā toi Māori activities.

Number of ngā toi Māori activities	0	1	2+	Total
n =	3,623	664	158	4,445

As the one-way ANOVA between variable 1 and variable 2 did not meet the normality assumption, a Kruskal-Wallis test (a non-parametric alternative) was used to test for statistical significance, then a post-hoc pairwise Wilcoxon test with Bonferroni adjustments was applied to identify which specific groups differed from one another. A linear regression model with interaction terms (for demographic variables) was used to further investigate the effect of demographic variables, treating the number of ngā toi Māori extracurricular activities as a numeric variable.

How to Interpret the Graphs in this Report

Findings are primarily presented using Line graphs and Box-and-Whisker plots. Each line graph has a solid line that illustrates a trend, either linear or non-linear. The shaded area around the trend line represents the 95% confidence interval, providing an estimate of the reliability of these trends.

Box-and-Whisker plots show the spread of the data. The lines, or whiskers, extend from the lowest to the highest values. The shaded box highlights where the middle half of the data falls, marking the 25th percentile, the median, and the 75th percentile. Outliers are indicated by dots beyond the whiskers. Observing the positions and widths of the multiple Box-and-Whisker plots can provide insights into differences in medians, variability, and overall data spread between groups. Trends showing an increase or decrease in median values can suggest a general rise or fall across different groups.

5.0 Results – Ngā Mahi a te Rēhia & Wellbeing

What associations are there between engagement with ngā mahi a te rēhia – extracurricular and free-time arts, cultural and recreational activities – and young people's wellbeing at age 12? What is the effect to the associations when sociodemographic factors are accounted for? A summary table of the findings can be found at the end of this section (in Table 3, on page 54).

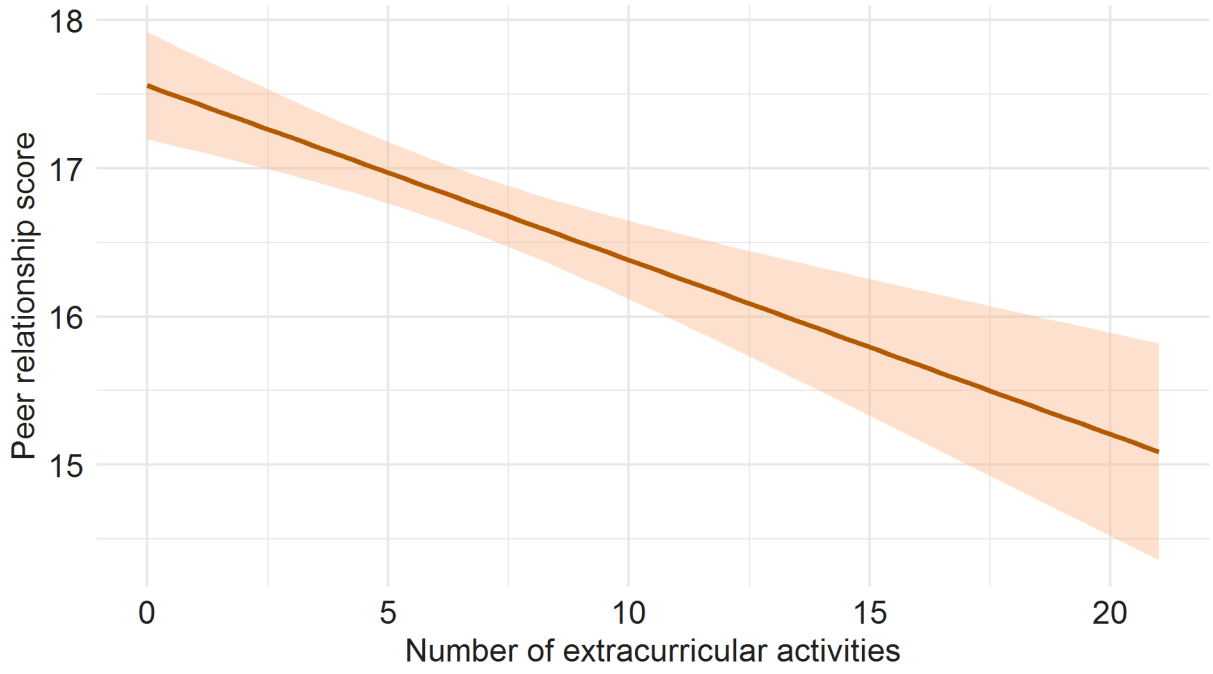
5.1. Here Tāngata (social and familial ties)

Child-Peer Relationships & Extracurricular Activities (ECAs)

Findings indicated that engaging in more extracurricular activities is associated with better peer relationships, with no significant differences across sociodemographic groups.

As seen in Figure 3, a significant but weak relationship between engaging in more extracurricular activities and better peer relationships was observed, where a lower score on the peer relationships scale indicates stronger and more positive peer relationships. The regression analysis revealed a statistically significant but weak negative (linear) association (-0.118, $p<.001$) between peer relationships and the number of ECAs ($p<.001$), indicating that as the number of extracurricular activities increases, there is a small decrease in peer relationship scores (indicating more positive peer relationships). This trend was consistent across gender, rurality, area-level deprivation, household structure, disability, and ethnicity, with no statistically significant differences identified across sociodemographic characteristics.

Figure 3: Graph showing the relationship between peer relationship score and number of extracurricular activities (n = 3,697).

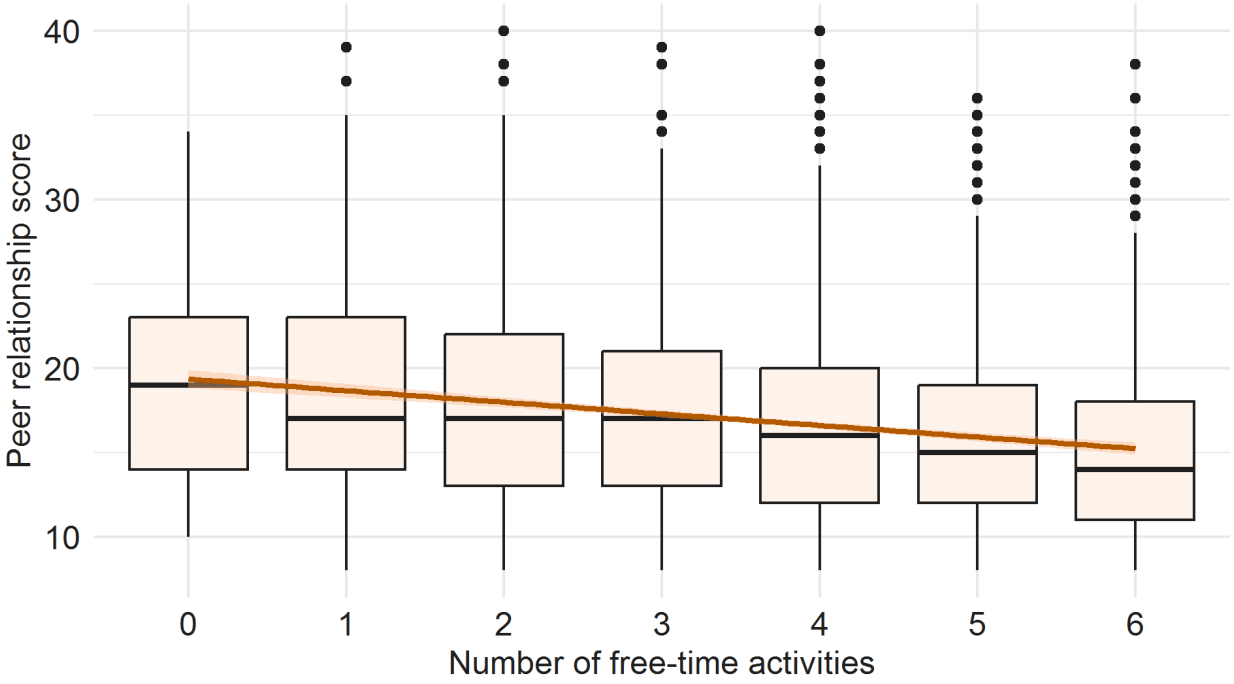


Child-Peer Relationships & Free-time Activities (FTAs)

Findings indicated that engaging in more free-time activities is associated with better peer relationships; however, this relationship is not seen for young people with a disability.

The regression analysis revealed a statistically significant negative (linear) relationship between child-peer relationship scores and the number of free-time activities, with a slope of -0.687 ($p<.001$). This association is visually depicted in Figure 4, demonstrating a clear downward trend. This suggests that higher engagement in free-time activities is correlated with better peer relationships.

Figure 4: Box plot showing the relationship between the Peer relationship score and Free-time activities (n = 3,737).



Note: A lower score on the peer relationships scale indicates stronger and more positive peer relationships.

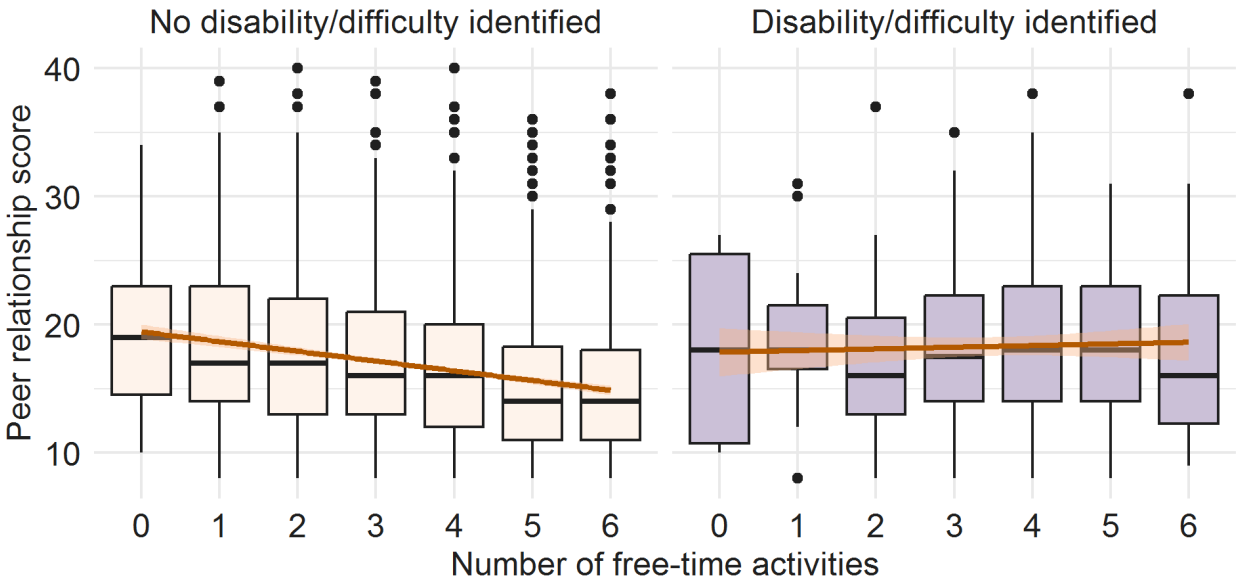
A similar trend is seen across most sociodemographic groups with no statistically significant differences identified by gender, rurality, level of deprivation, household structure or ethnicity. However, it was identified that for young people with functional deficits indicative of a Disability (n = 350) compared to those with No disability (n = 3383), an inverse relationship was seen: engagement in more free-time activities was correlated with poorer peer relationships. This finding was statistically significant from participants with No disability ($p<.001$).

As seen in Figure 5, Disability status moderates the relationship between free time activities and peer relationships: while these activities positively impact peer relationships for individuals with No disability (coefficient = -0.758, $p<.001$), they are associated with weaker peer relationships for those with a Disability (coefficient = 0.170, NS), as a lower score on the peer relationships scale indicates stronger peer connections.

However, it was identified that Disability status moderates the relationship between free time activities and peer relationships ($p<.001$ for the difference). As seen in Figure 5, for the participants without a Disability (n = 3,383), engagement in more free-time activities is significantly associated with better peer relationships, as indicated by a negative coefficient

(-0.758, p<.001). This suggests that more free-time activities correlate with better peer relationships. For those with disabilities, there is no relationship between participation in free-time activities and peer relationships (coefficient = 0.170, NS), further investigation is needed to fully understand the underlying dynamics.

Figure 5: Box plot showing the difference in relationship for those with and without Disability for Peer relationship score and Number of free-time activities (n = 3,733).



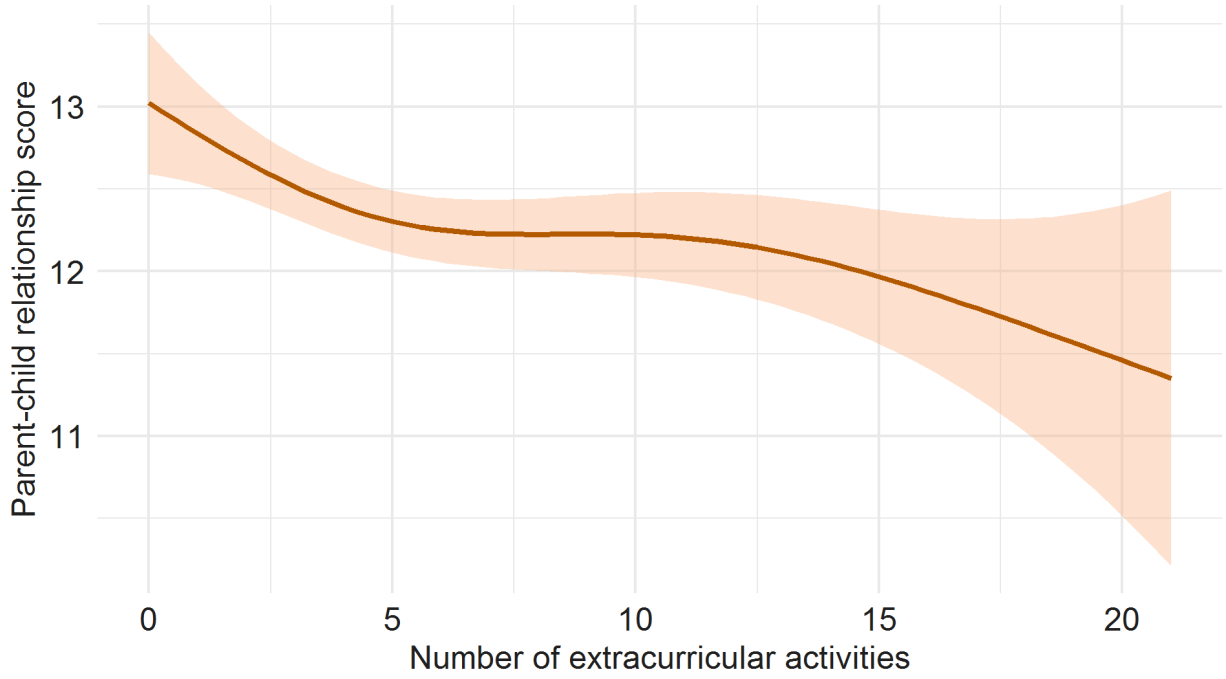
Note: A lower score on the peer relationships scale indicates stronger and more positive peer relationships.

Parent-Child Relationships & Extracurricular Activities

Findings indicated that engaging in more extracurricular activities is associated with better parent-child relationships, with no significant differences across sociodemographic groups.

The relationship between Parent-child relationship and Number of extracurricular activities was best described as non-linear (Effective degrees of freedom (edf) = 3.019, p<.01), see Figure 6. Visual inspection reveals an increase in Parent-child relationship score from 0-5 ECAs. The number of additional activities (from about 5 activities) does not appear to enhance the relationship much until the number of activities is 12 or more. Above 12 ECAs the relationship is less obvious, with a broader range captured within the 95% confidence interval. This trend was consistent across sociodemographic characteristics, with no statistically different relationships identified when accounting for each of gender, rurality, area level deprivation, household structure, disability and ethnicity.

Figure 6: Graph showing the non-linear relationship between Parent-child relationship score and Number of extracurricular activities (n = 4,152).



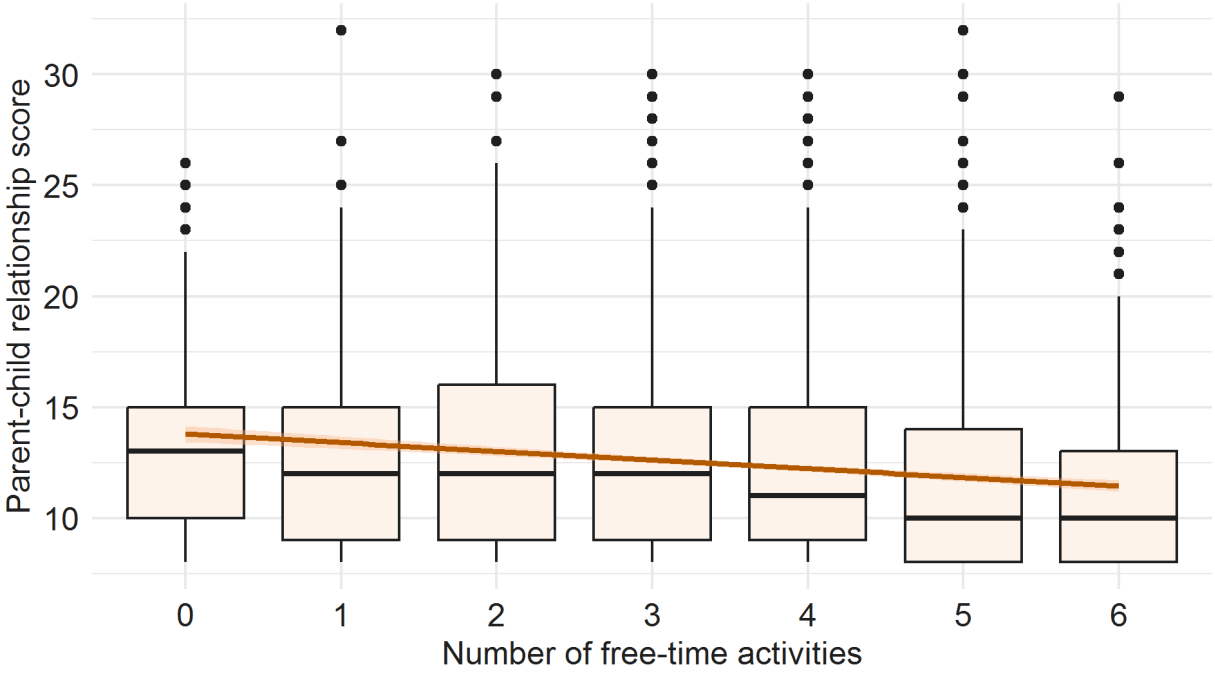
Note: A lower score on the parent-child relationships scale indicates stronger and more positive relationships.

Parent-Child Relationships & Free-time Activities

Findings indicated that engaging in more free-time activities is associated with better parent-child relationships. When sociodemographic factors were considered in this relationship, the association was strongest for Pacific young people, but it was not evident for young people with a Disability.

Regression analysis indicates a statistically significant negative relationship between Parent-child relationship score and Number of free-time activities, indicating that 12-year-olds in this sample who participate in more free-time activities, on average, have a stronger relationship with their parents. The slope coefficient is statistically significant (-0.391, $p<.001$), confirming this linear relationship.

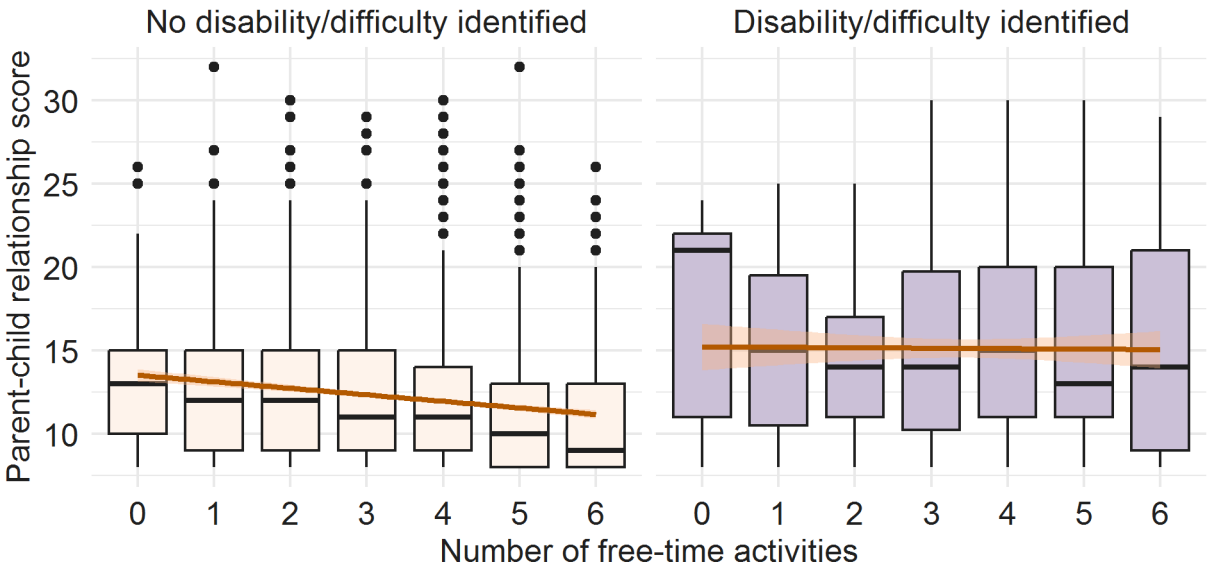
Figure 7: Box plot showing the linear relationship between Parent-child relationship score and Number of free-time activities (n = 4,191).



Note: A lower score on the parent-child relationships scale indicates stronger and more positive relationships.

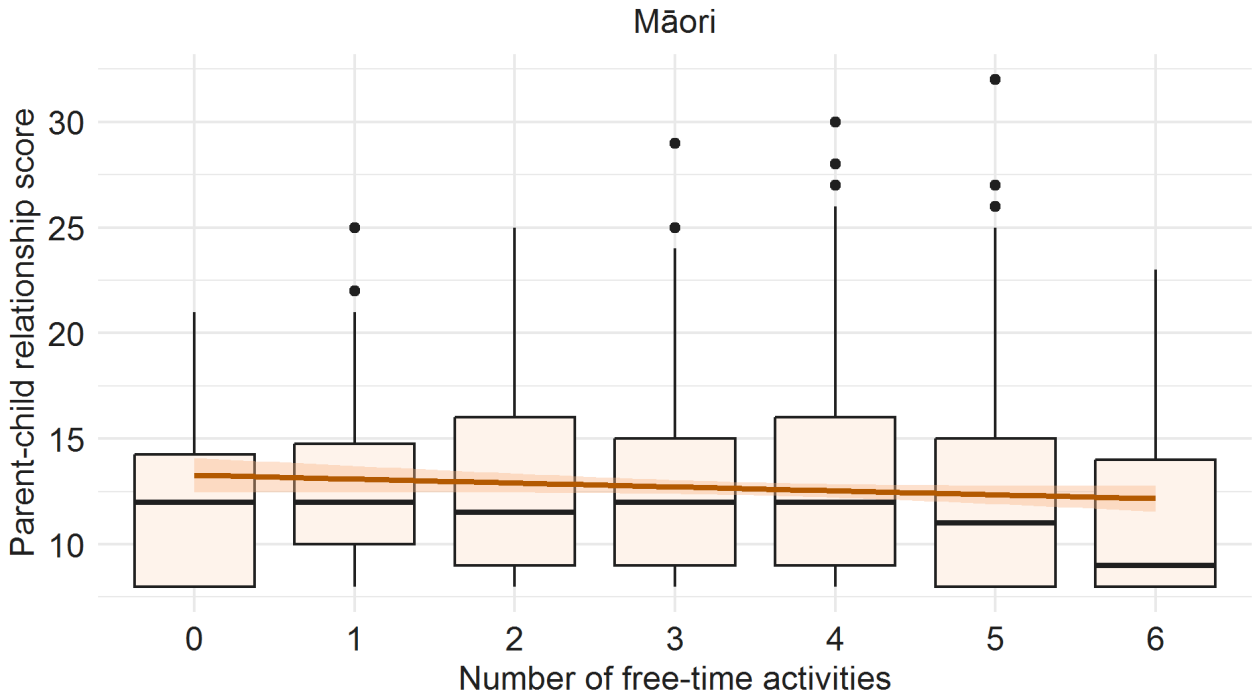
This same downward trend remains apparent across gender, rurality, deprivation, and household structure. However, the relationship between free-time activities (FTAs) and parent-child relationships differs significantly based on Disability status ($p<.05$), as shown in Figure 8. For participants with No disability (n = 3,804), FTAs show a statistically significant negative association with parent-child relationship scores, evidenced by a slope of -0.391 ($p<.0.001$). This indicates that greater participation in FTAs is associated with stronger parent-child relationships within this group. In contrast, for young people with a disability (n = 383), there was no association between FTAs and parent-child relationship (coefficient = -0.02, NS), indicating a need for more research to understand the dynamics in this subgroup.

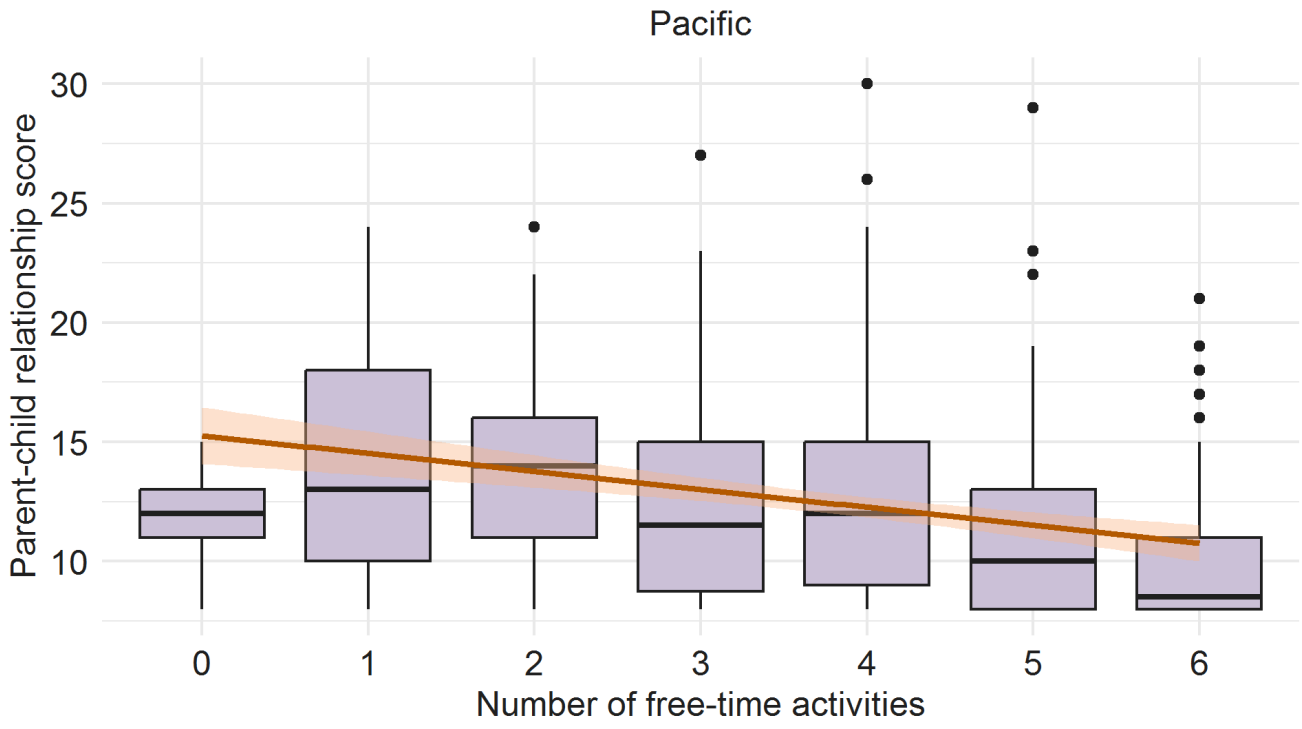
Figure 8: Box plot showing the relationship between Parent-child relationships and Number of FTAs, for those with and with No disability (n = 4,187).

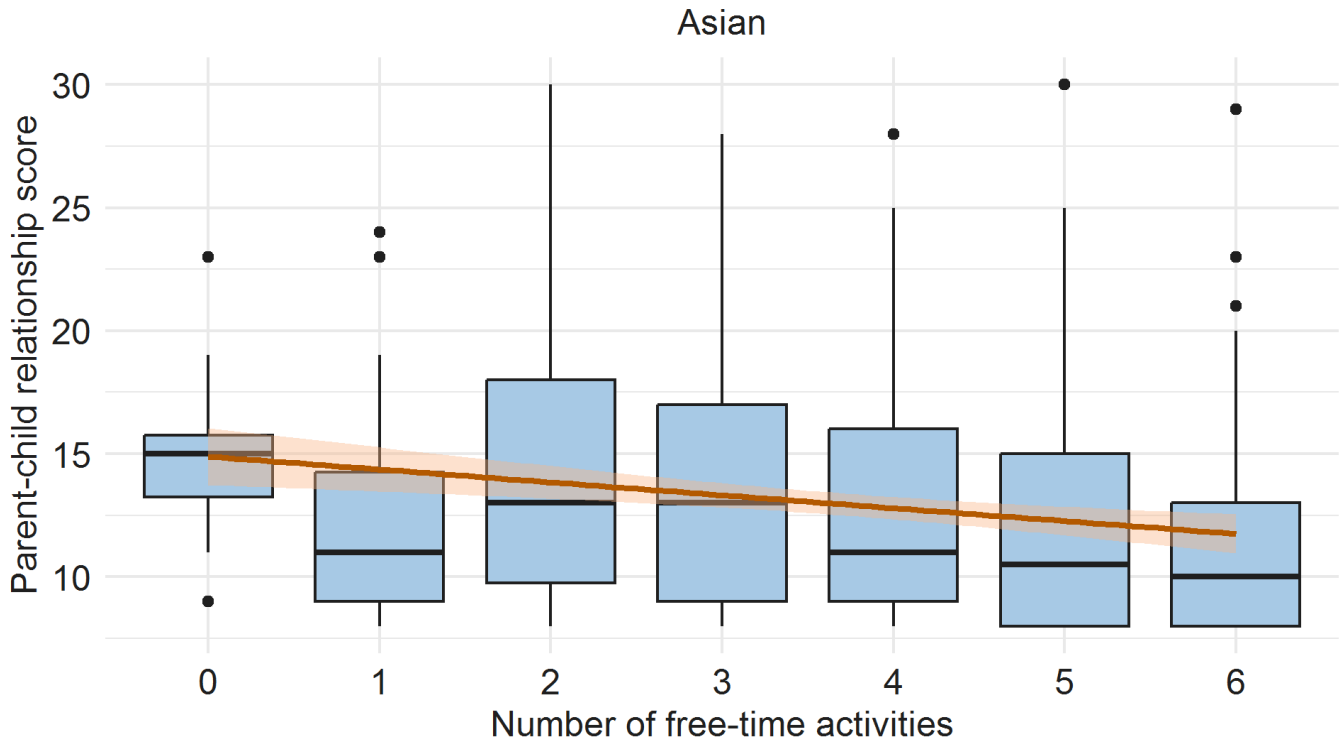


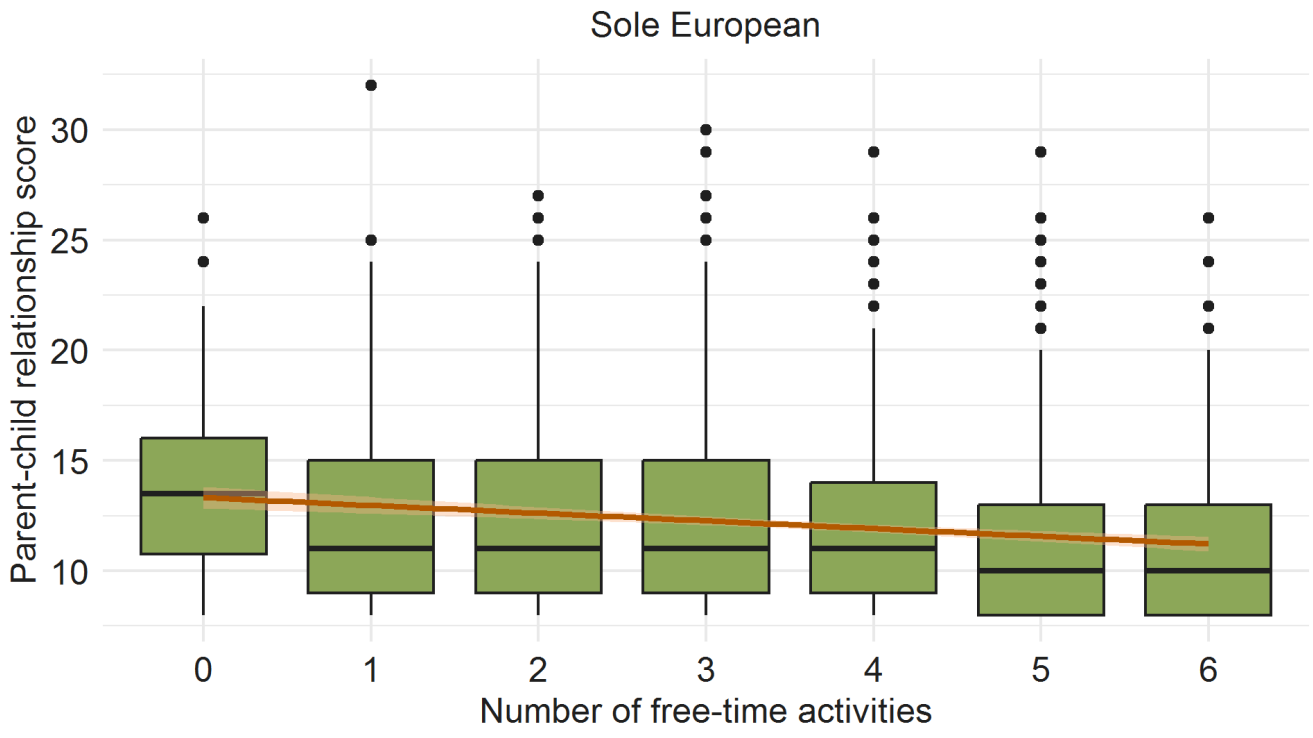
The relationship between FTAs and Parent-child relationships varied across ethnic groups ($p<.01$ for the difference), as illustrated in Figure 9a-d. For Sole European (n = 2,170) the association was moderately negative, with slopes of -0.350 ($p<.001$) but the association was not significant for rangatahi Māori (n = 899, slope = 0.185, NS). However, the slope for Pacific young people was much steeper at -0.75088 ($p<.001$), indicating a strong negative association. Similarly, the Asian group exhibited a slope of -0.524 ($p<.001$). This suggests that for Pacific and Asian participants, greater participation in FTAs has strong associations with positive Parent-child relationships.

Figure 9a-d: Box plot showing the different relationships between Parent-child relationships and Number of FTAs, considering ethnicity (externally prioritised) (n = 4,049).






Asian
Parent-child relationship score
30
25
20
15
10
0
1
2
3
4
5
6
Number of free-time activities


Sole European
Parent-child relationship score
30
25
20
15
10
0
1
2
3
4
5
6
Number of free-time activities

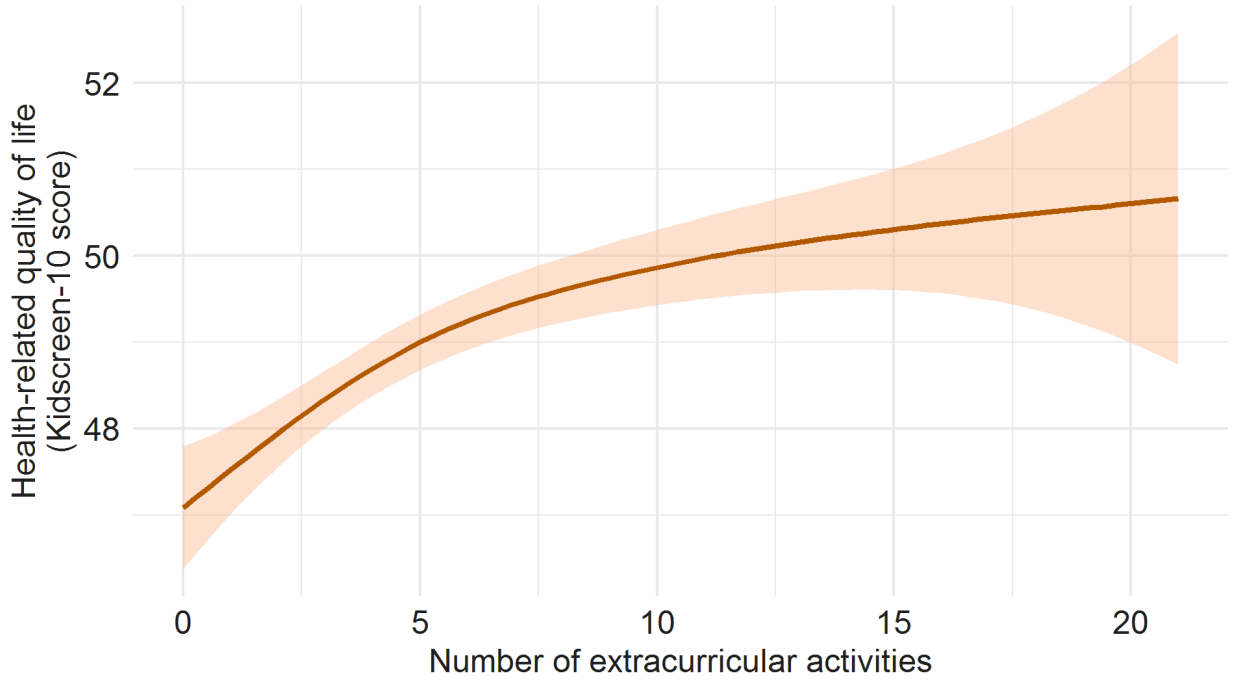
5.2. Tinana (bodily health)

Quality of Life & Extracurricular Activities

Findings indicated that engaging in more extracurricular activities is associated with better health-related quality of life, with no significant differences across sociodemographic groups.

The relationship between Health-related Quality of Life and ECAs was best described as non-linear (edf = 2.459, p<.001). Figure 10 shows a sharp increase in self-reported health-related quality of life from 0 to 5 ECAs, a gradual increase between 5 and 12 ECAs, and a less consistent picture for participants who reported engaging in more than 12 ECAs. When this relationship was investigated by demographic characteristics, no statistically significant differences were found.

Figure 10: Trend line showing the relationship between Health-related Quality of life (Kidscreen-10 score) and Number of ECAs (n = 4,409).

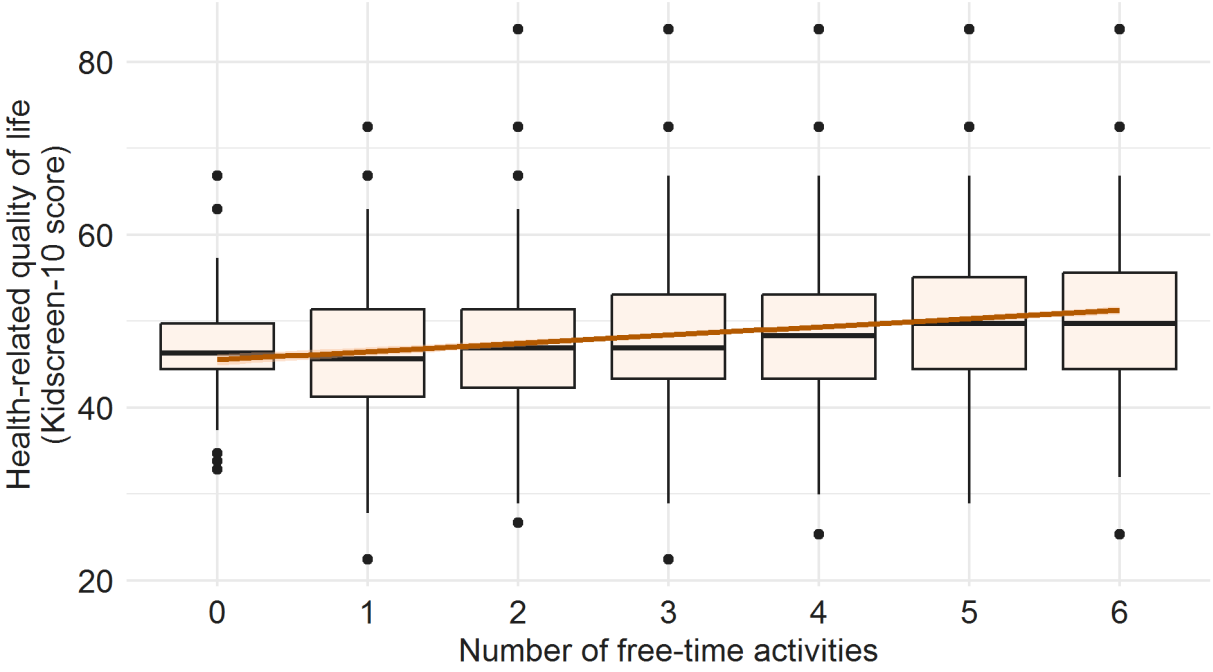


Quality of Life & Free-time Activities

Findings indicated that engaging in more free-time activities is associated with better health-related quality of life. Whilst the trends were consistent across sociodemographic characteristics, the strength of this relationship differed by gender and ethnicity.

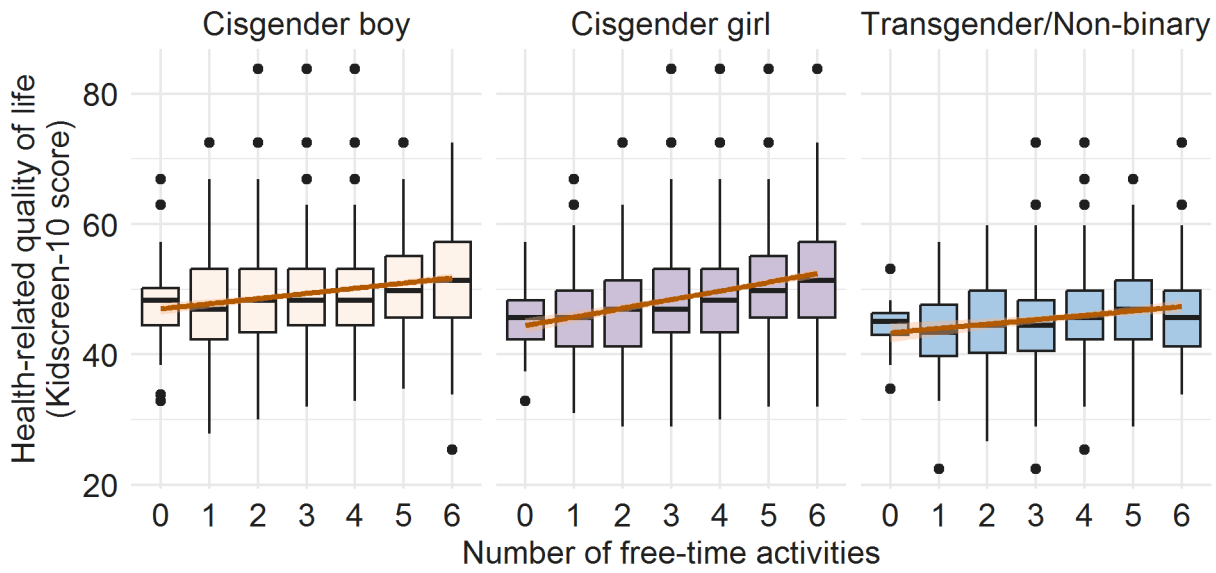
The relationship between child self-perceived Health-related quality of life and the Number of FTAs shows a significant linear relationship (estimate = 0.955, p<.001): greater participation in free-time activities is also associated with an increase in health-related quality of life.

Figure 11: Box plot showing the linear relationship between Health-related quality of life (Kidscreen-10 score) and Number of FTAs (n = 4,451).



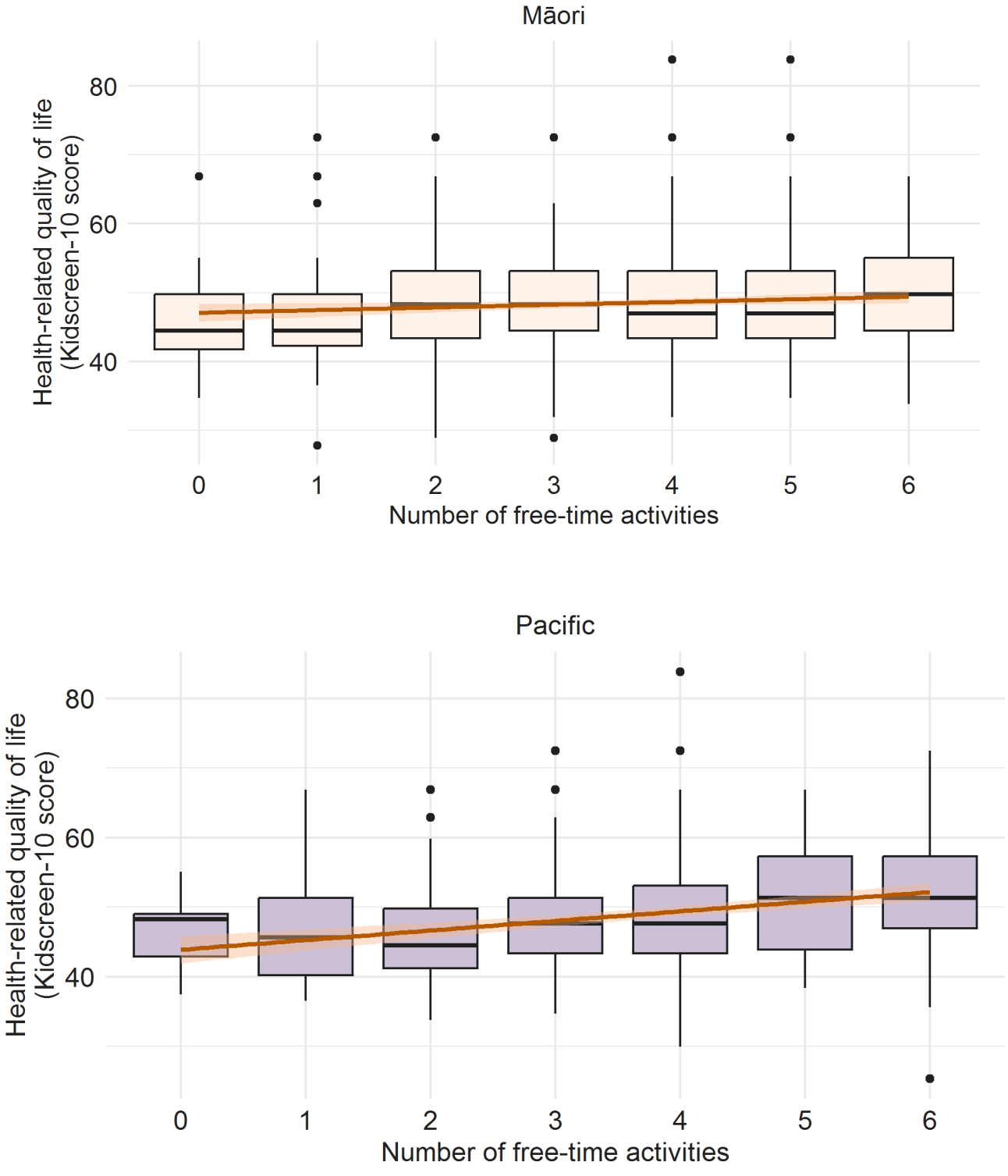
Whilst for many sociodemographic characteristics, there were no statistically significant results, we did find statistically significant differences (p<.01) for gender and ethnicity. When comparing the relationship between the number of free-time activities and self-perceived health-related quality of life, Cisgender girls showed a significantly steeper slope compared to Cisgender boys and Transgender/non-binary young people. This indicated that for each additional free-time activity, the increase in health-related quality of life scores was significantly greater for Cisgender girls (coefficient = 1.328, p<.001, n = 1,683) than for Cisgender boys (coefficient = 0.794, p<.001, n = 2,055) and Transgender/non-binary individuals (coefficient = 0.671, p<.001, n = 725), see Figure 12.

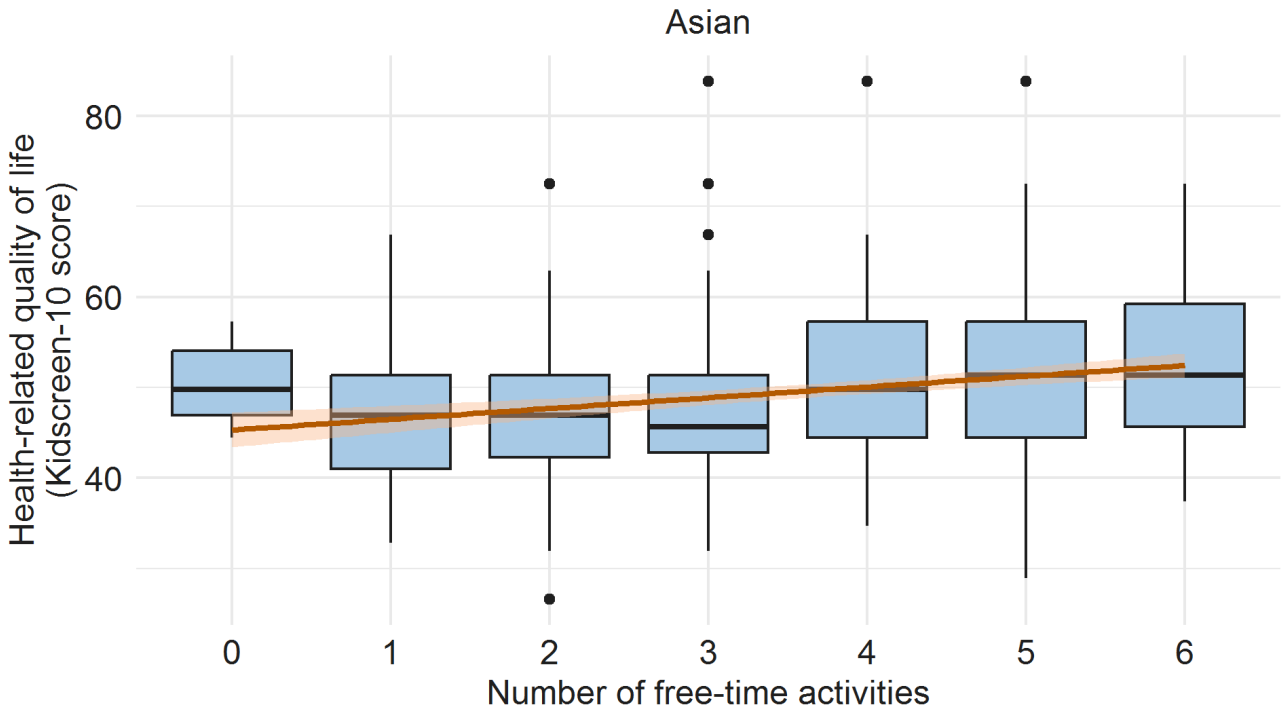
Figure 12: Box plot showing the relationship between Health-related quality of life (Kidscreen-10 score) and Number of FTAs by Gender identity (n = 4,436).

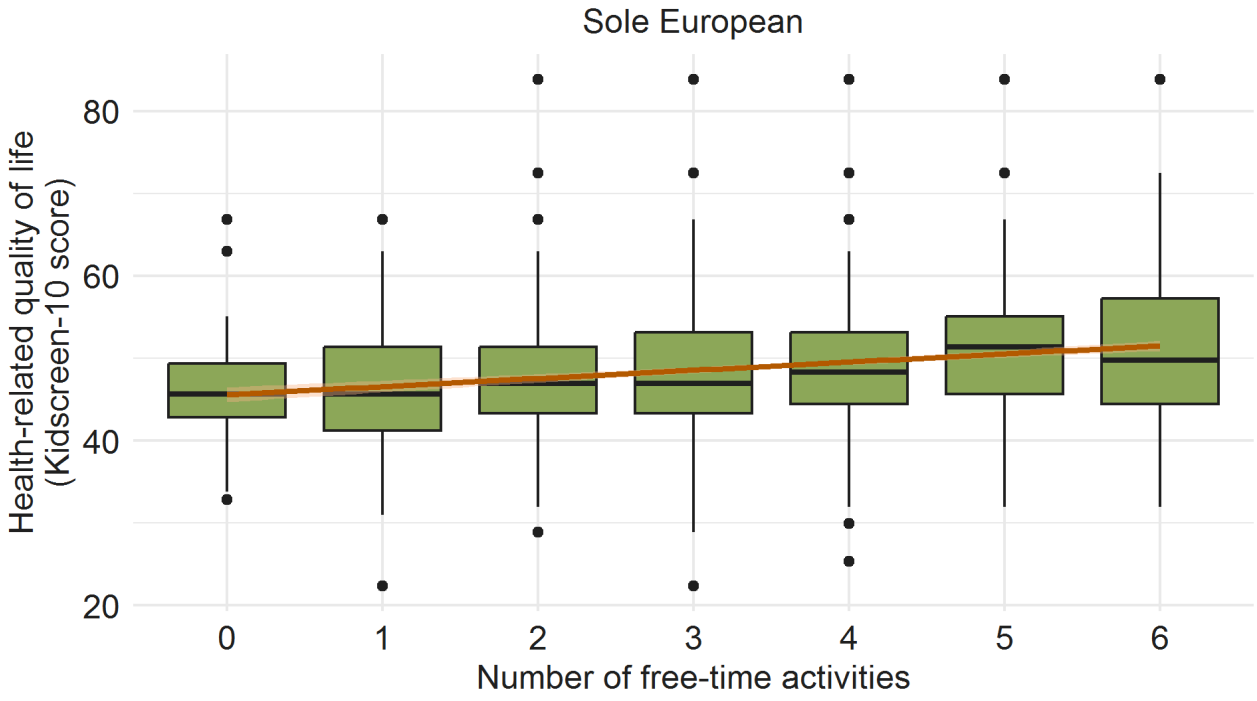


The effect of ethnicity on the relationship between free-time activity participation and health-related quality of life was analysed using Sole European participants as the reference group. While the trend remained positive for all ethnic groups, the slope of 0.389 ($p<.001$, $n = 946$) was significantly flatter for Māori participants compared to Sole European participants (slope = 0.989, $p<.001$, $n = 2,253$), indicating a weaker association for Māori participants. This difference was statistically significant ($p<.01$). In contrast, the difference between Pacific participants (slope = 1.381, $p<.001$, $n = 475$) and Asian participants (slope = 1.190, $p<.001$, $n = 510$) were not significantly different from that of Sole European participants, see Figure 13a-d.

Figure 13a-d: Box plot showing the relationship between Health-related quality of life and Number of FTAs, by Ethnicity (externally prioritised) (n = 4,184).




Asian
Health-related quality of life (Kidscreen-10 score)
80
60
40
0
1
2
3
4
5
6
Number of free-time activities

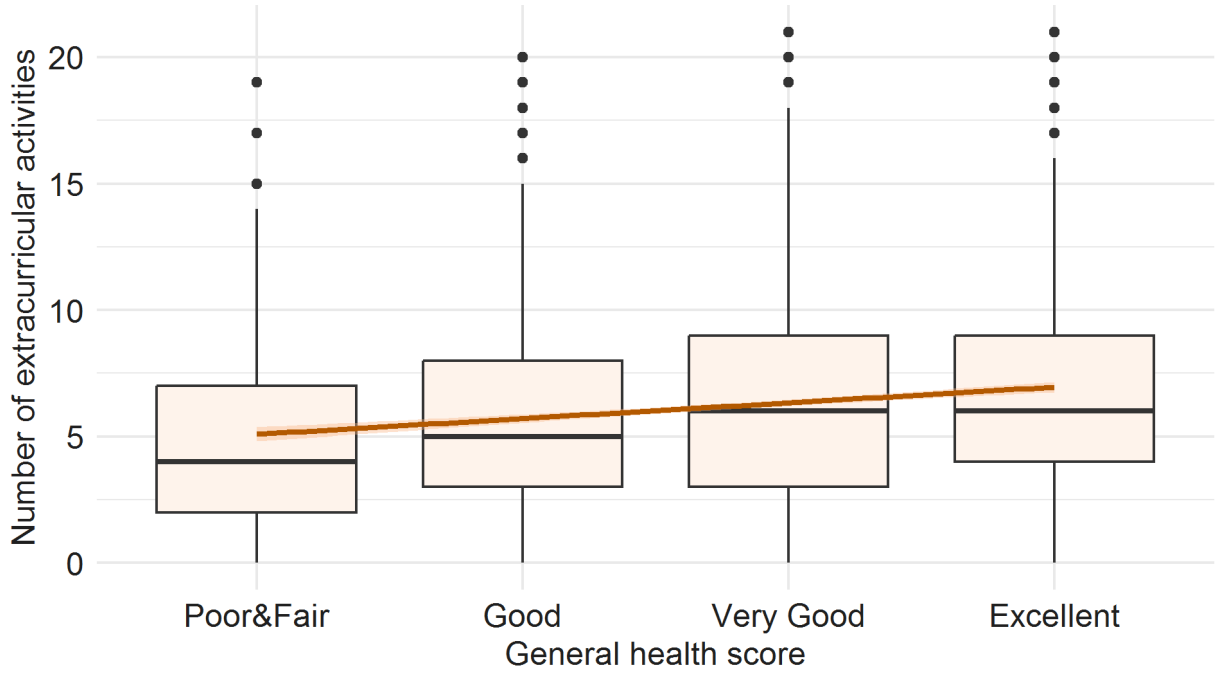

Sole European
Health-related quality of life (Kidscreen-10 score)
80
60
40
20
0
1
2
3
4
5
6
Number of free-time activities

General Health & Extracurricular Activities

Findings indicated that engaging in more extracurricular activities is associated with better reports of general health, with no significant differences across sociodemographic groups.

The Kruskal-Wallis rank sum test, a non-parametric alternative to the one-way ANOVA, identified statistically significant differences in the number of ECAs across health statuses. Specifically, there are statistically significant differences in the distribution of ECAs between groups. Further analysis using a pairwise Wilcoxon test with Bonferroni adjustments revealed that participants with self-reported "Very Good" or "Excellent" health engaged in significantly more ECAs compared to those with "Poor/Fair" or "Good" health ($p<.001$). Figure 14 illustrates this trend, showing that young people reporting higher general health-related quality of life also reported participating in more ECAs. No statistically significant differences were found in the number of ECAs by sociodemographic characteristics.

Figure 14: Box plot showing the relationship between ECAs and General health (n = 4,290).



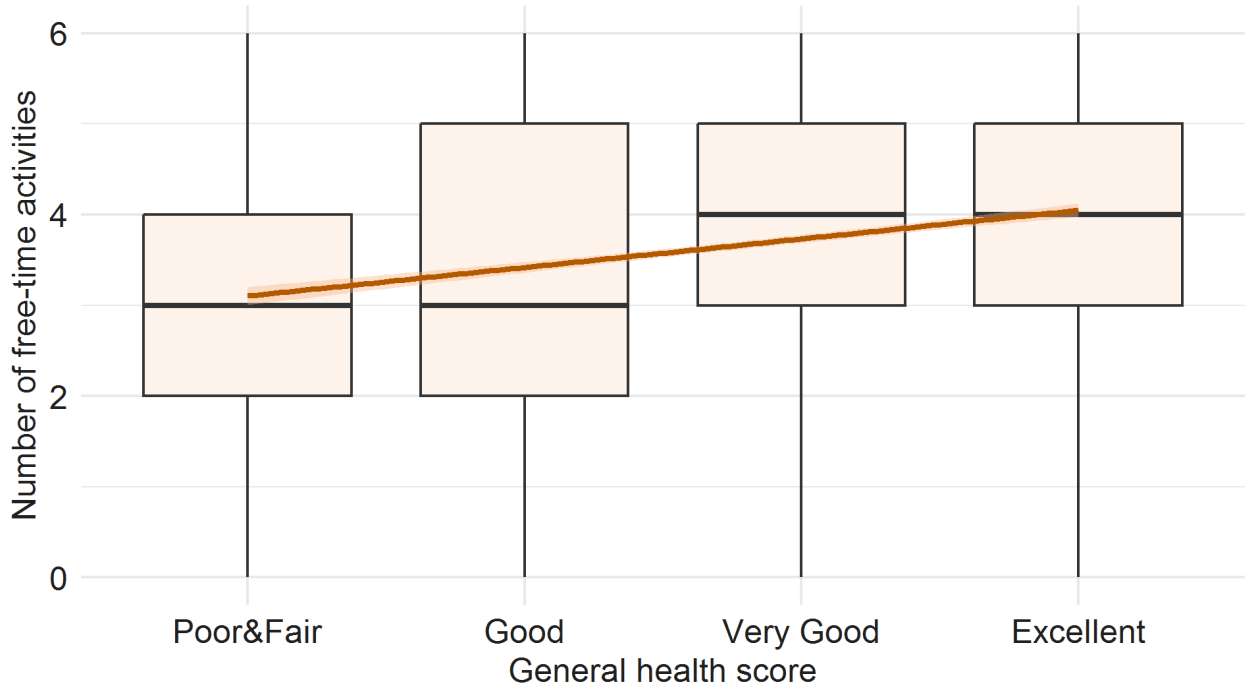
Note: Very few participants (n = 17, 0.38%) reported having 'poor' health-related quality of life, therefore Poor and Fair were combined.

General Health & Free-time Activities

Findings indicated that engaging in more free-time activities is associated with higher reports of general health, with no significant differences across sociodemographic groups.

The Kruskal-Wallis rank sum test, followed by pairwise comparisons with Bonferroni adjustments, identified statistically significant differences in the number of FTAs by General health status. Participants who rated their health as "Poor/Fair" engaged in significantly fewer FTAs compared to those with "Very Good" or "Excellent" health. Additionally, participants who rated their health as "Good" engaged in significantly fewer FTAs compared to those with "Very Good" or "Excellent" health. These differences are supported by both the statistical test and the visual representation in the box plot, where clear differences in medians are observed, as shown in Figure 15.

Figure 15: Box plot showing the relationship between FTAs and General health (n = 4,332).



5.3. Ngākau (inner-system, emotional wellbeing)

Depression & Extracurricular Activities

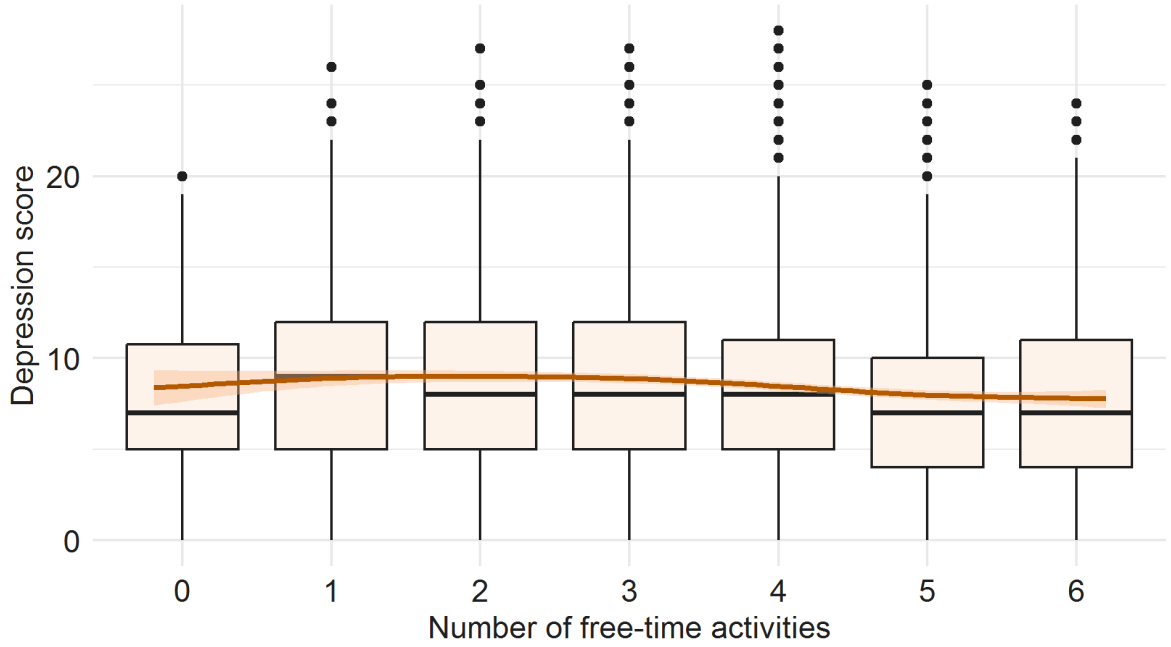
There were no significant relationships identified between depression and ECAs. This remained consistent when considering each of the sociodemographic characteristics.

Depression & Free-time Activities

Findings indicated that engaging in more free-time activities is associated with lower symptoms of depression, with no significant differences across sociodemographic groups.

Investigation into the relationship between FTAs and Symptoms of depression suggested that this relationship was best described as a non-linear relationship. The smooth term for the jittered FTAs variable is significant, indicating that there is a non-linear relationship between FTAs and the depression score (edf = 5.265, p<.001). There is strong evidence to support a non-linear relationship, as is seen by the trend line in Figure 16. The graph shows that those participating in 1 to at least 4 FTAs have on average, higher depression scores than those participating in no FTAs; but depression scores start improving with participation in greater than 4 FTAs. No significant differences were found by sociodemographic characteristics.

Figure 16: Graph showing the relationship between Depression score and Number of FTAs (n = 4,437).

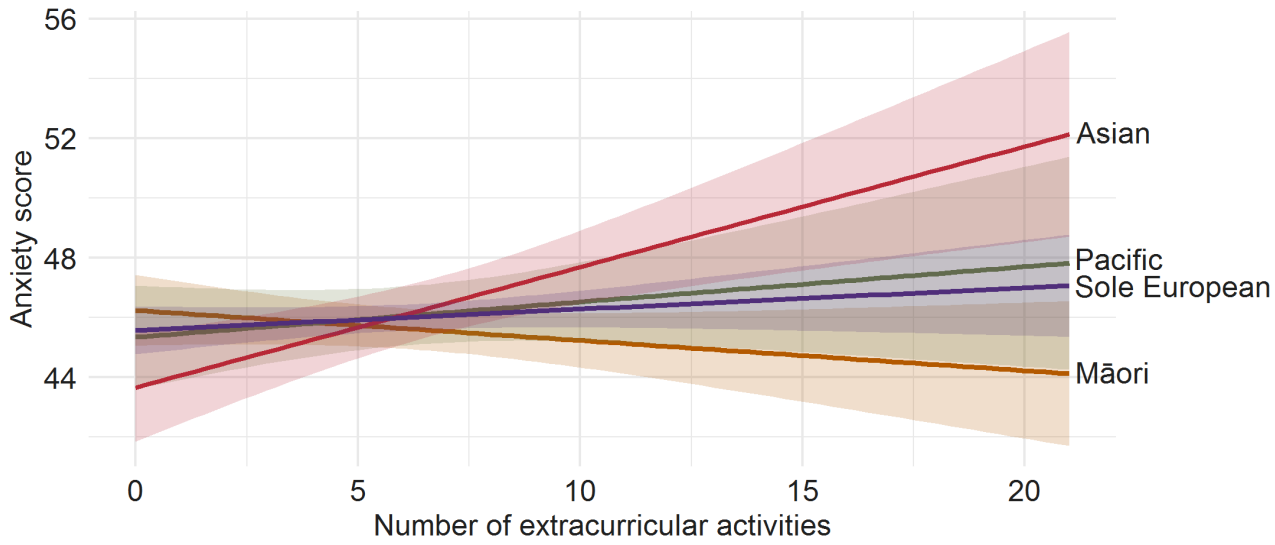


Anxiety & Extracurricular Activities

Findings indicated that engaging in more extracurricular activities is associated with higher symptoms of anxiety for Asian young people only. Overall, the relationship between Symptoms of anxiety and Number of ECAs was not significant and the regression line showed a nearly flat trend, indicating that, generally, participation in ECAs does not have a significant impact on anxiety levels.

However, a statistically significant difference ($p<0.01$) was found in the relationship between extracurricular activities (ECAs) and symptoms of anxiety among Asian young people compared to other ethnic groups. Asian participants showed a stronger positive association (slope = 0.404, $p<.001$, n = 508). The slopes for Sole European (0.071, NS, n = 2,244), Pacific (0.118, NS, n = 473) were weaker, and Māori participants (-0.101, NS, n = 945) showed a negative association, although this finding was also not statistically significant. This result highlights that while the relationship between ECAs and anxiety symptoms was not statistically confirmed across all groups, it is particularly pronounced among Asian participants, suggesting an ethnic-specific link that requires further investigation (see Figure 17). No other statistically significant differences were found when accounting for sociodemographic characteristics.

Figure 17: Trend lines showing the relationship between Symptoms of anxiety and Number of ECAs, by Ethnicity (Total-response) (n = 4,250).



Anxiety & Free-time Activities

Findings indicated that there was a minimal relationship between engaging in more free-time activities symptoms of anxiety; and there were no differences found by sociodemographic characteristics.

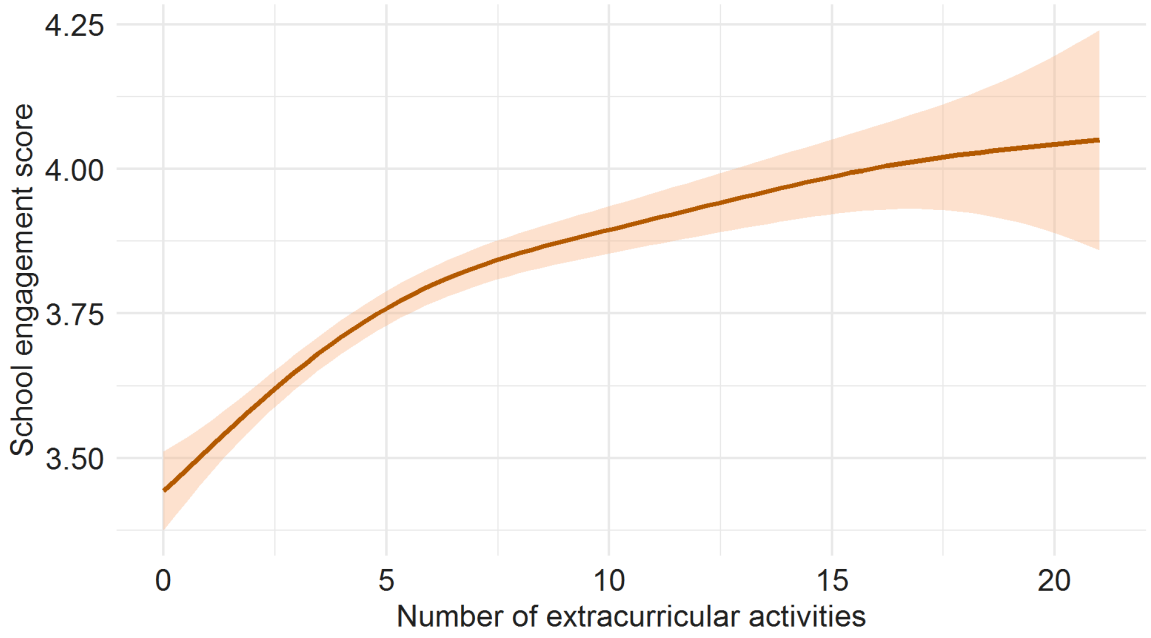
The relationship between symptoms of anxiety and the Number of FTAs is statistically significant, however the effect is negligible. The regression line showed a nearly flat trend (Estimate = 0.220, $p<.05$) indicating a negligible relationship. Additionally, no statistically significant differences were identified by sociodemographic characteristics (when considering gender, rurality, area level deprivation, household structure, disability and ethnicity).

School Engagement & Extracurricular Activities

Findings indicated that engaging in more extracurricular activities is associated with higher school engagement scores, with no significant differences across sociodemographic groups.

We concluded that the relationship between school engagement and number of extracurricular activities was best described as non-linear (edf = 3.142, p<.001). As seen in Figure 18 there was a steep increase in mean school engagement score from 0 to 5 ECAs, a gradual increase from 5 to around 15 ECAs, and a less consistent relationship thereafter. No statistical differences were identified across sociodemographic characteristics (gender, rurality, household structure, disability, ethnicity and area-level deprivation).[7]

Figure 18: Trend line showing the relationship between Mean school engagement score and Number of ECAs (n = 4,382).



School Engagement & Free-time Activities

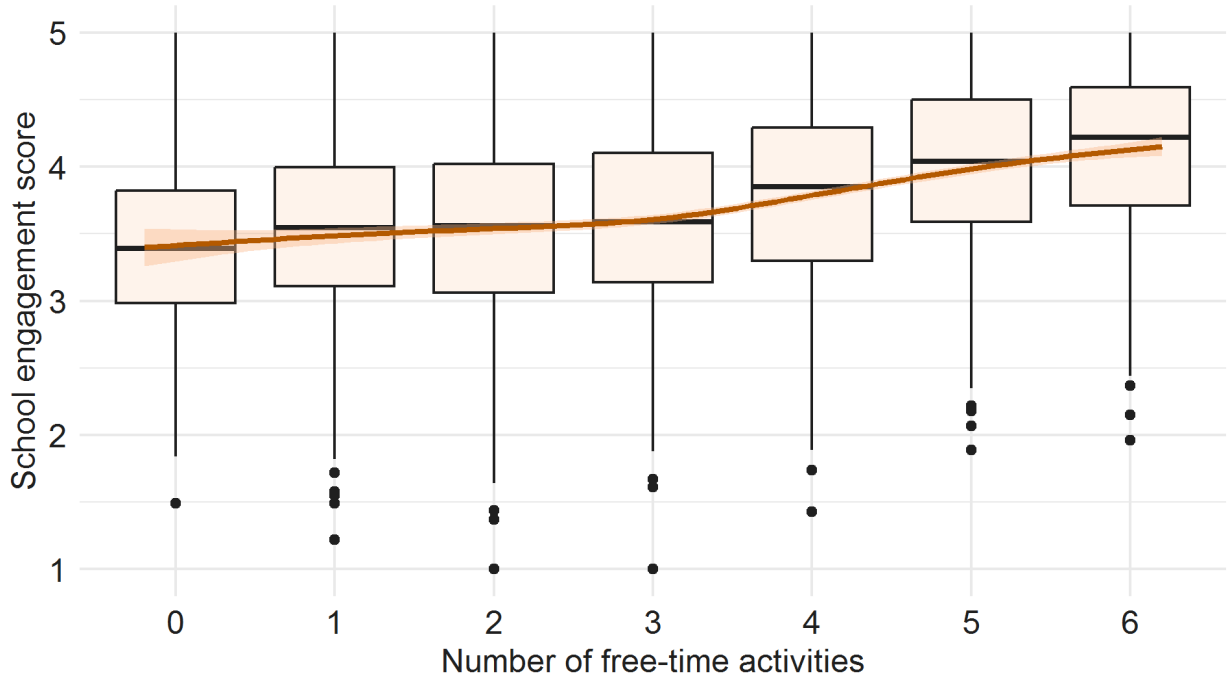
Findings indicated that engaging in more free-time activities is associated with higher school engagement scores, with different strengths of association found for young people by gender identity and disability status. The relationship was strongest for Cisgender girls, compared to

[7] When the relationship with FTAs and ECAs was investigated for each component of the school engagement score, we concluded that emotional engagement, behavioural engagement and cognitive engagement each had the same relationships as was evident using the overall school engagement score. Therefore, for simplicity, we have only reported overall school engagement in this report.

Cisgender boys and young people who are Transgender/non-binary; and a stronger relationship was found for those with No disability over those with a Disability.

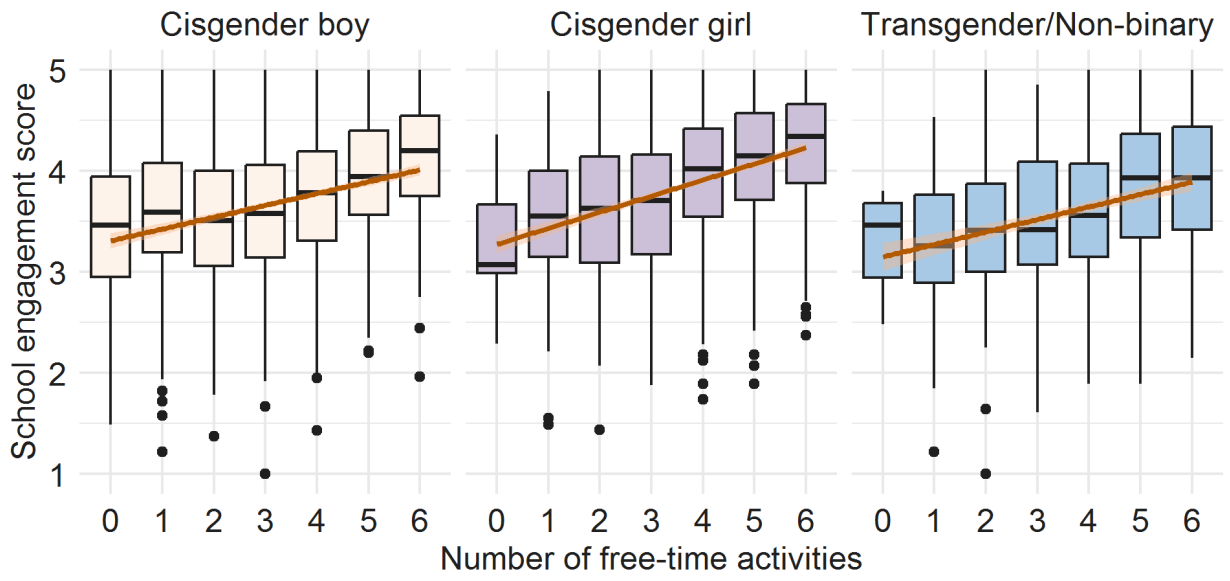
The relationship between school engagement and number of free-time activities was best described as non-linear (edf = 4.094, p<.001)[7]. The plot in Figure 19 further illustrates the relationship, showing the gradual increase in school engagement scores for those who engage in 0 and 3 FTAs, and a marked increase for those engaging in 4 or more FTAs.

Figure 19: Graph showing non-linear relationship between School engagement score and Number of FTAs (n = 4,421).



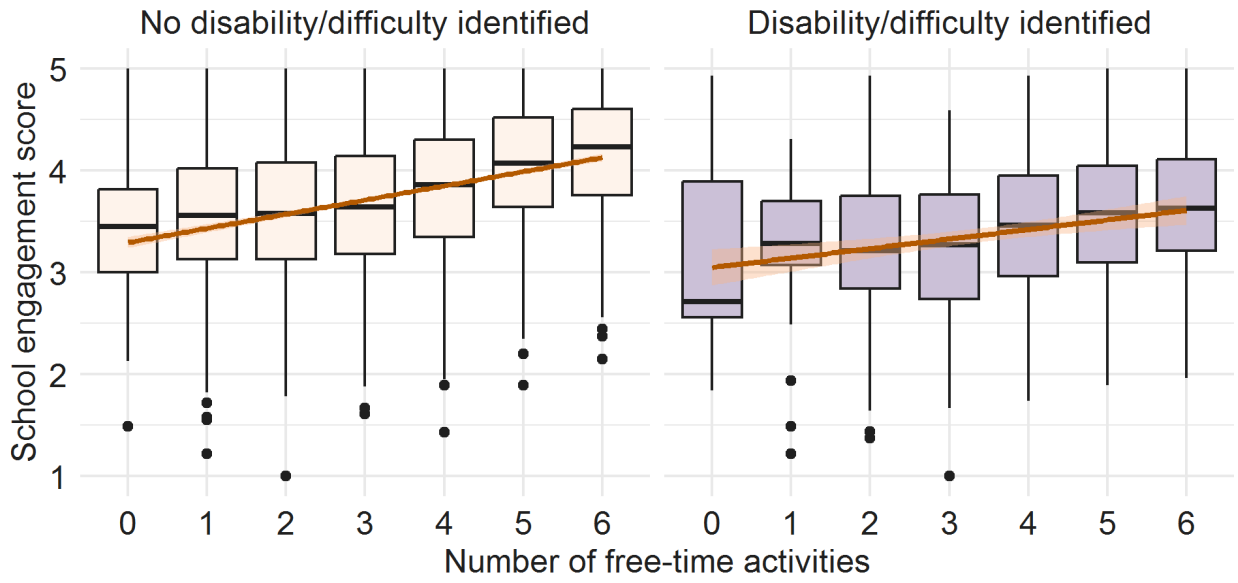
In examining whether the relationship between school engagement scores and participation in free-time activities (FTAs) varied across sociodemographic characteristics, the analysis found that this relationship remained consistent across rurality, area-level deprivation, household structure, and ethnicity. However, gender and perceived disability were identified as factors influencing this relationship (p<.05 for the difference). Specifically, Cisgender girls (n = 1,668) demonstrated a significantly stronger positive relationship, compared to Cisgender boys (n = 2,020) with the slope of 0.160 (p<.001) and 0.117 (p<.001) respectively; whereas the relationship with Transgender/non-binary individuals (n = 718) had a slope of 0.124 (approaching significance, p<.1), see Figure 20.

Figure 20: Box plot showing the relationship between School engagement scores and Number of FTAs, by gender (n = 4,406).



For young people with a self-perceived Disability (n = 431), this relationship was significantly different (p<.05 for the difference); weaker for those with a Disability (slope = 0.093, p<.001) compared to those with No disability (slope = 0.139, p<.001), see Figure 21.

Figure 21: Box plot showing the relationship between School engagement score and Number of FTAs, by Disability (n = 4,421).



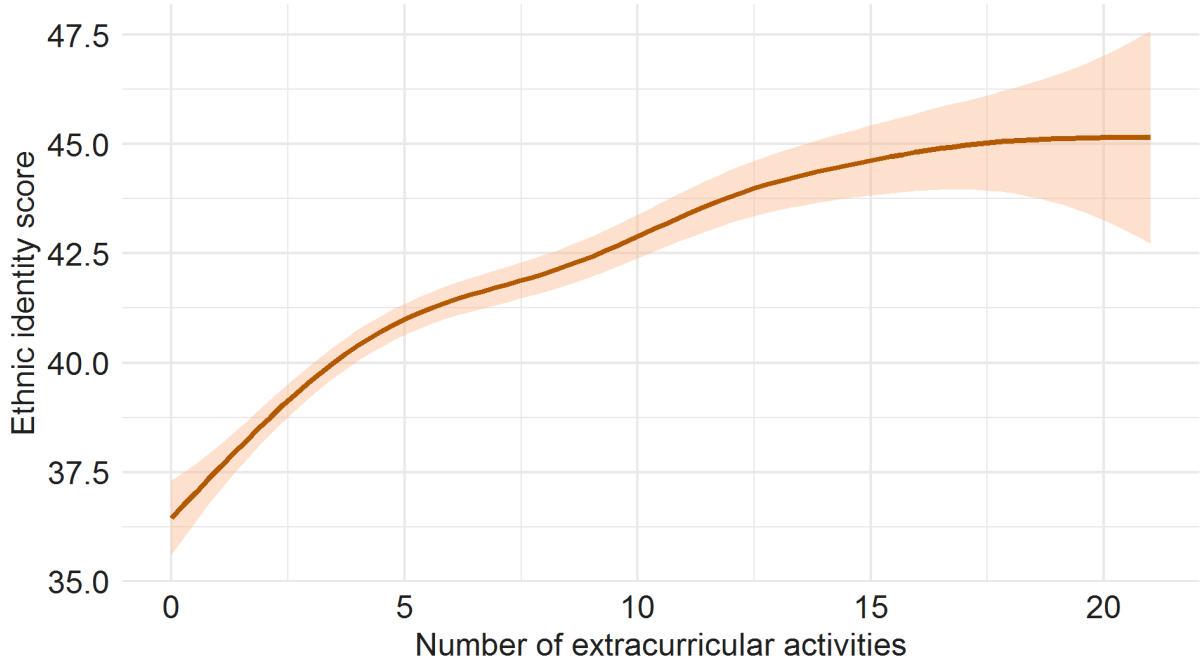
5.4. Wairua (spirit, identity)

Ethnic Identity & Extracurricular Activities

Ethnic identity refers to a person's sense of belonging to their ethnic group and does not specifically refer to any particular ethnic group (Phinney & Ong, 2007). Findings indicated that engaging in more extracurricular activities is associated with stronger ethnic identity, with no significant differences across sociodemographic groups.

The relationship between child self-perceived Ethnic identity and the Number of ECAs was best described as a non-linear relationship (edf = 4.434, p<.001), see Figure 22. The graph shows that there is a rapid increase in Multigroup-Ethnic Identity Measure Score for young people who participate in 0 to 5 ECAs, some increase from 5 to 12 ECAs, and then the relationship plateaus, above 12 ECAs. No statistical differences were found in sociodemographic characteristics.

Figure 22: Trend line showing the relationship between scores on the Multigroup-Ethnic Identity Measure (MEIM) and Number of ECAs (n = 4,409).

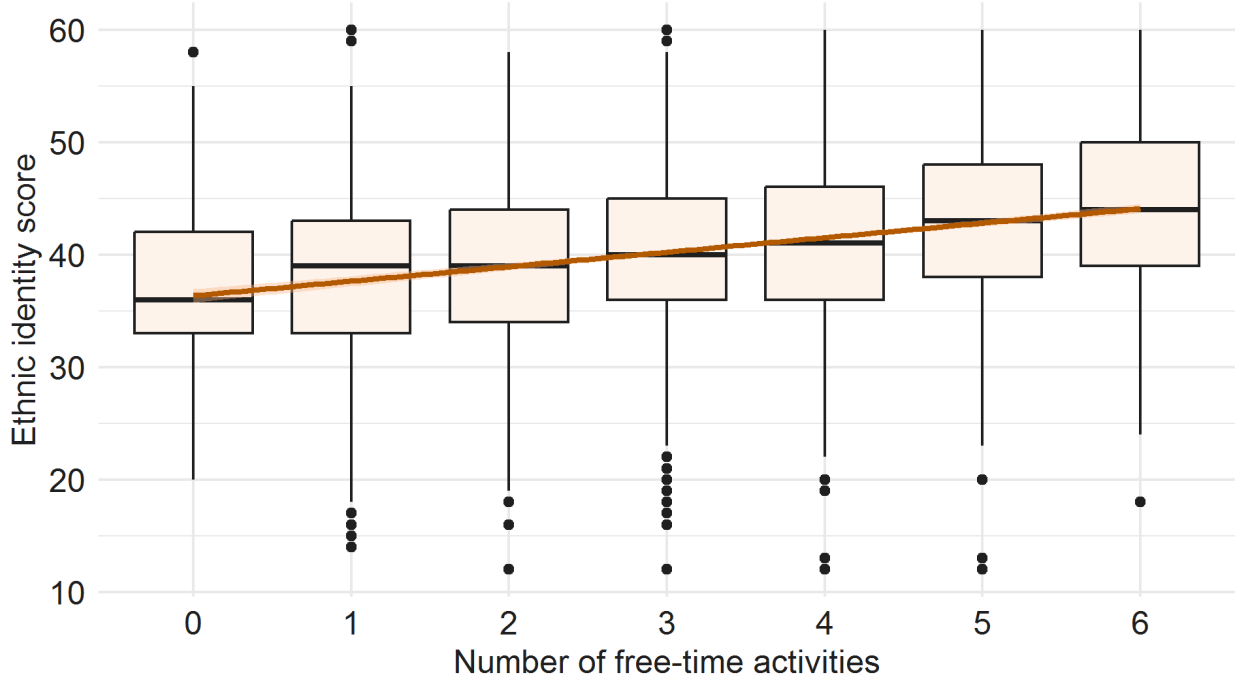


Ethnic Identity & Free-time Activities

Findings indicated that engaging in more free-time activities is associated with stronger ethnic identity, with no significant differences across sociodemographic groups.

The relationship between child self-perceived Ethnic identity and the Number of free-time activities shows a significant linear relationship (estimate = 1.290, p<.001), see Figure 23 for details. Exploration of sociodemographic characteristics revealed no statistically significant differences.

Figure 23: Trend line showing the linear relationship between scores on the Multigroup-Ethnic Identity Measure (MEIM) and Number of FTAs (n = 4,451).



5.5. Summary of Results

Table 3 summarises the findings with respect to outcomes associated with increased participation in ngā mahi a te rēhia – arts, cultural and recreation activities. A complete table of findings can be found in Appendix E, Table 19 and Table 20 for detailed information on the statistical findings on extracurricular and free-time activities, respectively.

Table 3: Summary of findings for Ngā Mahi a te Rēhia – ACR Activities.

Theme: Here Tāngata (Social and relational ties)			
Measure	**Outcome**	**Relationship**	**Demographics**
Child-peer relationships	more ECAs = stronger peer relationships	Linear***	NS
	more FTAs = stronger peer relationships	Linear***	Disability - For those with No disability, more FTAs = stronger peer relationships***.
Parent-child relationships	more ECAs = stronger parent-child	Non-linear**	NS
	more FTAs = stronger parent-child	Linear***	Disability – For those with No disability, more FTAs = stronger parent-child relationships***. Ethnicity - Pacific young people had the strongest association***.

Theme: Tinana (Bodily health)			
Measure	**Outcome**	**Relationship**	**Demographics**
Health-related Quality of Life (QoL)	more ECAs = better QoL	Non-linear***	NS
	more FTAs = better QoL	Linear***	Gender – Cisgender girls more FTAs = higher mean scores***. Ethnicity – Rangatahi Māori showed a statistically weaker association compared to Sole European young people*.
General health	more ECAs = higher general health	N/A	NS
	more FTAs = higher general health	N/A	NS

Note: 1) NS = Not significant 2) *p<.05; **p<.01; ***p<.001

Theme: Ngākau (Inner-system, emotional wellbeing)			
Measure	**Outcome**	**Relationship**	**Demographics**
Depression	ECA - NS	NS	NS
	>4 FTAs = lower depression	Non-linear***	NS
Anxiety	ECA - NS	NS	Ethnicity - Asian young people showed a strong positive association/more anxiety***.
	More FTAs = increased anxiety (weak association)	Linear (negligible)*	NS
School engagement	More ECAs = higher school engagement	Non-linear***	NS
	>3 FTAs = higher school engagement	Non-linear***	Gender - Cisgender girls showed the strongest association***. Disability - Those with Disability showed a weaker association***.

Theme: Wairua (Spirit, identity)			
Measure	**Outcome**	**Relationship**	**Demographics**
Ethnic Identity	More ECAs = stronger ethnic identity	Non-linear***	NS
	More FTAs = stronger ethnic identity	Linear***	NS

Note: 1) NS = Not significant 2) *p<.05; **p<.01; ***p<.001

6.0 Results – Ngā Toi Māori & Wellbeing

Are there any associations between engagement in extracurricular ngā toi Māori – Māori arts and cultural activities – and wellbeing at 12 years of age? A summary table of the findings can be found at the end of this section (in Table 4, on page 64).

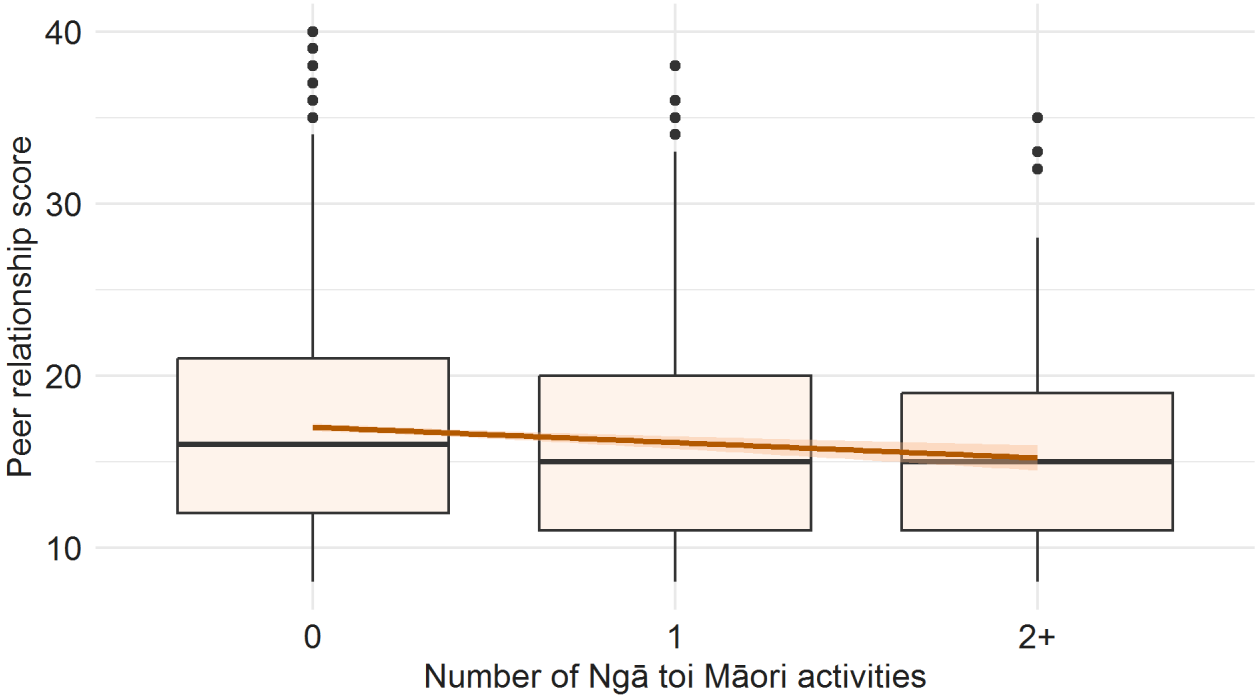
6.1. Here Tāngata (social and familial ties)

Child-Peer Relationships

Child-peer relationships were found to be stronger for participants who reported taking part in more ngā toi Māori activities, as seen by the downward trend in the box plot seen in Figure 24. Statistical differences were found between those who engaged in 0 activities compared to those who engaged in 1 or 2+ activities. No differences were found by sociodemographic characteristics.

The Kruskal-Wallis rank sum test revealed statistically significant differences between groups ($\chi^2 = 23.21$, df = 2, $p<0.001$). Post-hoc pairwise comparisons using the Wilcoxon rank sum test with Bonferroni correction indicated significant differences between participants who engaged in 0 activities and those who engaged in 1 activity ($p<.001$) and between 0 activities and 2+ activities ($p<0.01$). However, no significant difference was found between those who participated in 1 activity and 2+ activities.

Figure 24: Box plot showing the relationship between Child-peer relationship score and Number of ngā toi Māori activities (n = 3,731).



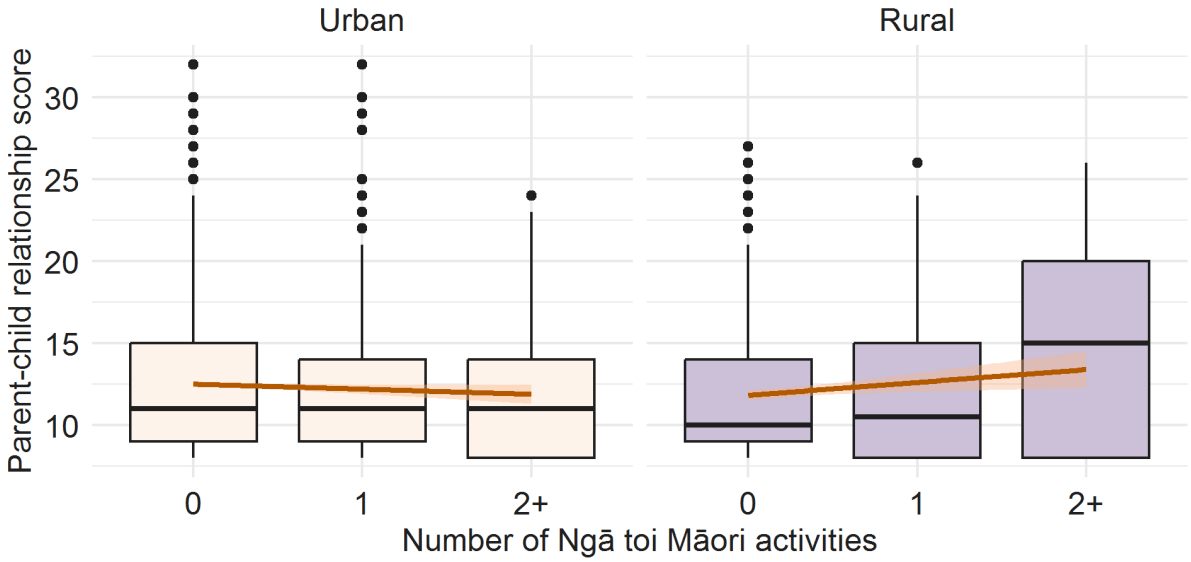
Note: Lower scores on the child-peer relationship scale represent stronger peer relationships.

Parent-Child Relationships

While no associations were found overall between young people's involvement in ngā toi Māori activities and parent-child relationship scores (n = 4,186), for those with a disability engaging in more ngā toi Māori was associated with stronger parent-child relationships. Whereas for those living rurally, engaging in more ngā toi Māori was associated with weaker parent-child relationships.

Statistically significant differences were identified by rurality (p<.01). For urban participants (n = 3,355), the slope of -0.307 was not significant. In contrast, for rural participants (n = 751), the slope was 0.783 (p<.05), suggesting that greater involvement in ngā toi Māori was associated with higher parent-child relationship scores, indicating weaker relationships. See Figure 25 for details.

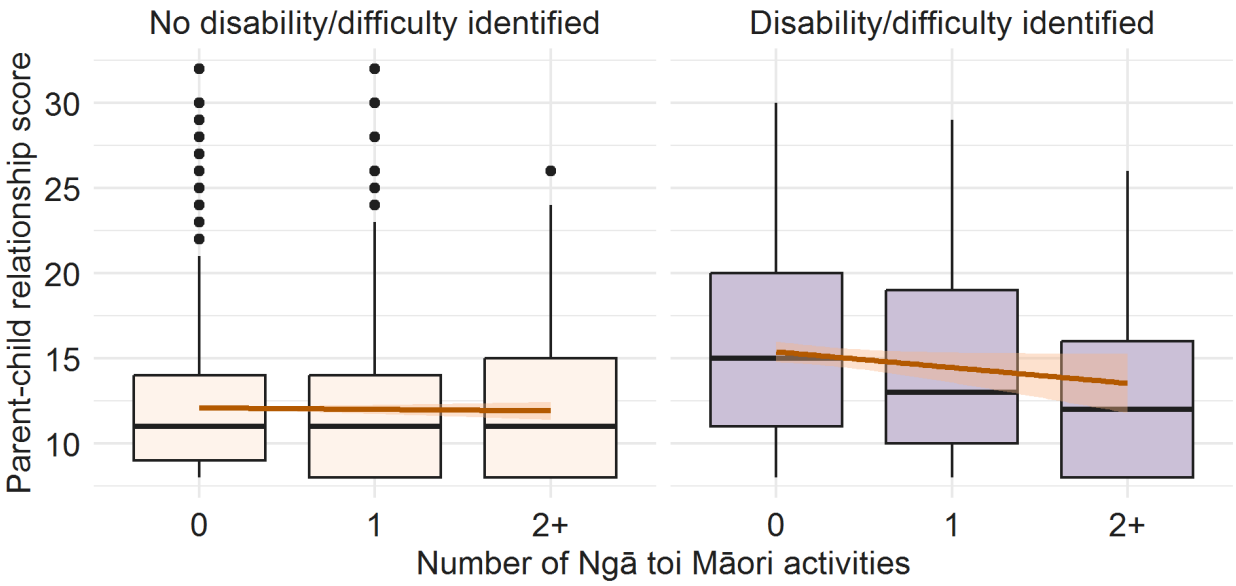
Figure 25: Box plot showing the relationship between Parent-child relationships and Number of ngā toi Māori activities, by rurality (n = 4,106).



Note: Lower scores on the parent-child relationship scale represent stronger relationships.

Statistically significant differences (p<.05) were also identified for young people with and with No disability in the relationship between ngā toi Māori activities and Parent-child relationships (see Figure 26). For young people with No disability (n = 3,801), the slope was -0.087 (NS), suggesting no association between ngā toi Māori activities and parent-child relationships. In contrast, for young people with a Disability (n = 383), the slope was -0.926 (p<.05), reflecting a strong negative association, suggesting that increased participation in ngā toi Māori activities was linked to notably stronger parent-child relationships for this group.

Figure 26: Box plot showing the differences by Disability status for the relationship between Parent-child relationship and Number of ngā toi Māori activities (n = 4,731).



6.2. Tinana (bodily health)

No significant associations were found between young people's involvement in ngā toi Māori activities and the measures of tinana (physical health) available in the datasets.

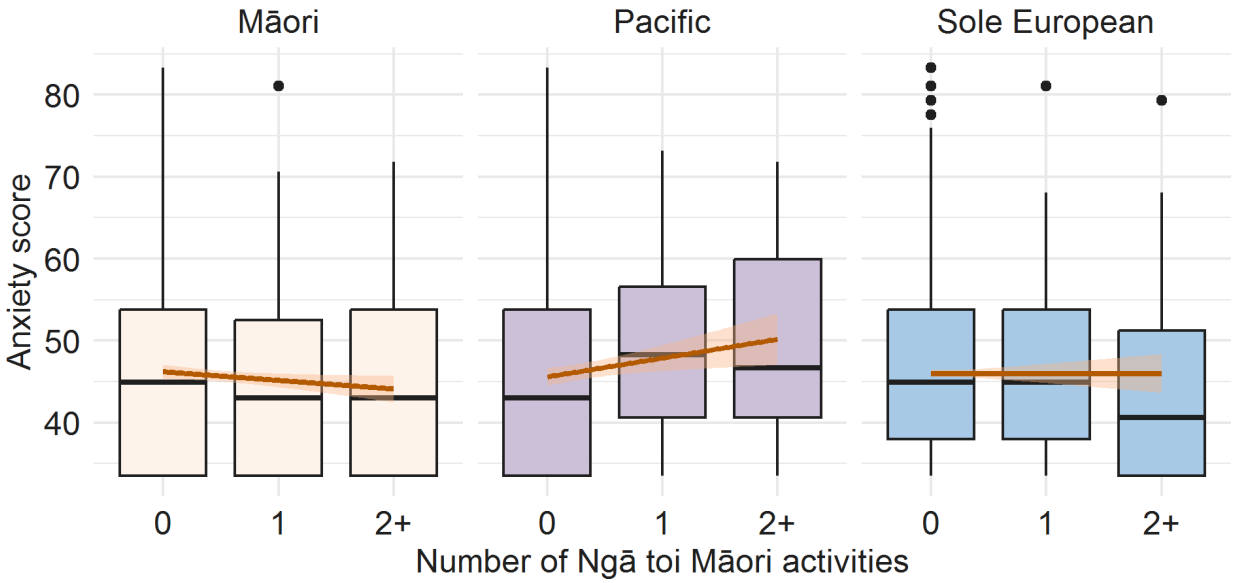
6.3. Ngākau (inner-system, emotional wellbeing)

Overall, no significant associations were found between young people's involvement in ngā toi Māori activities and the measures of depression or anxiety (n = 4,433); however, differences were found by ethnicity. For Pacific young people there was an association between engaging in more ngā toi Māori activities and higher symptoms of anxiety, whereas for rangatahi Māori, engaging in more ngā toi Māori activities was associated with lower symptoms of anxiety.

Anxiety symptom scores in relation to ngā toi Māori activities differed across ethnic groups ($p<.01$). Pacific participants (slope = 2.300, $p<.01$, n = 484) showed a significant association, which was statistically different from that of Sole European participants for whom no significant association was found (slope = -0.002, NS, n = 2,244). Māori participants also showed a significant association (slope = -1.059, $p<.05$, n = 965), but it was not statistically different from that of Sole European participants. These findings suggest a negative

association for Māori participants, whereas Pacific participants showed a positive association, with greater participation in ngā toi Māori activities linked to higher anxiety symptom scores (see Figure 27).

Figure 27: Box plot showing the differences by ethnicity for the relationship between Anxiety score and Number of ngā toi Māori activities (n = 4,227).

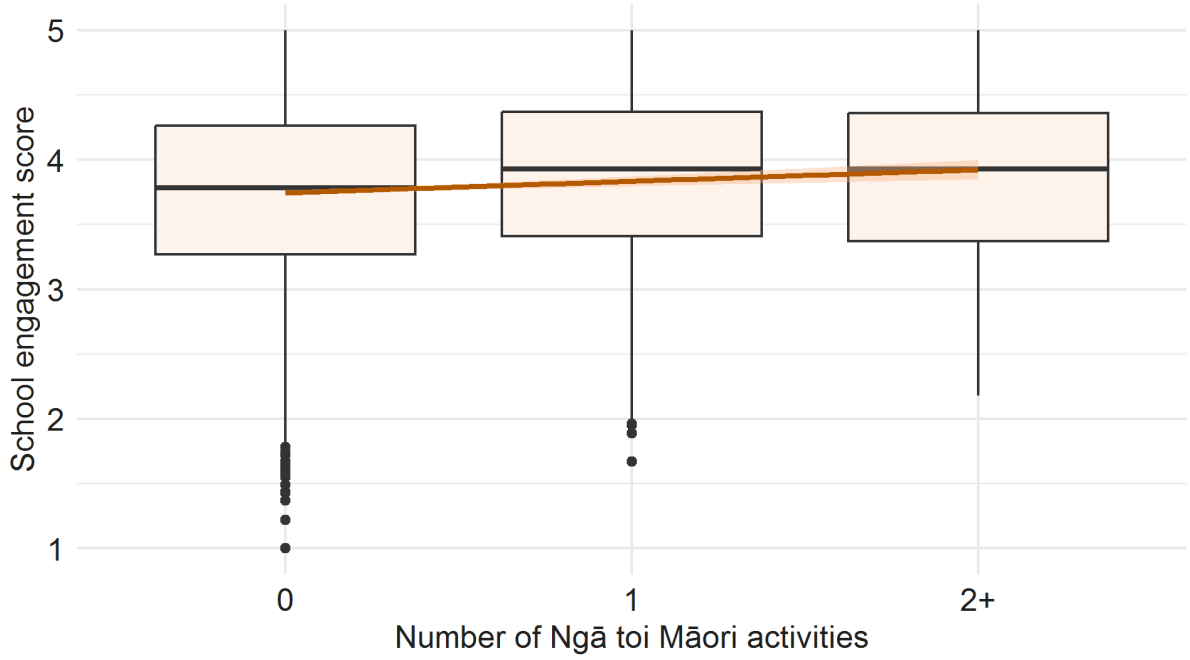


School Engagement

Engagement in more ngā toi Māori activities was associated with higher overall school engagement scores, and specifically for Māori and Sole European young people, but not Pacific young people. Differences were also found by gender. For Cisgender boys and Transgender/non-binary young people an association was found between higher school engagement scores and engaging in more ngā toi Māori activities; but this association was not evident from Cisgender girls.

Statistical differences were found between those who engage in zero ngā toi Māori activities compared to those who participate in one activity ($p<.001$), as seen in Figure 28.

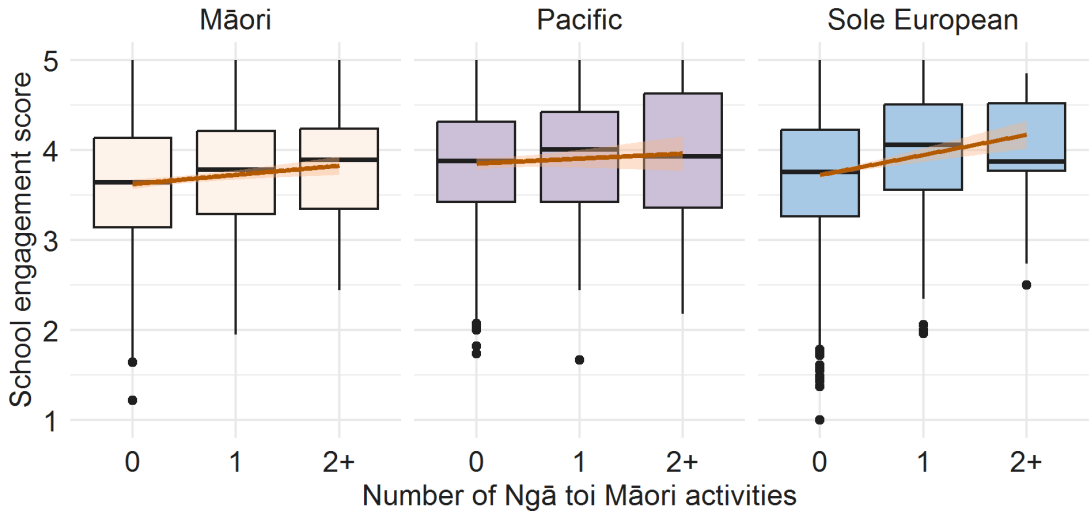
Figure 28: School engagement score by Number of ngā toi Māori activities (n = 4,417).



Whilst analysis across each ethnic grouping (externally prioritised) demonstrated a positive relationship between School engagement and participation in Ngā toi Māori activities, statistically different relationships ($p<.05$) were identified (see Figure 29), with Sole European young people showing the strongest association, followed by rangatahi Māori.

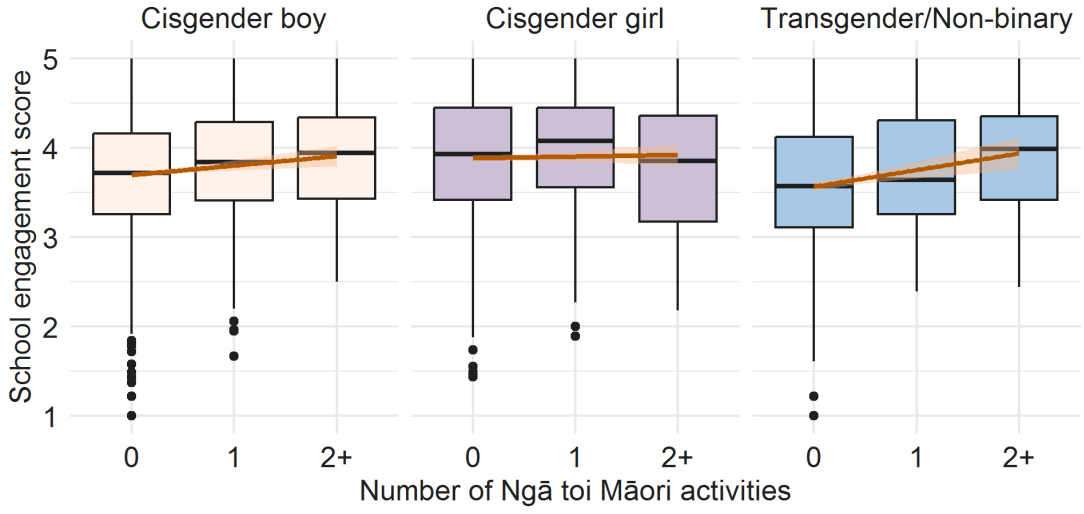
Sole European participants (n = 2,236), had a strong positive relationship between engagement in ngā toi Māori and school engagement scores, indicated by a slope of 0.224 ($p<.001$). For Māori participants (n = 963), there was also a positive association, though less strong, with a slope of 0.102 ($p<0.01$). The relationship among Pacific participants (n = 480) shows a positive slope of 0.055; however, this association was not statistically significant, suggesting the need for further investigation.

Figure 29: Box plot showing the relationship between School engagement score by Number of ngā toi Māori activities, by ethnicity (n = 4,212).



Statistically significant differences were also identified by gender, between School Engagement and ngā toi Māori extracurricular activities (p<.05); see Figure 30. The relationship statistically differed for Cisgender girls (n =1,397) compared to both Cisgender boys (n = 1,689) and Transgender/non-binary participants (n = 579), although Cisgender girls demonstrated a weak positive association (slope = 0.019), which was not statistically significant. Relationships within Cisgender boys and Transgender/non-binary participants were identified as significant, with slopes of 0.106 (p<.001) and 0.186 (p<.001) respectively. However, there were no statistically significant differences between these two groups.

Figure 30: Box plot showing the relationship between School engagement score and Number of ngā toi Māori activities by Gender (n = 4,402).



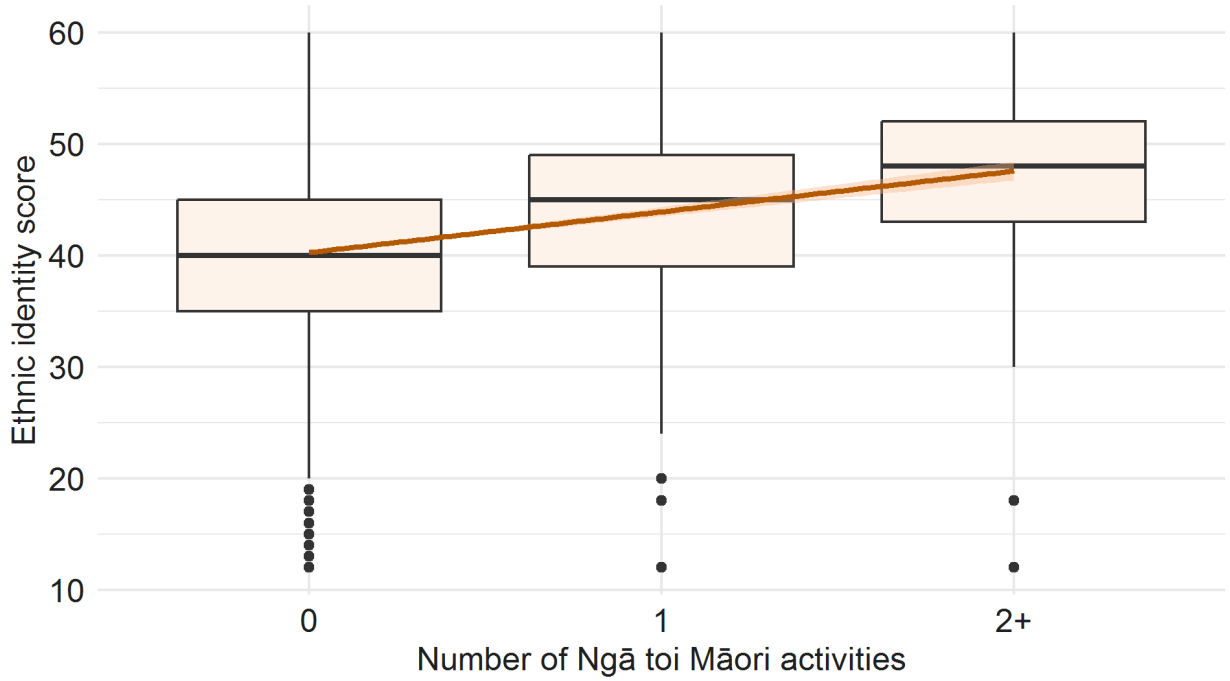
6.4. Wairua (spiritual wellbeing)

Ethnic Identity

Findings indicated that engaging in more ngā toi Māori activities is associated with stronger ethnic identity, with no significant differences across sociodemographic groups.

Similarly, the relationship between ethnic identity and engagement in ngā toi Māori activities was found to be positive and statistically significant, see Figure 31. Statistical differences were identified between those participants engaging in 0 activities compared to those who engaged in 1 or 2+ activities (p<.001). Statistical differences were also identified between those who engaged in 1 activity compared to 2+ activities (p<.001). No interactions were found for sociodemographic characteristics.

Figure 31: Multigroup-Ethnic Identity Measure score by number of ngā toi Māori activities (n = 4,445).



6.5. Summary of Results

In summary, engagement in ngā toi Māori activities was correlated with better child-peer relationships, higher school engagement scores and a stronger sense of ethnic identity (see Table 4).

Table 4: Results of the associations between ngā toi Māori activities and each wellbeing outcome.

Theme	Measure	Outcome	Demographics
Here Tāngata	Child-peer relationships	More ngā toi Māori = better peer relationships	NS
	Parent-child relationships	NS	Rurality - For rural young people, increased participation in ngā toi Māori was associated with weaker parent-child relationships*.
			Disability - For young people with a Disability, increased participation in ngā toi Māori activities was linked to stronger parent-child relationships*.
Tinana	Health-related Quality of Life	NS	NS
	General health	NS	N/A
Ngākau	Depression	NS	NS
	Anxiety	NS	Ethnicity - Greater participation in ngā toi Māori activities was associated with lower anxiety symptom scores for Māori participants* but higher anxiety symptom scores for Pacific participants**.
	School engagement	More ngā toi Māori = higher school engagement scores	Ethnicity - Sole European showed the strongest positive association***.
			Gender - the relationship was statistically different (weaker) between Cisgender girls and both Transgender/non-binary young people* and Cisgender boys*.
Wairua	Ethnic Identity	More ngā toi Māori = stronger ethnic identity	NS

Notes: 1) a Pearson's Chi-squared test was used for general health as both variables were categorical. 2) NS = Not significant. 3) p-value adjustment method: Bonferroni *p<.05 **p<.01 ***p<.001

7.0 Discussion

7.1. Overall Association Between ACR Participation and Wellbeing

Participation in Arts, cultural and recreation activities is linked to positive wellbeing

Higher engagement in ngā mahi a te rēhia (arts, culture and recreation activities, both extracurricular and free-time activities) was correlated with better scores for most wellbeing outcomes. This provides strong evidence to suggest that young people who regularly engage with several arts, cultural and recreation activities are experiencing better wellbeing, in the aspects studied in this report. Associations were found with a young person's here tāngata (better Peer and Parent Relationships), tinana (better Quality of Life scores and improved General Health), ngākau (higher School Engagement, lower Depression scores) and wairua (a stronger sense of Ethnic Identity). Associations were found for both involvement in extracurricular activities such as playing sport or belonging to a performing arts group, as well as free-time activities, such as reading books or listening to music.

This report also highlights the wide-reaching association of arts, cultural and recreation participation on wellbeing. We might have expected to see only select relationships, such as better peer relationships with higher engagement in extracurricular activities and better family relationships with more free-time activities – those often engaged in at home. Instead, we also saw cross-over relationships, in which free-time activities were related (on average) to stronger peer relationships and school engagement, even though these activities are not typically done with peers (e.g. reading books, art and craft activities). Similarly, we also saw that extracurricular activities were associated with stronger relationships with parents or caregivers, even though young people are not typically involved in these activities with them.

This is the most comprehensive research to date showcasing a diverse range of wellbeing benefits associated with participation in arts, cultural and recreation activities, completed with a large, closely representative sample of youth in Aotearoa New Zealand. This research can be situated alongside a growing body of international research that highlights the relationship between engaging in arts, cultural and sporting activities with young people's wellbeing (Zarobe & Bungay, 2017).

Biggest improvements for ‘getting involved’

When we inspected the data, non-linear trends were found for many of the wellbeing outcomes investigated. These findings suggest that, rather than linear or steady improvements as the number of activities increases, it appears that ‘getting involved’ is linked to markedly better wellbeing. We conclude that, on average, young people with the strongest wellbeing scores participate in at least five extracurricular activities regularly. Additionally, young people with the strongest wellbeing scores participate in at least four regular free-time interests.

The findings of this research align with previous studies. Based on studies into positive youth development we would expect that young people build more connections, confidence, character, and competence through participation in ACRs and are better placed for positive youth outcomes (Lerner et al., 2005). As well as this, the general trends across wellbeing indicators suggest that participation in several activities is linked to higher wellbeing scores for young people at 12-years of age. In other words, for young people who have increased access and/or interest in numerous activities, there are additional benefits to wellbeing that are associated with participation. Our research suggests that we should not be limiting participation to a few key activities, instead, we have grounds to encourage young people to follow their passions and participate in a range of activities. This research aligns with our whakataukī, by recognising and cherishing the importance of diversity in arts, cultural and recreational experiences amongst young people in Aotearoa.

Furthermore, these benefits of participation spilled into multiple environments. We found that doing ‘more’ was associated with positive wellbeing outcomes, not only for a young person’s emotional or physical wellbeing, or the wellbeing of their relationships with others, but also with their engagement in the school environment. These findings highlight the value of ACR participation across contexts.

Wellbeing and ngā toi Māori

Engagement in ngā toi Māori (Māori arts and cultural activities) showed similar trends as the findings for overall participation: participating in ngā toi Māori was associated with improved wellbeing for young people in many areas. In particular, across all demographic groups, greater ngā toi Māori involvement was significantly associated with a young person’s here tāngata (stronger child-peer relationships), ngākau (higher school engagement), and wairua (higher ethnic identity scores). This provides strong evidence to suggest that young people who engage with several Māori arts and cultural activities are experiencing better wellbeing outcomes. It also highlights the important role these types of activities play in positive youth

experiences, highlighting a special and unique role of Māori arts and cultural activities for youth in Aotearoa New Zealand.

Demographic differences

Report 1 found that participation in extracurricular activities varied significantly by ethnicity, gender, disability, material hardship, household structure and rurality, suggesting differential access to, and/or interest in participation in arts, culture and recreation activities (Evans, Redman, et al., 2023). In this report, we found that most demographic characteristics did not alter the relationship between participation in ACRs and wellbeing. This suggests that despite young people having different backgrounds, living arrangements, and societal contexts, wellbeing is consistently associated with greater participation in arts, culture and recreation activities. This highlights the importance for all young people to have ready access to a variety of ACR activities.

However, some differences were identified. We found differing strengths of the relationship between FTAs and some wellbeing outcomes for young people of different gender identities (School Engagement, Health-related quality of life) and ethnicities (Child-parent Relationships, Health-related quality of life, symptoms of Anxiety). We found for example that young people who spend more time on free-time activities in the home, on average, also report better physical health (increased quality of life scores) and have higher school engagement scores, and that this was most salient for cisgender girls.

Additionally, transgender and non-binary young people showed the strongest association between participation in more ngā toi Māori and higher school engagement scores, followed by cisgender boys. This strengthens the argument of encouraging participation in ngā toi Māori activities to promote school engagement and highlights the importance of ensuring such activities are inclusive for young people with a range of gender identities. This also emphasises the unique benefit in participating in ngā toi Māori and suggests that Māori arts and cultural activities provide a space that is particularly welcoming for transgender and non-binary young people, who often report lower school belonging than cisgender students (Fenaughty et al., 2019).

We also found statistical differences across a number of wellbeing measures for young people who indicated that they had a disability compared with those who did not. One finding was that child-peer relationships had an inverse relationship with free-time activities, suggesting that for young people with self-identified disabilities who engaged in more free-time activities also reported weaker peer relationships. In addition, it was found that the association between both parent-child relationships and school engagement, with number of free-time activities, was weaker for those with a disability than for those with no disability. Further research would be useful to explore this in detail and understand what might reduce these disparities. In contrast however, young people who experience disability showed a strong positive association between increased participation in ngā toi Māori and parent-child relationships, indicating that ngā toi Māori participation specifically is associated with positive parent-child relationships for this group, again emphasising the unique benefits of ngā toi Māori for youth wellbeing.

In contrast to the other wellbeing outcomes, we found that participation in a greater number of FTAs and ECAs for some young people was associated with higher anxiety scores, however the association was very weak, and the effect size was small. Whilst this may initially seem counter-productive, this finding is consistent with prior research conducted by Growing Up in New Zealand (e.g. Tait et al., 2023), also utilising this anxiety measure, which found that higher school engagement was associated with higher scores of anxiety symptoms. Importantly, this measure is not a clinical indication of an anxiety disorder, but instead it asks young people about their experienced symptoms of anxiety.

Higher reports of symptoms of anxiety were found for Asian participants for those who engage in more extracurricular activities, and this was the only demographic difference found comparing young people’s overall participation in ECAs and wellbeing. One interpretation of this finding is that in some Asian communities there are often familial and social expectations to perform to a high level in extracurricular activities (Wang & O’Connor, 2024), which may be contributing to increased experiences of anxiety simply because young people are engaging in more activities they need to do well in. The benefits of participating in ECAs are clear,

however parents and caregivers can maximise positive outcomes by working with young people to reduce and manage any symptoms of anxiety that may be produced as a consequence of this involvement.

Additionally, we found that the strongest relationship between school engagement scores and ngā toi Māori participation was seen for Sole European participants, followed by Māori, then Pacific young people, indicating that young people of Sole European descent experienced the strongest associations between participation in ngā toi Māori activities and engagement in school. It is important to remember that we only investigated associations and do not imply causation.

There were also differences in the associations between ngā toi Māori participation and anxiety scores for young people of different ethnicities; Pacific students experienced increased anxiety scores in association with higher participation, and the association was significantly stronger than for Sole European students, which was in contrast to overall anxiety scores in this cohort (Fletcher et al., 2023). However, for rangatahi Māori, participating in more ngā toi Māori activities was significantly associated with fewer symptoms of anxiety. Further research is needed to determine the reasons for these differences between ethnic groups.

7.2. Implications for Policy and Practice

Ensure ready access to ACRs for all (e.g. through schools and community groups)

These findings highlight the importance of promoting engagement in a variety of arts, cultural and recreation activities. No single activity can meet the needs of all young people; therefore, access to a variety of opportunities is key. This research has shown the value of engaging in multiple pursuits with various organised extracurricular activities and free-time activities. In this report, we found that the associations were the same regardless of sociodemographic characteristics; however, in Report 1 (Evans, Redman, et al., 2023), there were differences identified in the access to activities. This strengthens the recommendations of Report 1, in that engagement in activities is essential for all young people regardless of gender, ethnicity, family composition, area-level deprivation, rurality and disability. Policymakers need to ensure positive actions are taken to enable schools and communities to offer or facilitate access to extracurricular opportunities, allowing all young people to access ACRs. Further work is needed to investigate how ACRs could be funded sustainably and actions that could support young people with low engagement or barriers to accessing ACRs (as seen in Report 1).

Provide opportunities to engage in ngā toi Māori activities

Engagement in ngā toi Māori activities showed the same trends as overall participation: participating in ngā toi Māori activities was associated with young people's positive experiences of wellbeing across several domains. These findings can be used to add to the evidence base for the development of initiatives and policies. In Report 1 we found that 8.2% of young people reported 'missing out' [8] on at least one ngā toi Māori activity, demonstrating an area of policy importance (see Evans, Redman, et al., 2023). Schools could harness these benefits to wellbeing whilst promoting and enabling engagement in a variety of ngā toi Māori activities as these were positively associated with both school engagement and strength of ethnic identity, for students from diverse cultural backgrounds.

An association was also found for rangatahi Māori between participation in more ngā toi Māori activities and fewer symptoms of anxiety. We also found that ngā toi Māori participation was associated with wellbeing for some minority groups of young people (e.g. transgender/non-binary young people, and those with disabilities), as well as young people of Sole European descent. It should therefore be a priority to continue to develop and promote

[8] 'Missing out' refers to activities that young people would like to do but didn't or couldn't for a variety of reasons.

initatives that cherish Māori arts and cultural activities, which intrinsically provide a space that is particularly welcoming for young people of diverse backgrounds. These activities not only provide opportunities for rangatahi Māori to participate in their own cultural traditional practices but also promotes wellbeing for young people of all ethnicities, strengthening the argument to promote participation in ngā toi Māori. This report shows objectively that there are wellbeing benefits to learning these traditional practices for all.

Promote inclusive environments that build a sense of belonging

The groups that were found to have weaker relationships with wellbeing outcomes were those who belong to minority groups (e.g. young people who identify as transgender/non-binary and those unsure of their gender identity, those who identify with an ethnic minority, and young people with disabilities). It is essential that we create opportunities for young people who belong to minority groups to feel they belong, are valued and cherished, and can engage in activities that they enjoy. Our results highlight that the protective effect seen for other young people seems to be diminished for these minority groups and emphasises the need to ensure that places for arts, cultural and recreation participation are welcoming and not alienating.

As mentioned, statistical differences were found across a number of wellbeing measures for young people who indicated that they had a disability compared with those who did not. Consistent with recent recommendations (e.g. Tait et al., 2023 and Marks et al, 2023), more needs to be done to ensure young people with disabilities are enabled to engage in a variety of activities, and that they experience positive attitudes from others, through being exposed to more inclusive environments.

In the first report in this series we found that there was significantly lower engagement in free-time activities for people with disabilities particularly in time spent outdoors, active play and reading books (Evans, Redman, et al., 2023). It is acknowledged that these findings may be limited by the types of activities that were asked in the questionnaire. For example, these findings may not reflect young people with disabilities who engage in reading through different platforms and media (e.g. listening to audio books). However, when considered together, these findings suggest that access to a variety of activities for young people with disabilities and those belonging to other minority groups should be a focus for all society, in policy and practice alike.

Furthermore, whilst we did not explore intersectionality in this report, it is possible that young people who belong to multiple minority groups, have greater experiences of discrimination, and oppression (Meyer, 2003) and actions to mitigate these experiences could have powerful effects on wellbeing of both individuals and the groups as a whole.

Develop resources for parents, caregivers, educators and policymakers to highlight the wide-reaching benefits of extracurricular and free-time activities.

Everyone who works with young people needs to be equipped with the tools necessary to support wellbeing. We found that participation in ACRs was associated with both positive relationships and lower depression. Building positive relationships has been associated with lower depression in this cohort (Fletcher et al., 2023), which suggests that positive experiences in ACRs are a potential protective mechanism. These components work together in a mosaic of collective wellbeing that can be supported by well-resourced ACR providers who understand their role in positive youth development.

It is essential that all young people, regardless of their gender, ethnicity, disability or other aspects of their identity, feels positive connections and a sense of belonging in the environments and activities that they choose to participate in. Providers need to be fully equipped with the knowledge and resources to provide positive experiences to all young people. Parents need support to ensure young people are given opportunities to thrive across environments and that caregivers are informed of the importance of ACRs. Frameworks such as the Positive Youth Development in Aotearoa (Mullen et al., 2023) may give guidance to providers to equip them with the tools necessary to support youth wellbeing.

7.3. Limitations and Future Research

This research provides a springboard for further research in the area of Arts, Culture, and Recreation activities within Aotearoa, New Zealand. A significant limitation of this research is that around 29% of households in the original cohort did not engage in the 12-year data collection wave (Napier et al., 2023). The makeup of these participants who did not engage is not known; however, it is possible that these participants would have different rates of engagement and experiences that may have influenced these findings. Lower participation rates (longitudinally) have been noted for those from a non-European ethnic group, younger mothers, lower socioeconomic status and those mothers with lower level of educational attainment (Napier et al., 2023). Furthermore, the GUiNZ cohort were recruited prior to birth from the Auckland, Counties Manukau and Waikato District Health Board regions. Whilst approximately 23% of the cohort are now spread throughout the country (Evans, Redman, et al., 2023), the findings in this report are based on the stories only of participants and may not represent experiences of the wider community. The impact of attrition and geographic location needs to be taken into consideration before generalising these results at the population level.

This report relies on the self-report of participation and wellbeing outcomes by 12-year-olds. The accuracy of this information is dependent on the individuals honesty and recall. This analysis does not consider the intensity of activity participation, why young people are engaging in these activities, the quality of the participation, or whether they experience pressure to perform. The way that regular participation was defined and the variable derived may exclude young people who engage in less frequent but still regular participation, e.g. activities that occur once per month, therefore no participation may not be representative of absolutely no participation. These factors may influence the identified associations between participation and wellbeing.

Importantly, this research describes associations between variables at 12 years of age; therefore, these results cannot imply causality – it may be that better wellbeing leads to increased participation or vice versa or that other factors are involved. However, by investigating the key demographic characteristics and finding that these did not change the pattern of results, we have strengthened our key finding of direct links between arts, cultural and recreation participation and wellbeing amongst youth in this sample.

A further limitation of this research is that from the analyses we conducted we cannot determine the reason for the less consistent results for those who participate in more activities (as seen by the increased variability in the confidence intervals above 12 activities). The analyses may have been impacted by the smaller concentration of participants reporting engagement in more extracurricular activities; or it may indicate that other factors influence

wellbeing, such as whether the young person is engaging in the activities by choice or through pressure from parent/s.

It is also possible that results were influenced by smaller numbers of participants in certain categories (e.g. Ngā toi Māori involvement in two or more activities in a rural setting). Whilst each category analysed in this report was deemed to have a sufficient number of participants (see Appendix C and Appendix D) and the findings reported reached statistical significance, this should be considered in interpreting the findings.

Furthermore, whilst analysis is limited to the questions asked of the Growing Up in New Zealand cohort, who participated at the age of 12-years, this dataset provides a rich resource waiting for further analysis. Further research could usefully be conducted to investigate the factors influencing engagement in ACRs for young people with disabilities. This report found that there were differences for young people with a self-perceived disability in the relationship between participation in ACRs and their relationships with others. It will, therefore, be important to consider the addition of other relationship variables, including special adult and student-teacher relationships, as well as barriers to participation specifically for young people with disabilities. Qualitative data, including young people's views on their lived experiences, would provide a rich tapestry to add to this discussion. Future research could investigate the types of activities that young people with disabilities engage in most frequently, the protective factors that may be associated, as well as what age participation and engagement levels change and whether these are associated.

This research focused on a single model of overall participation in ACRs by looking at the total number of ECAs and FTAs each young person in the study participated in. Previous research (Balaguer et al., 2020; Ren et al., 2021) conducted internationally has found that there are differences in wellbeing outcomes based on breadth versus intensity of engagement. Whilst the GUiNZ dataset does not have a time variable, it would be possible to investigate the differences between breadth of engagement across different types of ACRs (e.g. sport, culture, music) compared to an overall number of activities and how this relates to wellbeing of young people.

This report has not considered each area of ACR participation – sports, music, arts and craft, digital engagement etc – therefore this research opens the door for further research considering the relationship between ACRs and wellbeing, and how these change over time. For example, there is potential to explore the relationship between wellbeing and digital activities, such as involvement in gaming, social media, and civic engagement.

Finally, the GUiNZ dataset lends itself to significant opportunities for longitudinal research, considering early arts participation and later wellbeing outcomes. Investigating how the

relationship between participation in ACRs and wellbeing change over time, and whether engaging in ACRs is a protective factor to wellbeing outcomes are key considerations that need to be addressed. This rich dataset is a taonga to be cherished and utilised: the stories of participants are waiting to be told. With further funding, additional research can be conducted to inform both policy and practice, and support arts, culture and recreation participation amongst youth in Aotearoa New Zealand.

7.4. Conclusions

This research found that young people's wellbeing was associated with engaging in a variety of extracurricular and free-time activities. Associations were found with a young person's here tāngata (better peer and parent relationships), tinana (better Quality of Life scores and improved general health), ngākau (higher school engagement, lower depression scores) and wairua (a stronger sense of ethnic identity). Marked improvements were seen when young people participated in at least five extracurricular activities. This was also the case when young people participated in at least four regular free-time interests, showcasing big improvements for just 'getting involved'. Additionally, engagement in ngā toi Māori activities showed similar trends as overall participation: participating in traditional and contemporary Māori arts and cultural activities was associated with a young person's here tāngata (stronger child-peer relationships), ngākau (higher school engagement), and wairua (higher ethnic identity scores).

This is the most comprehensive research to date showcasing a diverse range of wellbeing benefits for participation in arts, cultural and recreation activities, in a large, closely representative sample of youth in Aotearoa New Zealand. This research also harnesses the benefits of structuring our analyses with a Māori model of health, to consider young people's holistic experiences with a Te Ao Māori lens. These findings contribute a strong base from which to inform policy and practice that promotes engagement in arts, cultural and recreation activities for young people at the age of 12. Finally, this research reflects our understanding of the whakataukī that cherishes a diversity of ngā mahi a te rēhia in Aotearoa New Zealand: E tio te tūī, e ketekete te kākā, e korihi te kōkako.

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10.0 Appendix A: Extracurricular Activity Options

Participants were asked to self-report whether they had participated in each of these individual and group extracurricular activities on a regular basis (once per week or more often) over the past year. Activities marked with a * in the lists below denotes activities included in the variable “ngā toi Māori activities”.

Community group or club

- Student council
- Environmental group
- Academic group (e.g. mathletics, spelling, chess)
- Radio, Blog, Social media
- Second language
- Religious group
- Scouts or Guides
- Other
- None

Dance and drama

- Māori dance styles (e.g. kapa haka)*
- Ballet, jazz, tap
- Pasifika dance styles (e.g. Ma’ulu’ulu)
- Contemporary, Lyrical
- Hip-hop
- Asian dance styles
- School play
- Theatre sports
- Manu Kōrero, Pasifika speech competitions*
- Drama club
- Other
- None of these

Sports

- Cricket
- Waka ama, rowing, mau rākau*

- Netball, basketball, volleyball
- Rugby or touch rugby
- Hockey, floorball
- Running, cross-country
- Swimming
- Football, soccer or futsal
- Athletics
- Tennis, racket sports
- Cycling
- Tramping, bush walks
- Other
- None of these

Arts, craft and technology

- Weaving, Raranga*
- Robotics, AI, Coding club
- Gaming club
- Sculpture, carving*
- Knitting, craft
- Painting, Drawing
- Digital arts
- Other
- None of these

Music

- Waiata or choir
- Orchestra
- Kapa Haka*
- Jazz/Blues band
- Traditional group
- Brass/concert band
- Guitar or ukulele group
- Instrument lessons
- Rock band/ other band
- Other
- None of these

11.0 Appendix B: Variables Used in Analysis

Table 5: Participation measures.

Section	Question(s) or Source	Response options	Derived variable/s available for analysis
Free-time activities – 12-year Child questionnaire			
Free-time activities (FTAs): **Preamble: In this section, you are going to tell us about what you do in your free-time. This might be after school, or at lunchtime, or in the weekend.**	Overall, how often do you do these things? Read books Listen to music Do some art/craft or quiet activity (e.g. Lego, board games, drawing) Active play (e.g. running around playing games, bike riding) Spend time outdoors or with nature (e.g. play on the grass, go to the beach, gardening) Homework Household chores	0. Never/almost never 1. Once a week 2. Several times a week 3. Once a day 4. Several times a day	Number of FTAs engaging in 'Several times a week' or more often. Range: 0-6
Extracurricular activities – 12-year Child questionnaire			
Extracurricular activities (ECAs) **Preamble: In this section, we would love for you to tell us about the activities that you do before or after school, or at lunchtime, or in the weekend. You might not do any organised activities, that's ok!**	Thinking about the past year, which of the following activities do you do or have you done regularly (about once a week)? Community group or club (7 options; other; none) Dance & drama (10 options; other; none) Sport (12 options; other; none) Arts, crafts & technology (9 options; other; none) Music (7 options; other; none)	0. No 1. Yes Children click on each of 5 categories, represented with an image of the activity and its name, then select from the list of extracurricular activities. The circles are presented one after another. Multiple activities can be selected within each category and across categories.	Number of ECAs Range: 0-40 (cut at 21) Number of categories: 0-5
Grouped activities	Which of these activities did you do in a group?	0. No 1. Yes	N/A

Table 6: Participant child, household and neighbourhood characteristics (barriers and enablers of participation).

Variable	Question(s) or source	Response options	Derived variable(s) available for analysis
Child characteristics (from 12-year child dataset)			
Ethnicity (total response) [9]	Which ethnic group or groups do you belong to? (Choose all that apply, there is no wrong answer, you can select as many as you need)	1. New Zealand European 2. Māori 3. Samoan 4. Cook Island Māori 5. Tongan 6. Niuean 7. Chinese 8. Indian 971. Other ethnicity 1 972. Other ethnicity 2 973. Other ethnicity 3 974. Other ethnicity 4	Total response Māori (yes/no) Total response Pacific (yes/no) Total response Asian (yes/no) Total response MELAA (yes/no) Total response Other (yes/no) Sole European (yes/no) Alternatively, 'externally prioritised ethnicity' is used. *Note*. MELAA = Middle Eastern, Latin American, or African.
Gender	Thinking about who you are, do you see yourself as a boy, a girl, or somewhere in between?	1. Boy 2. Mostly a boy 3. Somewhere in the middle 4. Mostly a girl 5. Girl 99. I don't know	1. Boy/mostly boy 2. Girl/mostly girl 3. Trans/Non-binary/Unsure
	Sex assigned at birth (from Antenatal Dataset)	1. Male 2. Female	Cisgender girl Cisgender boy Transgender/Non-binary/Unsure
Disability	Washington Group Short Set on Functioning (WG-SS; Washington Group on Disability Statistics, 2022):	0. No – no difficulty 1. Yes – some difficulty	0. No (did not answer "yes – a lot of difficulty" or "cannot do at all" to any question)

[9] For a description of the methods used to describe ethnic identity in our cohort, see Neumann et al., 2023

Variable	Question(s) or source	Response options	Derived variable(s) available for analysis
	1. Do you have difficulty seeing, even if wearing glasses? 2. Do you have difficulty hearing, even if using a hearing aid? 3. Do you have difficulty walking or climbing steps? 4. Do you have difficulty remembering or concentrating? 5. Do you have difficulty (with self-care such as) washing all over or dressing? 6. Using your usual language, do you have difficulty communicating, for example understanding or being understood?	2. Yes – a lot of difficulty 3. Cannot do at all	1. Yes (answered "yes – a lot of difficulty" or "cannot do at all" to at least one question)
Household characteristics (from 12-year mother dataset)			
Household composition	Derived from household grid (the following are considered a parent: mother, mother's partner, father, step-mother, step-father)	See 12-year Mother Questionnaire available at Growingup.co.nz	1. Sole parent 2. Two or more parents 3. Living with extended family 4. Living with non-kin
Neighbourhood characteristics (derived from 12-year mother-reported residential location)			
Area level deprivation	NZ Deprivation Index 2018 (NZDep18; Atkinson et al., 2019) based on home address	N/A	1. NZDep 1-2 (lowest deprivation) 2. NZDep 3-4 3. NZDep 5-6 4. NZDep 7-8 5. NZDep 9-10 (highest deprivation)
Urban/rural	Urban rural classification (Statistics New Zealand, 2017) based on home address	N/A	1. Urban 2. Rural

12.0 Appendix C: Tables showing the sociodemographic responses by participation in Free-time activities

Table 7: Free-time activities by gender (N = 4,451).

Gender	Number of free-time activities							
	0	1	2	3	4	5	6	Totals
Cisgender boys	48 (1.3%)	149 (7.3%)	304 (14.9%)	493 (24.2%)	528 (25.9%)	378 (18.5%)	140 (6.9%)	2040
Cisgender girls	21 (1.3%)	99 (5.9%)	209 (12.5%)	316 (18.9%)	408 (24.4%)	378 (22.6%)	244 (14.6%)	1675
Transgender/non-binary/I don't know	<10	47 (6.5%)	98 (13.6%)	162 (22.5%)	185 (25.7%)	130 (18%)	91 (12.6%)	721

Table 8: Free-time activities by externally prioritised ethnicity (N = 4,334).

Ethnicity	Number of free-time activities							
	0	1	2	3	4	5	6	Totals
Māori	19(2%)	72 (7.4%)	134 (13.8%)	243 (25.1%)	238 (24.6%)	179 (18.5%)	84 (8.7%)	969
Pacific Peoples	<10	30 (6.2%)	69 (14.2%)	94 (19.3)	131 27(%)	81 (16.7%)	74 (15.2%)	486
Asian	12 (2.2%)	37 (6.9%)	80 (14.9%)	103 (19.2%)	122 (22.8%)	107 (20%)	75 (14%)	536
Other	<10	<10	12 (13.3%)	19 (21.1%)	19 (21.1%)	21 (23.3%)	11 (12.2%)	90
Sole European	30 (1.3%)	144 (6.4%)	291 (12.9%)	493 (21.9%)	582 (25.8%)	486 (21.6%)	227 (10.1%)	2253

Note: Externally Prioritised Ethnicity (according to STATS NZ prioritisation)

Table 9: Free-time activities by child self-report of functional deficit indicative of a Disability (N = 4,447).

Disability status	Number of free-time activities							
	0	1	2	3	4	5	6	Totals
Disability	<10	35 (8%)	82 (18.8%)	109 (24.9%)	97 (22.2%)	71 (16.2%)	36 (8.2%)	437
No disability	71 (1.8%)	263 (6.6%)	529 (13.2%)	865 (21.6%)	1023 (25.5%)	819 (20.4%)	440 (11%)	4010

Table 10: Free-time activities by Area level deprivation (N = 4,369).

Area Level Deprivation	Number of free-time activities							
	0	1	2	3	4	5	6	Totals
Quintile 1 (least deprived)	<10	57 (5.4%)	130 (12.3%)	231 (21.8)	301 (28.4%)	231 (21.8%)	102 (9.6%)	1061
Quintile 2	20 (2%)	65 (6.6%)	122 (12.5%)	220 (22.5%)	246 (25.2)	189 (19.3)	116 (11.9%)	978
Quintile 3	18 (2.1%)	46 (5.4%)	117 (13.7%)	176 (20.7%)	211 (24.8%)	184 (21.6%)	99 (11.6%)	851
Quintile 4	15 (2.1%)	47 (6.6%)	110 (15.4%)	170 (23.8%)	164 (22.9%)	137 (19.2%)	72 (10.1%)	715
Quintile 5 (most deprived)	15 (2%)	75 (9.8%)	124 (16.2%)	157 (20.5%)	180 (23.6%)	133 (17.4%)	80 (10.5%)	764

Table 11: Free-time activities by rurality (N = 4,369).

Rurality	Number of free-time activities							
	0	1	2	3	4	5	6	Totals
Urban	65 (1.8%)	246 (6.9%)	517 (14.4%)	779 (21.7%)	882 (24.6%)	716 (19.9%)	385 (10.7%)	3590
Rural	12 (1.5%)	44 (5.6%)	86 (11%)	175 (22.5%)	220 (28.2%)	158 (20.3%)	84 (10.8%)	779

Table 12: Free-time activities by household structure (N = 4,405).

Household Structure	Number of free-time activities							
	0	1	2	3	4	5	6	Totals
Sole parent	14 (2.5%)	54 (9.6%)	87 (15.5%)	127 (22.6%)	136 (24.2%)	97 (17.3%)	46 (8.2%)	561
Two or more parents	51 (1.6%)	199 (6.1%)	432 (13.2%)	713 (21.8%)	843 (25.8%)	669 (20.5%)	362 (11.1%)	3269
Parent(s) living with extended family	<10	36 (7.3%)	71 (14.3%)	106 (21.4%)	115 (23.2%)	103 (20.8%)	58 (11.7%)	495
Parent(s) living with non-kin	<10	<10	16 (20%)	14 (17.5%)	17 (21.2%)	13 (16.2%)	<10	80

13.0 Appendix D: Tables showing the sociodemographic responses by participation in ngā toi Māori activities

Table 13: Ngā toi Māori activities by gender (N = 4,430).

Gender	Number of ngā toi Māori activities			
	0	1	2	Totals
Cisgender boys	1703 (83.6%)	270 (13.2%)	65 (3.2%)	2038
Cisgender girls	1327 (79.4%)	282 (16.9%)	63 (3.8%)	1672
Transgender/non-binary/ Unsure	582 (80.8%)	109 (15.1%)	29 (4%)	720

Table 14: Ngā toi Māori activities by externally prioritised ethnicity (N = 4,239).

Ethnicity	Number of ngā toi Māori activities			
	0	1	2+	Totals
Māori	568 (58.8%)	299 (31%)	99 (10.2%)	966
Pacific Peoples	384 (79.2%)	72 (14.8%)	29 (6%)	485
Asian	486 (90.7%)	45 (8.4%)	<10	536
Sole European	2004 (89%)	226 (10%)	22 (1%)	2252

Note: Externally Prioritised Ethnicity (according to STATS NZ prioritisation)

Table 15: Ngā toi Māori activities by child self-report of functional deficit indicative of a Disability (N = 4,443).

Disability status	Number of ngā toi Māori activities			
	0	1	2+	Totals
Disability	338 (77.3%)	72 (16.5%)	27 (6.2%)	437
No disability	3282 (82%)	592 (14.8%)	131 (3.3%)	4006

Table 16: Ngā toi Māori activities by Area level deprivation (N = 4,364).

Area Level Deprivation	Number of ngā toi Māori activities			
	0	1	2	Totals
Quintile 1 (least deprived)	908 (85.7%)	133 (12.5%)	19 (1.8%)	1060
Quintile 2	832 (85.2%)	114 (11.7%)	31 (3.2%)	977
Quintile 3	703 (82.6%)	120 (14.1%)	28 (3.3%)	851
Quintile 4	573 (80.1%)	112 (15.7%)	30 (4.2%)	715
Quintile 5 (most deprived)	546 (71.7%)	168 (22.1%)	47 (6.2%)	761

Table 17: Ngā toi Māori activities by rurality (N = 4,364).

Rurality	Number of ngā toi Māori activities			
	0	1	2+	Totals
Urban	2927 (81.6%)	536 (14.9%)	123 (3.4%)	3586
Rural	635 (81.6%)	111 (14.3%)	32 (4.1%)	778

Table 18: Ngā toi Māori activities by household structure (N = 4,400).

Household Structure	Number of ngā toi Māori activities			
	0	1	2+	Totals
Sole parent	437 (77.9%)	101 (18%)	23 (4.1%)	561
Two or more parents	2710 (83%)	459 (14.1%)	96 (2.9%)	3265
Parent(s) living with extended family	378 (76.5%)	86 (17.4%)	30 (6.1%)	494
Parent(s) living with non-kin	68 (85%)	<10	<10	80

14.0 Appendix E: Tables of Summary of Findings

Table 19: Summary of findings for Extracurricular Activities.

Theme	Wellbeing Outcome	Pearson Correlation coefficient	Spearman correlation coefficient	Linear Model (GLM) coefficient	Non-linear model (GAM) coefficient	Demographic differences
Here Tāngata	Peer relationships (n = 3,697)	-0.079***	-0.084***	Estimate = -0.118; R^2 = 0.006***	NS	No changes
	Parent-child relationship (n = 4,152)	-0.051***	-0.063***	Estimate = -0.056, R^2 = 0.003***	Edf = 3.019**	No changes
Tinana	Quality of Life (Kidscreen) (n = 4,409)	0.099***	0.121***	Estimate = 0.195, R^2 = 0.010***	Edf = 2.459*** Non-linear relationship with plateau effect at 7-10 ECA.	No changes
	General health (n =4,290)	0.131***	0.131***	-	-	-
Ngākau	Depression symptoms (n = 4,398)	NS	-0.033*	NS	NS	No changes
	Anxiety symptoms (n = 4,398)	0.029 (NS)	0.028 (NS)	Estimate 0.075; R^2 = 0.001 (NS)	NS	Ethnicity - Asian had a stronger positive relationship than Sole European (estimate = 0.332*)
	School engagement (n = 4,382)	0.194***	0.203***	Estimate = 0.032; R^2 = 0.038***	Edf=3.142*** Rapid increase from 0-5 ECA, and a gradual increase from 5-12 ECA.	No changes
Wairua	Ethnic identity (n = 4,409)	0.255***	0.251***	Estimate = 0.470, R^2 = 0.062***	Edf = 4.434*** Rapid increase from 0-5 ECA, and a gradual increase from 5-12 ECA.	No changes

Note: 1) NS = Not significant 2) *p<.05; **p<.01; ***p<.001

Table 20: Summary of findings for Free-time Activities (FTAs).

Theme	Wellbeing Outcome	Pearson correlation coefficient	Spearman correlation coefficient	Linear Model (GLM) coefficient	Non-linear model (GAM) coefficient	Demographic differences
Here Tāngata	Peer relationships (n = 3,737)	-0.164***	-0.171***	Estimate = -0.687 R^2 = 0.027***	NS	Disability - no association was found for those with a Disability (difference in coefficient estimate = 0.928***)
	Parent-child relationship (n = 4,191)	-0.127***	-0.150***	Estimate = -0.391 R^2= 0.016***	Edf = 1.887**	Disability - statistical difference for those with a Disability compared to those without (estimate = 0.364*). Ethnicity - statistical difference between Pacific young people and Sole European (estimate = -0.401*).
Tinana	Quality of life (Kidscreen) (n = 4,451)	0.173***	0.169***	Estimate = 0.955 R^2 = 0.03***	Estimate = 1.368***	Gender - Statistical difference between Cisgender boys and Cisgender girls**. Ethnicity - Statistical difference between Māori and Sole European**.
	General health (n = 4,332)	0.187***	0.182***	-	-	-
Ngākau	Depression symptoms (n = 4,437)	-0.075***	-0.096***	Estimate = -0.266 R^2 = 0.0057***	Edf = 5.265***	No changes
	Anxiety symptoms (n = 4,437)	NS	0.030*	Estimate = 0.220 R^2 = 0.001*	NS	No changes
	School Engagement (n = 4,421)	0.297***	0.304***	Estimate = 0.139, R^2 = 0.089***	Edf = 4.094*** Non-linear relationship with increase in school engagement around 4 FTAs	Gender - Compared to Cisgender boys, cisgender girls had a stronger relationship** Disability - those with a Disability had a weaker relationship*.
Wairua	Ethnic identity (n = 4,451)	0.243***	0.238***	Estimate = 1.290 R^2 = 0.0589***	Edf = 1.719***	No changes

Note: 1) NS = Not significant 2) *p<.05; **p<.01; ***p<.001

Table 21: Summary of findings for ngā toi Māori activities.

Theme	Wellbeing outcome	Statistical differences found between number of ngā toi Māori activities	Demographic differences
Here Tāngata	Child-peer relationships (n = 3,731)	0 vs 1*** ngā toi Māori = better peer relationships 0 vs 2+** ngā toi Māori = better peer relationships	NS
	Parent-child relationships (n = 4,186)	NS	Rurality** - Urban: slope = -0.307; Rural: slope = 0.783 Disability* - No disability: slope = -0.087; With Disability: slope = -0.926
Tinana	Quality of Life (n = 4,445)	NS	NS
	General health (n = 4,445)	NS	-
Ngākau	Depression (n = 4,433)	NS	NS
	Anxiety (n = 4,433)	NS	Ethnicity*** - Sole European: slope = -0.002 (NS); Māori: slope = -1.059 (NS); Pacific: slope = 2.300
	School engagement (n = 4,417)	0 vs 1*** ngā toi Māori = higher school engagement	Ethnicity* - Sole European participants: slope = 0.224; Māori: slope = 0.102; Pacific: slope = 0.055. Gender* - Transgender/non-binary young people: slope = 0.186; Cisgender boys: slope = 0.106; Cisgender girls: slope = 0.019.
Wairua	Ethnic Identity (n = 4,445)	0 vs 1*** ngā toi Māori = stronger ethnic identity 0 vs 2+*** ngā toi Māori = stronger ethnic identity 1 v 2+*** ngā toi Māori = stronger ethnic identity	NS

Notes:

1) a Pearson's Chi-squared test was used for general health as both variables were categorical.

2) NS = Not significant.

3) p-value adjustment method: Bonferroni *p<.05 **p<.01 ***p<.001