

# COMMUNITY ACTIVITIES & YOUTH WELLBEING

**Getting involved, doing well, feeling connected:**

**How participation in community activities relates to positive  
developmental outcomes in a culturally diverse sample of young New  
Zealanders**

Seini O'Connor

February, 2011

Thesis submitted in partial fulfilment of the requirements for the degree of

Master of Science in Cross-Cultural Psychology

*Victoria University of Wellington*

*Te Whare Wānanga o te Ūpoko o te Ika a Māui*

*Aotearoa / New Zealand*

## COMMUNITY ACTIVITIES & YOUTH WELLBEING

# COMMUNITY ACTIVITIES & YOUTH WELLBEING

## Abstract

Extracurricular activities are important in many young people's lives, and have been associated with positive academic, psychological, and social outcomes. However, most previous studies have focused only on correlations between participation and outcomes, and few have explored ethno-cultural differences. Using multivariate and propensity score matching techniques to control for selection effects, this study analysed longitudinal data collected from over 1700 young New Zealanders. Results suggest that youth who participated in community-based activities reported higher levels of adjustment (had higher general wellbeing, social support, and life satisfaction) and felt more connected (to communities and schools) than those who did not. Sports participants, young men participating in arts or community activities, and Māori youth participating in a combination of arts or community and sports activities appeared to benefit the most. These findings form an important extension to previous research, and provide a better understanding of the positive impacts of extracurricular activities for youth in Aotearoa / New Zealand.

Keywords: Youth, Extracurricular activities, Wellbeing, Connectedness,

Community

## COMMUNITY ACTIVITIES & YOUTH WELLBEING

## COMMUNITY ACTIVITIES & YOUTH WELLBEING

### Acknowledgements

I would like to extend my thanks to my excellent primary supervisor, Associate Professor Paul Jose, and also to Professor Cliff O'Donnell, who supervised my ongoing work during an exchange semester in Hawai'i. Both provided many helpful suggestions for developing and improving this study, as well as inspiration and encouragement. I am also grateful to have been able to access the large and valuable dataset collected through the Youth Connectedness Project under funding from FRST, and deeply appreciate all the time and effort that went into the Project—from the participants who so generously contributed their information, from the academics who led the Project, and from all the research assistants involved in data collection and compilation. Finally, I would like to acknowledge the Ryoichi Sasakawa Young Leaders Fellowship Fund (SYLFF), whose generous Masters Scholarship funding enabled me to undertake full time study and complete this thesis, and the Centre for Applied Cross Cultural Research, which established the exchange opportunity with the University of Hawai'i.

## COMMUNITY ACTIVITIES & YOUTH WELLBEING

# COMMUNITY ACTIVITIES & YOUTH WELLBEING

## Table of Contents

Introduction.....	1
Defining extracurricular activity participation .....	3
Theories concerning the association between activity participation and positive outcomes.....	4
Evidence for an association between activity participation and positive outcomes .....	11
<i>Comparison with other types of activities .....</i>	<i>15</i>
<i>Differential outcomes for different rates of participation .....</i>	<i>16</i>
<i>Implications of evidence for theory.....</i>	<i>18</i>
Limitations of past research.....	19
<i>Cross-sectional data and selection effects.....</i>	<i>19</i>
<i>Lack of recognition for youth heterogeneity .....</i>	<i>23</i>
The present study .....	32
<i>Key measures.....</i>	<i>33</i>
<i>Distinctive features of this study .....</i>	<i>35</i>
<i>Research questions and predictions.....</i>	<i>37</i>
Method.....	39
Participants.....	39
YCP Design, Materials, and Procedure.....	41
Measures .....	42
<i>Participant characteristic variables.....</i>	<i>43</i>
<i>Time-use variables.....</i>	<i>44</i>
<i>Outcome variables.....</i>	<i>45</i>
Results .....	50
Initial analyses .....	50
<i>Distribution of values .....</i>	<i>51</i>
<i>Missing values .....</i>	<i>53</i>
<i>Outcome factors .....</i>	<i>59</i>
Identifying between-group differences in participation rates.....	60
<i>Chi-square analyses on completed dataset .....</i>	<i>60</i>
Assessing the benefits of participation in community activity groups .....	63
<i>Repeated measure MANCOVA results.....</i>	<i>64</i>
<i>Analyses on samples matched by propensity scores.....</i>	<i>71</i>
Discussion.....	79
Group differences in participation rates .....	81
<i>Differences in participation rates between ethno-cultural groups.....</i>	<i>81</i>
<i>Differences in participation rates between sexes.....</i>	<i>83</i>

## COMMUNITY ACTIVITIES & YOUTH WELLBEING

<i>Differences in participation rates between youth from different locations and socio-economic backgrounds .....</i>	<i>84</i>
Apparent participation benefits .....	87
Differences in participation benefits.....	91
<i>Differences between youth participating in different activity types.....</i>	<i>91</i>
<i>Differences in participation benefits between ethno-cultural groups .....</i>	<i>98</i>
<i>Differences in participation benefits between sexes .....</i>	<i>102</i>
Study implications.....	104
<i>Implications for theory .....</i>	<i>104</i>
<i>Implications for policy.....</i>	<i>109</i>
Limitations of the present study .....	112
<i>Effect sizes .....</i>	<i>112</i>
<i>Influence of other contexts .....</i>	<i>116</i>
<i>Cultural considerations.....</i>	<i>117</i>
Future directions.....	119
Conclusion.....	123
References .....	126
Appendix A: Survey items for time use and outcome variables used in this study .....	137
Appendix B: Skewness and kurtosis measures for time use and outcome variables .....	141
Appendix C: Correlations between non-transformed and transformed Y1 variables .....	153
Appendix D: Correlations between mean outcome factors and mean Time-use variables .....	159
Appendix E: MANCOVA analyses on time use.....	161



## Introduction

Families and schools are highly influential in youth development and learning (Benard, 1993; Blum, McNeely, & Rinehart, 2002; Larson, 2000;), but these are not the only significant settings in a young person's life: between the classroom and the home many young people are also involved in a range of extracurricular activities. In Aotearoa / New Zealand, over 50% of high school students participate in sports outside of school time, 30% are involved in daily performing arts-related activities, and 60% belong to a youth group or club (AHRG, 2008). Like classroom and home-based activities, these types of activities can be a source of learning and development experiences (Feldman & Matjasko, 2005; Heath, 2001), and thus contribute to youth "doing well" in life. When these activities take place in the community, they may also help youth form strong neighbourhood connections.

There are several ways in which extracurricular activities may help young people to "do well". For instance, such activities promote the acquisition of new skills, provide opportunities for young people to interact with adults and peers in their communities (Blyth, Hill, & Thiel, 1982), and help create a sense of enjoyment, personal satisfaction and worth – all important features in positive youth development (Eccles & Templeton, 2002; Larson, 2000). Indeed, past studies indicate that participation in extracurricular activities is positively correlated with desirable outcomes in several spheres of life – at school, in personal life, and in the broader

community (e.g., Eccles, Barber, Stone, & Hunt, 2003; Zaff, Moore, Papillo, & Williams, 2003).

However, gaps in knowledge about the relationship between extracurricular activities and positive outcomes remain. In particular, most studies have established only a correlational link between participation and positive outcomes – thus, it is not clear whether participation *causes* better outcomes, or is simply another characteristic of better-adjusted youth. Furthermore, although there is evidence that youth from some ethno-cultural groups participate more in extracurricular activities than others (e.g., Bonneau, Ee, & Lauzon, 2006), and males and females participate in different types of activities at different rates (e.g., Nelson & Gastic, 2009), few studies explore both sex and ethno-cultural differences in the outcomes linked to participation. Thus, existing research on activity participation does not adequately assess the potential benefits of extracurricular activities for different groups of youth over time.

This thesis describes a study examining the relationship between extracurricular activity participation and “doing well” – operationalised here as the positive psychological and social outcomes of general wellbeing, social support, life satisfaction, school and community connectedness, and lower negative affect – for different groups of young New Zealanders over a three year period. These young people (or “youth” – these terms are used interchangeably in this thesis) were aged between 9 and 17 during the course of the study, and groups of youth were differentiated by their sex and ethno-

cultural identification. By using longitudinal data and propensity score matching techniques, the study provides strong evidence for a causal relationship between participation and positive outcomes, but this relationship appears to differ in strength across different groups of youth and across different activity types. The obtained findings are consistent with, but also build upon, previous studies in this area, and help provide a better understanding of the impacts of activity participation for young people in Aotearoa / New Zealand. Such an understanding has potential importance for shaping the policies around, and funding available for, such activities in the future.

The remainder of this introduction sets out the background and rationale for the present study. It begins by defining the scope of extracurricular activities, and examining theoretical explanations of the mechanisms through which extracurricular activities may relate to positive youth outcomes. Next, it reviews empirical data that lends support to these theories. It then highlights some limitations of previous research, including the lack of longitudinal research and limited investigation of ethno-cultural differences. The introduction concludes with a description of the present study, and a summary of the expected findings.

### **Defining extracurricular activity participation**

Broadly defined, extracurricular activities include any activities that fall outside the specified school curriculum. They may include both informal activities (such as spending time with friends or watching movies) and formal

activities (such as participation in clubs or organised teams). Key distinctions between the two are that formal activities are more structured and regulated, and are usually led by an adult or experienced mentor, whereas informal activities are less structured and may involve spontaneous and fluid groupings and conventions (Engel-Yeger, Jarus, & Law, 2007).

While both informal and formal extracurricular activities are important in young people's lives and have the potential to influence their development, the focus of this study is on formal activities. In particular, this study focuses on the role of community-based extracurricular activities – those that are organised outside of school time, and generally take place beyond school grounds. School-based extracurricular activities may be run by teachers or other school staff, and in some cases may be direct extensions of classroom activities (e.g., academic clubs). In contrast, community-based extracurricular activities are generally run by leaders from other community organisations, and are unlikely to have direct links to school curricula. Thus, community-based extracurricular activities may provide youth with a set of networks and site of leisure and learning that is quite separate from the school environment. This difference makes them an interesting and distinctive activity setting to study (O'Donnell, Tharp, & Wilson, 1993).

### **Theories concerning the association between activity participation and positive outcomes**

Research into the role of school or community-based extracurricular activities in young people's lives is not entirely new – several prominent

developmental theorists have posited that activity participation can have a significant influence on young people's psychological and social outcomes. However, the posited nature of this influence differs according to the theoretical model used to discuss participation. Two key theoretical models evident in activity participation literature are the "zero-sum" or displacement model of participation (e.g., Coleman, 1959, cited in Marsh, 1992), and the positive youth development model (e.g., Larson, 2000).

Under the zero-sum model of participation, extracurricular activities are seen as a direct substitute for other activities that young people may focus on; thus, extracurricular activities may displace other activities that are important for healthy youth development. This model assumes that if young people spend more time on extracurricular activities they will spend less time with their families, or focusing on their school work, or engaging in other positive behaviours. As a result, this model predicts that higher extracurricular activity participation should be associated with, for example, poorer academic outcomes (Coleman, 1959, cited in Marsh 1992) or even inadequate levels of sleep (Dorofaeff & Denny, 2006).<sup>1</sup>

---

<sup>1</sup> Although their investigation provides little support for the zero-sum model, in their conclusion Dorofaeff and Denny propose that "[a]s significant numbers of young people are not getting the amount of sleep required [...] parents and health professionals should consider the amount of extra-curricular activities that students are engaging in, especially part-time employment, and the potential impact this may have on the adequacy of their sleep" (2006, p. 519).

However, a variation of the zero-sum model acknowledges that, in some cases, extracurricular activities may displace anti-social or risky activities (rather than positive activities), and thus have apparently beneficial effects (e.g., Fredricks, et al., 2002). Importantly, in its simplest form this view implies that youth participating in extra-curricular activities do not necessarily “do better” (i.e., participation does not foster positive development); rather, they may, depending on which activities the extracurricular involvement displaces, simply avoid the negative consequences accruing to those who engage in dysfunctional behaviours. For instance, unstructured and unsupervised time use (such as hanging out with friends at malls, etc.) has been associated with a range of problem behaviours (Barnes, Hoffman, Welte, Farrell, & Dintcheff, 2007); extracurricular activity participation may replace at least some of this unsupervised time use with supervised time use, resulting in fewer negative, but not necessarily more positive, outcomes.

In contrast, the positive youth development model (Dworkin, Larson, & Hansen, 2003; Hansen, Larson, & Dworkin, 2003; Larson, 2000) sees activity participation as inherently beneficial for youth, with more participation predicted to lead to more beneficial outcomes. Under this model, the proposed benefits of extracurricular activities are multi-dimensional, and fall broadly into two categories (Larson, 2000): they enhance young people’s personal attributes (through building their initiative, sense of identity, and abilities in emotional regulation); and they improve young people’s

interpersonal abilities (through building team work skills, positive peer networks, and “social capital”).<sup>2</sup> Extracurricular activities can offer such benefits because they provide youth with challenges, thereby promoting personal growth (and a sense of self-efficacy – as described by Bandura’s (1986) Social Cognitive Theory) when these challenges are tackled and overcome. Generally, these activities are also formally organised and supervised, providing youth with structure, exposure to societal norms (e.g., Youniss, Mclellan, Su, & Yates, 1999), and positive role modelling (also an important aspect of social learning in Social Cognitive Theory). Finally, extracurricular activities are often social activities, providing youth with opportunities to work in teams and build networks with other youth and adults (e.g., see Eccles & Barber, 1999). Together, these three key aspects of extracurricular activities fit into an ecological model of influence in young people’s lives, with participation in extracurricular activities seen to expose youth to new activity settings and social networks over an extended time frame, thereby “changing relationships, displacing existing activities, and redistributing and transforming resources” (Hawe, Shiell, & Riley, 2009, p. 267).

Because the participation-related personal and interpersonal attributes and skills emphasised by positive youth development theorists are quite

---

<sup>2</sup> Here, social capital is meant in the sense introduced by Bourdieu (1977), i.e. as a set of personal resources arising from a positive network of instrumental relationships within the community.

broad – that is, they are not specific to abilities in a particular activity “type”, such as playing a musical instrument – they are likely to be applicable across a range of life domains. Thus, positive youth development theorists expect the benefits of activity participation to be evident on several outcome variables, ranging from holding a positive self-concept (Blomfield & Barber, 2009), to manifesting a resistance to experiencing depression (Mason, Schmidt, Abraham, Walker, & Tercyak, 2009), to performing well in school (Larson, Hansen, & Moneta, 2006). These effects may in part be mediated by activity participation’s role in enhancing young people’s identification with, or sense of connection to, their peers, communities, and schools. For example, Dotterer, McHale and Crouter (2007) invoke a participation-identification model in hypothesising the role of extracurricular activity participation in increasing school-related competencies and sense of identification with school, manifested in a higher likelihood of completing high school.

The broad scope of predicted participation benefits (influencing both specific skills and more general personal attributes) also suggests that some benefits are likely to be long-lasting. In particular, Youniss et al. (1999) propose that because extracurricular activities play a role in shaping individual identity at a critical stage in young people’s lives, the effects of participating in such activities should be evident not only during and immediately after participation, but also over the following years. Taking a similarly long-term perspective, Eccles and Barber (1999) propose that young people’s activity participation profiles strongly influence (and, conversely, are



also influenced by) their peer groups and sense of identity – factors that, in turn, serve to shape their ongoing developmental pathway.

It is important, however, to consider the broader context in which activities take place, and the differential impact that activities may have on youth from different backgrounds. For instance, drawing from Bronfenbrenner's (1979) bio-ecological systems theory, it is likely that there are complex interactions between neighbourhood assets or context and the rate and type of extracurricular activity participation within those neighbourhoods, which can both individually and together affect youth outcomes (Mason, et al., 2009; Urban, Lewin-Bizan, & Lerner, 2009). One implication of this interaction is that, if participating in extracurricular activities involves increased community involvement, this could be beneficial for youth in a supportive and well-resourced community, but potentially detrimental for those in violent or dangerous communities (Urban, et al., 2009).

Other aspects of extracurricular activities may also be potentially harmful for young people. For instance, Gardner, Roth, and Brooks-Gunn (2009) propose that activities focused on sports may reinforce patterns of aggression, particularly among young males. Hansen et al. (2003) also suggest that the character-building aspects of sporting involvement may at times be outweighed by the "character challenging" aspects, particularly if the sport is highly competitive and evokes stress. They further theorise that, in such

environments, the activity coach can be an important mediator of positive or negative outcomes.

Some developmental theorists also suspect that excessive time commitments required by extracurricular activities may lead to negative outcomes – an important variant on the positive youth development model known as “the over-scheduling hypothesis” (also referred to as the “threshold model” (Marsh & Kleitman, 2005). This hypothesis predicts neutral or negative outcomes from extracurricular activity participation above a certain “maximum benefit” level or threshold (although, as Marsh and Kleitman note, there is little consensus over where this threshold lies). The hypothesis accepts that some participation in extracurricular activities may be beneficial for youth, but, like the zero-sum model, also assumes that extracurricular activity participation (if sufficiently time-consuming) will displace other beneficial activities in young people’s lives.<sup>3</sup> Thus, the over-scheduling hypothesis predicts that *high* levels of extracurricular activity participation would be related to poorer psychological and social outcomes for youth, because of the combination of decreased time on other beneficial activities and increased stress related to high activity participation loads.

---

<sup>3</sup> Mahoney, Harris, and Eccles (2006) further suggest that the over-scheduling hypothesis assumes that youth are chiefly motivated to participate in extracurricular activities because of the social and material rewards that they are told (often by parents and teachers) such activities will bring, rather than for more intrinsic benefits; and that they may consequently feel pressured to devote considerable time to these activities.

### **Evidence for an association between activity participation and positive outcomes**

In line with the positive youth development model predictions, past studies on youth participation in extracurricular activities have found participation to be associated with a range of positive outcomes. Eccles and Templeton (2002), Feldman and Matjasko (2007), and Shulruf, Tumen, and Tolley (2008) all provide good summaries of this literature. In general, benefits of participation have been found in three broad areas related to young people “doing well”: school performance, psychological outcomes, and social outcomes. However, some specific activity types are also linked to negative outcomes in these domains.

Because many studies have focused on *school*-based extracurricular activities, they have often tested outcomes related to school performance. For instance, participation in these activities has been associated with having an enhanced academic orientation (e.g., Denault & Poulin, 2009b); with achieving higher scores on standard tests and higher grades (e.g., Cooper, Valentine, Nye, & Lindsay, 1999; Luthar, Shoum, & Brown, 2006); with lower school dropout rates and more successful careers following school (e.g., Eccles, et al., 2003; Zaff, et al., 2003); and with late high school and post-school academic success and occupational status (Marsh, 1992). Contrary to the expectations of the zero-sum model of participation, Dotterer et al. (2007) found that youth who spent more time on extracurricular activities did not spend any less time on homework than non-participants; furthermore, these youth reported

higher school self esteem and school bonding. Marsh and Kleitman (2002) found a similar relationship between activity time and academic achievement, but noted that only time in *school*-based extracurricular activities was significantly associated with higher achievement; time in community-based activities, conversely, was associated with lower achievement. This suggests that community activities may be less relevant for school achievement, may tend to attract students who are less interested in or successful at school, or may be associated with lower levels of time spent on school work (in line with the zero-sum model).

Other studies have focused on outcomes that are less school-specific, and more related to doing and feeling well in a range of life situations. These studies have suggested that activity participation may serve both to bolster positive psychological outcomes and to protect against negative psychological outcomes, with the result that “the wellbeing of youth who do not participate in organized activities is reliably less positive compared to youth who do participate” (Mahoney, et al., 2006, p. 22).

For example, several researchers have identified apparent benefits of participation on affect and esteem-related psychological outcomes. In particular, Blomfield and Barber (2009) found that youth who participated in extracurricular activities not only had a more positive self concept in academic domains, but also in social and general (self worth) domains. Similarly, Kort-Butler and Hagewan (2010) recently documented a positive

relationship between participation in school-based extracurricular activities and higher adolescent self esteem.

In contrast, some researchers have looked at negative, rather than positive, psychological outcomes, and explored whether participation may be a protective factor. For instance, Mason et al. (2009) found that activity participation was negatively correlated with depression, and proposed that, alongside good family relationships, participation could serve to buffer youth against negative influences on their mental health.

Youth who participate in extracurricular activities also appear to do better on a range of social outcomes related to pro-social behaviour and positive relationships. For instance, in a longitudinal study documenting youth participation in various extracurricular activities, McGee, Williams, Howden-Chapman, Martin, and Kawachi (2006) found positive effects of participation not only on self-reported strengths but also on levels of attachment to parents and peers. These effects were evident in the years proximal to participation (in early adolescence), and persisted through to early adulthood, suggesting a continuing legacy of benefits from participation. Similarly, in another longitudinal study, Denault and Poulin (2009a) found that participation in extracurricular activities in adolescence was linked with greater civic engagement in later life, including more altruistic views, commitment to civic life, and support for environmental sustainability. Distinguishing between different types of activities, Gardner, Roth, and Brooks-Gunn (2008) found that participation in both school- and

community-based extracurricular activities during school years predicted a higher likelihood of voting, volunteering, and completing higher education after school; school-based extracurricular activities additionally predicted greater likelihood of employment and higher income.

Participation also appears to have protective effects against some anti-social (delinquent or risky) behaviours – for example, Barnes et al. (2007) found that young people who spent more time on sports engaged in less smoking and illicit drug use, and those who spent more time participating in other extracurricular activities and hobbies were less likely to engage in potentially risky sexual activity. In a longitudinal study Barber, Eccles, and Stone (2001) found that students who had participated in community service activities later reported significantly lower alcohol and drug consumption (and also higher self esteem) than students who had not participated in such activities.

However, not all of the social outcomes associated with activity participation have been positive. For example, participation in sports activities has been associated with higher alcohol consumption (B. L. Barber, et al., 2001; Eccles & Barber, 1999) and binge drinking behaviour (Barnes, et al., 2007), and – for contact sports, in particular – with higher levels of physical violence in young males (Kreager, 2007). Larson et al. (2006) also found that participants in sports activities were more likely to report exposure to negative peer dynamics.

*Comparison with other types of activities*

The above findings suggest that participation in extracurricular activities has clear benefits compared to non-participation. But are these activities any better for youth than alternative uses of their time? Some researchers have sought to answer this question by comparing the outcomes associated with extracurricular activity participation with those of other informal, out-of-school activities, and have found that extracurricular activities are indeed more beneficial. For example, looking at the hours youth spent on different activities, Dotterer et al. (2007) found that time spent watching television was negatively related to school self esteem and school bonding (though the latter applied only for boys), while time on extracurricular activities was positively related to these positive outcomes.

In a study investigating how experiences in extracurricular activities differed from those in other activity settings, Hansen et al. (2003) found that, compared to activities such as “hanging out with friends” or being in class at school, young people in extracurricular activities reported a greater range and frequency of positive experiences. This included having more experiences in which they had to use their initiative; engaging in more exploration of / reflection on their sense of identity; learning more skills related to emotional regulation, physical activities, group processes, and leadership; developing more pro-social norms; and establishing more community and work or college links. When participating in extracurricular activities, youth also reported experiencing less stress than they did in academic classes, and less

negative peer interactions than they did when just hanging out with friends. These findings provide direct support for the mechanisms of benefit proposed by the positive youth development model.

A similar study by Larson et al. (2006) broke extracurricular activities down into six domains (sports, performing and fine arts, academic clubs, community-oriented activities, service activities, and faith-based youth groups), and found that each domain type appeared to be associated with different benefits for youth relative to being in class, working in a job, or hanging out with friends. Among the study's findings was that community, service, and faith-based activities had particular benefits in terms of providing youth with access to social factors such as positive adult networks, while sports and arts activities were linked with personal growth factors such as building initiative.

### *Differential outcomes for different rates of participation*

Another important question for researchers has been if, when it comes to extracurricular activity participation, more is better. Although the positive youth development model suggests that higher levels of participation should be associated with greater benefits, a study by Marsh (1992) found evidence of a quadratic relationship between greater total participation in extracurricular activities and some social and academic outcomes. This relationship indicated a tail-off in benefits for youth who were participating in many activities (particularly for those who were five standard deviations or more above the mean level of participation).



Some studies have even suggested that greater levels of participation in extracurricular activities are associated with *negative* outcomes. For example, Harrison and Narayan (2003) found that although youth who participated in extracurricular activities had an overall pattern of better outcomes than those who did not,<sup>4</sup> for youth specifically involved in a combination of sports and non-sports activities (indicating a greater breadth of participation) the opposite held true: these youth were *more* likely to engage in negative behaviours than non-participants. Nelson and Gastic (2009) recorded a similar finding for students with a wide breadth of activities: these participants had high rates of reported victimisation, and a lower than expected percentage of students in the highest academic achievement quartile. The authors suggest that these students may have been over-extended by their participation in multiple activity types.

However, other studies have not found such relationships. For instance, Denault and Poulin (2009b), Fredericks and Eccles (2006b), and Hansen et al., (2003) all found that both greater breadth (larger number of activities of different types) and greater intensity (larger number of hours per week on activities overall) of participation were associated with more positive outcomes.

---

<sup>4</sup> Specifically, non-participants were more likely to engage in anti-social behaviours (such as substance use, truancy, and fighting), and less likely to engage in healthy behaviours or positive outcomes (such as frequent exercising, good nutritional practices, positive self esteem, and perceptions of others caring).

Furthermore, it appears likely that few youth participate “too much” – the majority are involved in only a small number of activities, and spend only a moderate amount of time in total on these activities. For example, Mahoney et al. (2006) found that American youth in their sample averaged only five hours per week on extracurricular activities (a little more than they spent on household chores, but less than they spent on watching TV or playing video games).<sup>5</sup> Hansen and Larsen (2007) estimated that less than five percent of students participate at the high levels that may be related to decreasing benefits, and did not find any evidence of a quadratic relationship in the benefits of activity participation up to “10 +” hours per week. Thus, in line with the over-scheduling hypothesis, it may be the case that beyond a relatively high threshold the benefits of participation do drop off, but few young people may reach this threshold.

### *Implications of evidence for theory*

Overall, the observed pattern of outcomes associated with participation in extracurricular activities appears to support a positive youth development model, in which activity participation is associated with a range of benefits. There is also some evidence in support of the over-scheduling hypothesis, with less beneficial, and even negative, outcomes being associated with higher intensity or breadth of participation. However, the group of adolescents affected by such “over scheduling” appears to be small and

---

<sup>5</sup> These authors further noted that although time spent in activities did increase as adolescents aged, it only rose to levels above 20 hours per week for five percent of the sample.

specific (i.e. limited to the few who are spending large amounts of time in large numbers of different activities). Furthermore, it may be the case that many youth learn time management skills through their participation in extracurricular activities, and that with ongoing participation they become better able to manage stresses and pressures, decreasing the likelihood of feeling overburdened (Dworkin, et al., 2003). Thus, over scheduling may not be a major concern relative to the general benefits of extracurricular activity participation.

### **Limitations of past research**

As a summary of recent literature on activity participation reveals, some important aspects of theory remain untested. For instance, despite the substantial number of studies linking participation in extracurricular activities to positive outcomes, there is limited evidence that the association between participation and these outcomes is causal. Furthermore, differences in the relationship between participation and outcomes for different groups of youth have not been well explored.

#### ***Cross-sectional data and selection effects***

Amongst the many studies on activity participation and youth outcomes, only a few have taken a longitudinal approach. Those that have are able to lend some important insights into potential causal relations between activity participation and positive outcomes, as well as to some of the early factors that influence activity participation (i.e. selection effects), which warrant further investigation. For instance, a longitudinal study by Denault

and Poulin (2009a) studied the predictive effects of individual (psychological), peer, and family factors on growth curves in adolescent activity participation. They found that although participation in activities was relatively stable over time, initial participation levels were positively predicted by factors such as having friends who participated and coming from higher income homes.

Another longitudinal study by McGee et al. (2006) was able to identify significant path models between predictors and outcomes over a twenty-year period. These researchers found that children from families with an “active-recreational” orientation or an “intellectual-cultural” orientation were more likely to participate in “sports” and “cultural/youth” groups in adolescence, and that activity participation was positively related to greater levels of self-perceived strengths and greater attachment to parents, friends, and school in later school years and early adulthood.

Similar types of activity participation were assessed in another longitudinal study by Barber et al. (2001). Using a repeated-measures MANCOVA design, controlling for maternal education, the researchers found that participating in different types of activities was positively associated with different positive outcomes at later time points. For instance, prosocial activities predicted lower substance use and higher self-esteem, participation in the performing arts predicted more years of education and a greater likelihood of college graduation, and participation in sports predicted positive educational and occupational outcomes and lower levels of social isolation.

Despite these promising insights from longitudinal studies on both the predictors of and outcomes from extracurricular activity participation, the majority of studies exploring links between extracurricular activity participation and youth outcomes have relied on cross-sectional data (e.g., Blomfield & Barber, 2009; Dotterer, et al., 2007; Feldman & Matjasko, 2007), enabling researchers to identify correlations, but precluding any causal conclusions. This is concerning for those wishing to persuasively demonstrate the benefits of extracurricular activity participation. For instance, it may be the case that causality works in the reverse direction (i.e., youth who score better on a range of outcomes may be more likely to participate in extracurricular activities, making participation the “result”, rather than cause, of good outcomes). Alternatively, there may be external factors either directly or indirectly influencing both participation rates and outcomes. For example, variables such as socio-economic status (SES) may have two separate effects: firstly, rendering youth with a high SES more likely to participate in activities than those with a low SES (e.g., as found by Denault & Poulin, 2009a; McGee, et al., 2006) – a mechanism that may act through direct factors such as better access to facilities and equipment); and secondly, rendering youth with a high SES (through separate mechanisms, such as better education or more stable family structures) more likely to return higher scores on a range of outcome variables. Thus, participation and outcomes may both co-vary with SES, but not be directly causally related. Simple correlations may also misrepresent the complex relationship between participation and outcomes.

Feldman and Matjasko (2005) have observed that participation in extracurricular activities “is not as voluntary as generally thought” (p. 201); rather, it is embedded in a broader social ecology. This ecology includes parents, who may vary in their levels of support and pressure for youth to participate (Mahoney, et al., 2006; Shannon, 2006); the school and wider community, which may provide more social and financial support for some activities (e.g., sports) over others (Hansen, et al., 2003); and broader social norms, which may establish expectations for the kinds of activities young people should be involved in (including different expectations according to gender (Engel-Yeger, et al., 2007)). All of these ecological factors can influence how young people make decisions, interacting with their individual levels of motivation (which may be linked, for instance, to their personal levels of arousal and sensation-seeking proclivity (Gordon & Caltabiano, 1996) and intentions to engage in activities (in line with the theory of planned behaviour, which links individual attitudes towards participation, subjective norms, and perceived behavioural control with actual leisure behaviours (Ajzen & Driver, 1992) to determine how likely they are to participate in extracurricular activities.

These “selection effects” (i.e., factors increasing the likelihood of both participation and positive outcomes) pose a significant limitation in past research on various adolescent time uses and outcomes (Marsh & Kleitman, 2005). Without controlling for selection variables, it is difficult to determine how much of a given outcome – if any – is directly attributable to

participation in extracurricular activities. Even the handful of existing longitudinal investigations on extracurricular activity participation have included only limited controls for important ecological factors (e.g., Denault and Poulin (2009a) controlled only for SES, sex, and initial participation intensity, but not other time uses or background variables). Thus, ongoing research into activity participation could benefit from controlling for a greater range of selection effects, as well as focusing on longitudinal, rather than cross-sectional, data.

### *Lack of recognition for youth heterogeneity*

Past research has also provided limited insights on how consistent the apparent benefits of extracurricular activity participation are across different groups of youth. A key reason for this is that many studies have used samples that are biased towards majority groups. For example, although Nelson and Gastic's (2009) comprehensive study on extracurricular activity participation drew from a nationally-representative dataset, their exclusion of cases with missing data resulted in their sample under-representing ethnic minorities such as Latino, African Americans, and Pacific Islanders. Furthermore, even though theory predicts that there should be differences in participation profiles, experiences, and outcomes between different groups of youth, few studies with more representative and diverse samples have actually explored this heterogeneity.

*Theories behind participation differences*

There are several reasons for expecting participation differences across different groups of youth. Firstly, participation *profiles* (i.e., types and number of activities engaged in) are likely to differ across youth because of selection effects linked to their group characteristics. For instance, as discussed earlier, youth with lower SES may be less likely to participate in certain types of activities due to SES-related factors such as access to facilities and equipment or the value their families and communities place on certain extracurricular activities. Illustrating this link, Eitle and Eitle (2002) suggest that youth with fewer educational resources at home (a frequent concomitant of lower SES) may be more likely to perceive greater benefits in participating in activities such as sports groups than in exerting themselves in academic activities, as the former present them with a more tangible route to social mobility. Similarly, youth from different ethno-cultural groups may place higher value on certain activities than others, or find some activities difficult to access due to language or cultural factors (Nelson & Gastic, 2009). Even between different sexes (both within minority groups, and more generally) there are likely to be differences in participation profiles – as Eder and Parker (1987) discuss, societal messages surrounding the acceptable roles for girls and boys and for different ethno-cultural groups are often reinforced through schools (in textbooks, teachers' expectations, class streaming, etc.), influencing the way that young people interact and participate in activities both within the school grounds and in the broader community.



Secondly, even when they do participate in the same kinds of activities, there are a number of reasons why youth with different SES and from different ethno-cultural groups may have different *experiences*. One reason relates to their group's relative minority or majority status in society, which affects their degree of "cultural capital" (Bourdieu, 1977)—that is, how closely these youth reproduce the patterns of behaviour and attitudes held by the majority social groups. Social Reproduction Theory suggests that youth with greater cultural capital (predominantly, majority youth) will be rewarded more in mainstream institutional settings, which may include the settings of extracurricular activities; thus, these youth may benefit more from participating in activities than youth who, for economic and historic-social reasons, are relatively marginalised (Eitle & Eitle, 2002). Another formulation of this thesis is that youth from majority groups may have cultural values that are more consistent with those being propagated by the various extracurricular activities, which, like schools, serve as a venue for socialisation and the transmission of cultural beliefs (Larson & Verma, 1999). Thus, for these majority youth, participation may be belief affirming and lead to more positive psychological outcomes, whereas for youth from other (marginalised / minority) cultural groups participation may elicit dissonance.

However, other theories suggest that *marginalised* youth are more likely to benefit from certain types of extracurricular activity participation than majority group youth. For instance, at-risk youth may particularly benefit from participation in structured and supervised groups because these

activities provide them with experiences and behavioural settings that are not available elsewhere in their lives (e.g., Denault & Poulin, 2009b). Thus, although youth from more privileged backgrounds or with less risky behaviour patterns may still benefit from activity participation, they may benefit less than at-risk youth because their levels on variables such as wellbeing, connectedness, and pro-social behaviour are already relatively high. In a similar vein, Baker (2008) suggests that minority group youth may particularly benefit from participation in extracurricular activities linked to religious organisations, because these activities are likely to help with building a sense of self worth and connectedness to a broader community, which may be less salient in other aspects of the marginalised young person's life (compared to the lives of majority youth). Within the Aotearoa / New Zealand context, Te Rito (2007) suggests that participating in an extracurricular activity such as rugby can be particularly beneficial for Māori youth (who form an ethno-cultural minority relative to New Zealand European / Pākehā) because it provides them with "something to believe in, value or something they can excel in...[and with] teaching and learning opportunities including leadership" (p. 124), and because performance in rugby is generally highly valued in Aotearoa / New Zealand.

#### *Evidence of participation differences*

In line with these theoretical predictions, several studies have reported differences in participation rates among different groups of youth. For instance, there is evidence that overall activity participation rates are lower

for youth from ethno-cultural minorities, including Hispanic youth (Feldman & Matjasko, 2005, 2007; Nelson & Gastic, 2009; White & Gager, 2007) and Latin American, American Indian, and African American youth (grouped as “students of color” (Harrison & Narayan, 2003) in the United States, and indigenous youth in Canada (Bonneau, et al., 2006). However, participation in *some* types of activities appears to be higher for these youth – in particular, research has suggested that males from minority ethno-cultural groups in the United States participate more in sports (Baker, 2008; Eitle & Eitle, 2002), and that Māori and Pacific youth in Aotearoa / New Zealand participate more in sports (for fun or competitively), as well as cultural, church, music, or religious activities (Crooks, Smith, & Flockton, 2008; Wylie, Hipkins, & Hodgen, 2008).

Participation rates also appear to vary by gender. Feldman and Matjasko (2005) concluded from their review of multiple past studies that boys were less likely than girls to participate in all types of extracurricular activities, apart from sports. In a later study, they found that a majority of males participated in either sports activities only (34.7%) or a combination of sports and other activities (33.1%), while nearly a quarter participated in no activities at all; a similar but slightly lower proportion of females reported non-participation, but a higher proportion participated in performance activities (9%) or a combination of sports and performance or other activities (53.5%), and fewer (10%) participated in sports alone (Feldman & Matjasko, 2007). Consistent with these findings, Denault and Poulin’s (2009a) study on

time spent in various extracurricular activities found that boys spent more time on sporting activities than girls, while girls spent more time in arts-based activities than boys. Wylie et al. (2008) reported a similar pattern of males participating more in sports, and females more in other activities, in Aotearoa / New Zealand: from their study into a range of school-based extracurricular activities they found that females were more likely to take part in or attend musical and other performances, or join debating teams, while males were more likely to captain a sports team.

Interestingly, such differential gender patterns may not hold across all ethno-cultural groups. For instance, in a study focusing exclusively on African-American youth, Dotterer et al. (2007) found no evidence of differences between males and females on time spent on a range of informal and formal out-of-school activities (except for homework, on which girls reported spending more time). However, they did find some evidence of differences in associations between time use types – for example, for girls (but not boys), spending more time with friends was associated with spending less time doing homework, indicating a potential substitution effect.

There is also evidence of differences in participation levels according to potential selection factors such as location and SES. For instance – following the seminal work of Barker and Gump (1964) showing how smaller schools can create “under-manned” environments in which there is relatively greater encouragement for students to be involved in (and less competition to join) school-based extracurricular activities – several studies have reported lower

overall rates of participation in extracurricular activities, and notably fewer students participating in *multiple* activities, in larger and more urban schools (e.g., Feldman & Matjasko, 2007; Marsh, 1992; McNeal, 1995). Overall participation rates and numbers of students participating in multiple activities also appear to be lower among youth from lower SES backgrounds (e.g., Feldman & Matjasko, 2007; Youniss, et al., 1999). Looking at variables linked to SES, other studies have found lower participation rates among youth from single-parent homes (Harrison & Narayan, 2003; White & Gager, 2007), and youth from families with lower maternal qualification (although youth in these families did tend to participate more in informal or formally-organised sports – Wylie, et al., 2008).

It is worth noting, however, that low extracurricular activity participation rates among certain groups of youth do not indicate that they are totally “uninvolved” – for instance, Nelson and Gastic (2009) reported that when they included a range of both structured extracurricular activities and unstructured activities (such as casual sports or physical activities organised among youth) in their list of possible time uses, all the youth in their study reported substantial levels of activity. However, they also noted some evidence of differences in opportunities and preferences for different activities based on sex, SES, ethno-cultural group, and school location.

In contrast to this relatively substantial evidence on different *rates* of participation in extracurricular activities among different groups of youth, few studies have explored differences in the *effects* of participation for

different groups of youth. Nevertheless, there is some initial evidence that some youth benefit more than others from participation. Some of this evidence suggests that only majority group youth benefit from participation; for example, Feldman and Matjasko (2005) reported that the participation benefits they observed for European American youth (particularly pertaining to school achievement) did not hold for African American youth. Looking specifically at females, Chambers and Schreiber (2004) noted that the participation in extracurricular activities was consistently associated with better academic scores for European American and Asian or Pacific Island girls, but not for girls who identified as African Americans or Latinas. A similar pattern may hold for boys: Eitle and Eitle (2002) observed that participation in lower status sports (i.e., sports other than football or basketball) was associated with higher grades for European American, but not for African American, male students.

Other evidence suggests that *both* majority and minority group youth benefit, but in different ways. For instance, in an interesting study on participation intensity, Mahoney et al. (2006) found that high overall levels of extracurricular activity participation were related to different outcomes in European American and African American youth. African American youth who reported high levels of participation in activities spent less time with their parents and had lower reading achievement scores compared to youth with moderate or low levels of participation—and even compared with youth who did not participate in extracurricular activities at all. In contrast, for

European American youth the outcomes associated with extracurricular activity participation became increasingly positive as levels of participation increased (or in some cases levelled off at high levels of participation, but did not decrease). There is also some evidence of an *interaction* between ethno-cultural group and activity type: for example, in a study of Latin American and African American youth, Baker (2008) found that participation in sports activities was negatively related to grade point average in college for Latin American females, but not males or African American females.

In contrast, other studies have found evidence of benefits for minority group or marginalised youth, but not majority youth. For example, Fischer (2007, cited in Baker, 2008) found a positive relationship between participation in extracurricular activities and school grades for students from minority ethno-cultural groups, but not for European Americans.

Looking at marginalisation related to SES, Marsh (1992) found that youth with lower SES appeared to benefit more from activity participation than youth with higher SES. In a similar vein, Urban et al. (2009) reported that girls living in “low asset neighbourhoods” (i.e., with low SES) benefited from extracurricular activities, while girls in neighbourhoods with higher SES showed increasing levels of risky behaviour as they participated more in extracurricular activities. Interestingly, and contrary to the researchers’ expectations, this pattern of results was reversed for boys.

Finally, looking at marginalisation in terms of existing risk, Mahoney, Cairns, and Farmer (2003) found evidence that consistent participation in

extracurricular activities over the course of several years was beneficial for all youth, but more so for those youth who had been categorised as “at-risk” (related to showing more aggressive behaviour and being isolated from peers). Specifically, at-risk youth who participated in extracurricular activities over multiple years showed greater subsequent interpersonal competence and educational achievement and aspirations than non-participants.

However, not all researchers investigating ethno-cultural group as a moderator of benefits have found evidence of inter-group differences. For example, in a study exploring the relationship between activity participation and youth depression, Mason et al. (2009) found that participation served as a protective factor for all youth, with no differences between ethno-cultural groups. Similarly, in a study of youth experiences in extracurricular activities, Hansen et al. (2003) found no differences between ethno-cultural groups, although they did find a sex difference, with females reporting fewer negative experiences relating to participation than males.

Nevertheless, both theory and evidence suggest that it is important to consider the possibility of inter-group differences when investigating the benefits of participation. The failure of many past studies to do so leaves some gaps in our understanding of the roles of activity participation in varied cultural settings.

### **The present study**

In order to address some of these limitations in past research, and expand on existing knowledge in the field, the study presented in this thesis



aimed to investigate the links between participation in community-based extracurricular activities and general youth wellbeing, affect, and connectedness in a culturally diverse sample of New Zealand youth.

### *Key measures*

For this study, *wellbeing* was conceived of as a multi-faceted measure of “doing well”, incorporating several elements of positive psychological functioning, including positive subjective wellbeing and life satisfaction, and related constructs such as perceived social support. As discussed earlier, past studies have suggested a relatively robust link between participation and wellbeing, although most have focused on individual components of wellbeing rather than an overall measure. Thus, a key aim of this study was to assess any global effects of participation on wellbeing.

Another key variable for this study was *affect*, which has both negative and positive dimensions. Positive affect forms one important component of overall wellbeing, and thus was assessed as part of the wellbeing variable. Negative affect, on the other hand, is a key symptom of depression. Past studies have suggested that negative psychological outcomes are reduced through participation in extracurricular activities; an association which may be partially mediated or indicated by a reduction in negative affect. Accordingly, this study investigated whether patterns of association between activity participation and negative affect differed from those for overall wellbeing.

Finally, the third key outcome variable for this study was *connectedness*, which was conceived of as a measure of relationships with others that provide youth with a sense of belonging and a source of positive interactions (B. K. Barber, Stolz, & Olsen, 2005). These key “others” in young people’s lives can be grouped into four contexts: families, peers, schools, and communities (Jose, Ryan, & Pryor, (under review); Libbey, Ireland, & Resnick, 2002). Although connections with all of these contexts may potentially be affected by participation in extracurricular activities, this study focused on two areas for which the most robust data were available: school connectedness and community connectedness. Research has already indicated that participation in *school*-based extracurricular activities is significantly correlated with higher levels of school connectedness (Blum, et al., 2002). In contrast, understanding how participation in *community*-based activities influences young people’s sense of connection within both school and community domains is an important element of positive functioning that has not been well studied. Understanding the link between participation and connectedness may also help to identify a potential route through which ongoing positive outcomes may be mediated. For instance, past research has suggested that higher community connectedness is associated with more enjoyment of life, better coping abilities, and greater scholastic competence and sociability in young people (Chipuer & Pretty, 1999) – positive outcomes that are similar to those linked with activity participation.

The community-based extracurricular activities investigated in this study were grouped into sports-only activities, arts and community group activities (non-sporting), and mixed activities (a combination of sports and arts or community group activities). Similar groupings of activities have been used in previous studies (e.g., Blomfield & Barber, 2009; Denault & Poulin, 2009b) to capture the broad areas of participation relevant to most youth. Comparing sporting activities to other types of activities is particularly relevant in the New Zealand context, where sports are widely promoted and participation is especially encouraged during school years (SPARC, 2008).

#### *Distinctive features of this study*

There are several features that distinguish this study from past research. These features relate to differences in the study sample, the activities examined, and the analytical methods employed.

Firstly, the majority of studies on extracurricular activity participation have focused on North American samples of youth, who may differ in important ways (including cultural values, schooling requirements, community opportunities, and peer influences) from youth in other countries. Furthermore, many studies have focused on limited subsets of youth within North America, failing to examine inter-group differences. By focusing on a multi-ethnic sample of youth in Aotearoa / New Zealand, this study not only tests whether past research findings are equally applicable in another country setting, but also explores important potential variations in the activity participation-outcome relationship – in particular, by examining differences

between three different ethno-cultural groups (Māori, New Zealand European (NZE) / Pākehā, and “Dual heritage” or bicultural Māori-Pākehā – three groupings identified by Ward, 2006). Understanding such inter-group differences is particularly interesting and important in the context of Aotearoa / New Zealand’s political and cultural climate. The government currently takes an active role in influencing the types of youth activities that schools and communities promote (e.g., through Sports and Recreation New Zealand (SPARC), a state-funded entity aimed at promoting and supporting sport and recreational activities), and thus needs to be aware of the degree to which different youth may be differentially affected by policies and promoted activities, especially in relation to broader societal goals of gender equality and positive multiculturalism.

Secondly, most past studies have focused on school-based extracurricular activities, which form an important context in young people’s lives, but do not necessarily capture their broader involvement in the community. This study focuses instead on community-based activities, which provide a distinct developmental domain from that experienced at school. The study also tests for differences between youth who participate only in sports or only in arts and community activities versus those who participate in a combination of activities.

Finally, this study adopts a particularly robust method. It involved the analysis of longitudinal data from a large sample of youth, and, when assessing the effects of participation on youth outcomes, it controlled for

variation both in initial levels of “outcome” variables among these youth as well as other contextual factors (socio-economic, demographic, and time use-related) that may have exerted selection effects for activity participation – thus helping to overcome key limitations of past studies focusing on single time-point correlations.

### *Research questions and predictions*

An initial goal of this study was to investigate whether rates and types of participation differed between different groups of youth in Aotearoa / New Zealand. Finding such differences could indicate that selection effects influencing participation were present. The second – and perhaps more significant – goal of this study was to investigate whether there were positive, longitudinal links between participation in community-based extracurricular activities and positive youth psychological and social outcomes, and whether these links differed across different groups of youth (differentiated by ethno-cultural group, type of community group participation, and sex).

With regards to rates and types of participation, I expected to find that more males than females participated in sports-only activities, and that more females than males participated in arts and community activities (e.g., as found by Feldman & Matjasko, 2005; Wylie, et al., 2008). I also expected – in line with Baker (2008), Eitle and Eitle (2002), and Wylie et al.’s (2008) findings that youth from minority ethno-cultural groups had higher sporting participation – that more Māori and Dual heritage youth than NZE / Pākehā youth would have participated in sports-only activities. Finally, I expected

that participation rates would differ according to school location and decile, with greater participation in rural areas (due to smaller community size and greater encouragement for individuals to be involved in community activities, in line with the findings of Barker and Schoggen (1973) and greater participation for youth from higher decile schools (due to higher family SES, as observed by Denault & Poulin, 2009a).

With regard to participation benefits, I expected to find that, overall, participation in any community-based extracurricular activity would be positively linked to more positive outcomes. Due to limited past research and theorising on inter-group differences in participation benefits, it was difficult to form specific predictions on how the relationship between participation and outcomes would vary between ethno-cultural groups and between males and females. However, a recent study by Fox (2010) using the present dataset found that Māori and Pacific Island youth who participated in cultural arts activities experienced more positive outcomes (particularly related to sense of ethnic identity, wellbeing, and overall connectedness) than those who did not participate in any cultural arts activities. Accordingly, I expected to find a similar relationship in my analyses, with participation in arts and community activities being linked to more positive outcomes for all youth (compared to youth not participating in arts and community activities), and also to more positive outcomes for Māori and Dual heritage youth compared to NZE / Pākehā youth.

## Method

To explore the research questions and test the predictions set out above, this study employed a quantitative approach, analysing data collected in the survey component of the Youth Connectedness Project (YCP) – a three year (2006-2008) longitudinal study of young people in Aotearoa / New Zealand.

### Participants

In total, 1774 young people participated in the survey component across all three years of the YCP. In Year 1 of data collection (2006) their ages ranged from 10 to 15 ( $M = 12.12$ ;  $SD = 1.73$ ). Approximately half of the participants were female (52%).

Participants indicated their ethnic identity by selecting one or more options from the following list: New Zealand European, Māori, Samoan, Cook Island, Tongan, Niuean, Chinese, Indian, Other.<sup>6</sup> Based on these participant-selected ethnic identity profiles, I derived three key ethno-cultural groupings of sufficient size for inclusion in this study, based on the three distinctive categories used by Ward (2006):

---

<sup>6</sup> It is interesting to note that self-identified ethnicity appeared to be fluid for some YCP participants. Such fluidity or mobility in ethnic identity in New Zealand has also been observed and discussed in detail by Carter, Hayward, Blakely, and Shaw (2009). Overall, 32% of participants changed their ethnic identity selections in some fashion across the three years of the YCP. Of these, 7 participants in Year 1, 34 in Year 2, and 44 in Year 3 did not select any ethnic identity option. Only 2 participants consistently omitted to select any ethnic identity option across the three survey years.

- New Zealand European (NZE) / Pākehā (participants who selected NZE only: n= 919 in Year 1 and 2; 953 in Year 3)
- Dual heritage (participants who selected both NZE / Pākehā and Māori, and may also have selected other ethnic identity options: n= 278 in Year 1; 293 in Year 2; and 298 in Year 3)
- Māori (participants who selected Māori only or Māori plus any another ethnic identity (or identities) *except* NZE / Pākehā: n= 172 in Year 1; 164 in Year 2; and 140 in Year 3).

Participants who selected any identity or combination of ethnic identities other than those indicated by the three groups above were designated as “Other” (n=398 in Year 1; 364 in Year 2; and 363 in Year 3).

In Year 1 of the YCP, all participants were attending one of 78 schools (including private schools, state schools, and kura kaupapa Māori – state schools where students are taught in the Māori language and in line with Te Aho Matua philosophy) in the North Island of Aotearoa / New Zealand.<sup>7</sup> By Year 3, 39 students were no longer at school: 28 participants had left school altogether and 11 were being home-schooled.

---

<sup>7</sup> Coverage areas included Wellington, Kapiti Coast, Wairarapa, Horowhenua, Taranaki, Hawke’s Bay, and Auckland.



Participants came from a range of socio-economic and geographical contexts, as indicated by their school location and decile.<sup>8</sup> The mean school decile for YCP participants was 5.2, with a range from 1 to 10, indicating that participants were nationally representative in this respect (the national mean being, by definition, 5, and the range being 1 to 10). Participants' geographical contexts were also roughly nationally representative: 59% came from schools in major urban areas, 16% from secondary urban areas, 21% from minor urban areas, and 5% from rural areas – similar to the national averages (Hattie, 2002), albeit with a slight over-sampling of “city” (major and secondary urban) participants.

### **YCP Design, Materials, and Procedure**

The aim of the YCP was to collect information on the nature of young people's connections to their families, schools, peers, and communities, and on how these connections affected aspects of their wellbeing. Information for the project was primarily gathered through an interactive survey administered through laptop computers (resulting in the dataset used for this study), but also through face-to-face interviews with a small group of participants.

---

<sup>8</sup> “Decile” refers to a one to ten ranking assigned by the New Zealand Ministry of Education, which is calculated from the average household income, education level, crowding, occupation, and degree of state income support of relevant households in the school's student intake area. Decile one schools are the ten percent of schools with the highest proportion of students from low socio-economic communities, and each subsequent decile represents the next ten percent of schools, with decile ten being the ten percent of schools with the lowest proportion of students from low socio-economic communities.

The full interactive survey comprised over 300 items, but participants were only presented with those that were applicable to them, as indicated by their responses to previous items (the survey was designed with skips and branches). Some survey items were adapted from existing scales, while others were generated specifically for the YCP. The Measures section below discusses the specific indicators analysed for this study in more detail.

To administer the survey, YCP researchers selected schools using a stratified random sampling approach. They then asked these schools to recruit students, and to obtain both student and parental consent for the students to participate over the three survey years. Once a year, from 2006 to 2008, researchers visited the schools to administer the survey to small groups of participants. Participants completed the survey individually on laptop computers, reading questions on the screen and indicating their responses by ticking options with the mouse or writing text using the keyboard. Each participant received a token gift of appreciation after completing the survey. More information on the survey sampling design and administration is available on the YCP website:

<http://www.vuw.ac.nz/youthconnectedness/index.aspx>.

## **Measures**

I analysed three sets of indicators from the YCP survey dataset: participant characteristic variables, time-use variables, and outcome variables. The following sections describe these selected variables, and indicate other variables that would have been of interest but that were excluded from

analyses due to high levels of missing data (as discussed further in the Results section) or low reliability.

### *Participant characteristic variables*

The first key set of variables used in this study related to participant demographic, socio-economic, and activity participation characteristics. For all three years of the YCP, adequate data were available for the following variables: ethno-cultural group (NZE / Pākehā, Dual heritage, Māori, or Other), sex (dichotomous male or female), age (in whole years), and community group participation type (sports only, arts / community, mix, or none). Analyses also included data on school decile (ranging from 1 to 10) and school location (urban, secondary urban, minor urban, or rural).<sup>9</sup>

The Participants section above describes the age, sex, ethno-cultural group, decile, and school location variables. For the purposes of my analyses, described in detail in the Results section, it was necessary to leave aside the

---

<sup>9</sup> Another demographic variable that has been strongly linked with extracurricular activity participation is school size: in larger schools, participation may be lower due to “overmanning” of activities, resulting in greater competition for places in activity groups, and less perceived encouragement to participate and personal reward from participating (Barker & Gump, 1964). However, an investigation of school size as a potential control variable for this study indicated that school size was moderately correlated with both school decile ( $r(1770) = .420, p < .01$ ) and school location ( $r(1770) = -.402, p < .01$ ), and thus did not add a significant source of new variation to the study. I deemed location to be a preferable indicator to school size because of this study’s focus on community-based, rather than school-based extracurricular activities, making the size of the community (which has also been linked with activity participation rates – Barker and Schoggen (1973)) more conceptually relevant than the size of the young person’s school.

ethno-cultural group Other, as this group of participants was too heterogeneous for meaningful conclusions to be drawn about them.

The community activity type variable was formed from data that participants provided to questions asking about the community activities in which they were involved. One section of the YCP survey asked participants if they belonged to a community group (yes or no). Participants who answered “yes” were then asked to select all applicable activities from a list of nine options, including “other”. From these responses, four groupings with adequate numbers for analysis emerged: sports (participants who indicated they belonged to a “sports group / club” or “marching” group), arts or community (for participants who indicated they belonged to a “dance group”, “drama group”, “music band”, “kapa haka or Polynesian club”, or “church youth group”, or to “scouts, guides or similar”, or who indicated “other”), mixed (participants who indicated they belonged to a combination of sport and non-sport groups), and none (participants who indicated that they did not belong to any community group).

### *Time-use variables*

Seven survey items in the YCP asked participants to indicate how many hours per week they spent looking after someone in their family / whanau, doing household chores, taking part in community groups, working in a job, doing school / kura homework, alone, and gaming. In Years 2 and 3 of the survey, four new survey items also asked how many hours per week participants spent in an after-school programme, chatting or surfing on the

net (the Internet), watching television (TV), videos, or DVDs, and talking or text messaging on home or cell phones (full wording of these questions is provided in Appendix A). Of these potential variables, it was necessary to exclude time spent in a community group as this was integrally connected to the community activity type variable described above, and time in an after-school programme, because missing data for this variable was deemed too high (> five percent). Thus, the final set of Time-use variables totalled six in Year 1, and ten in both Years 2 and 3.

Participants indicated their responses to the time use items by selecting a time-range category such as “none”, “3-5 hours”, or “more than 10 hours” or “more than 25 hours” (questions relating to internet use had a wider range of hours in the answer options – for the full set of response choices, see Appendix A). These categorical responses were re-coded into continuous variables by assigning each response the value in the midpoint of the time category; for example, “3-5 hours” was re-coded as 4.0. For the two categories where the upper end of the range was not specified, “more than 10 hours” was re-coded as 13.0, and “more than 25 hours” as 28.0.

### *Outcome variables*

The YCP collected data on six psychological constructs (life satisfaction, overall wellbeing, overall social support, negative affect, positive affect, and strength of self) and four dimensions of connectedness (school, community, family, and peer) that were of potential interest for this study. Of these, this study ultimately focused on six variables for which there were

adequate levels of data (missing data < five percent), and which were sufficiently reliable across all three key ethno-cultural groups (Cronbach's  $\alpha > .70$ ). These six outcome variables are each described below. Full wording of the survey questions used to collect data on each variable is provided in Appendix A.

*Life satisfaction.* Each participant's score for this variable was the average of their responses for three items in the YCP survey, with a higher score indicating greater satisfaction. The three items were derived from the subjective wellbeing scale (Diener, Emmons, Larsen, & Griffin, 1985), and included "I am happy with my life" and "there is very little that I would change in my life." For each item, participants responded on a 5-point scale ranging from 1 ("strongly disagree") to 5 ("strongly agree"). Internal consistency across the three items, averaged across the three years of the YCP, was .78 (.71 in Year 1, .80 in Year 2, .83 in Year 3) for all participants; .81 (.75, .83, .85) for NZE / Pākehā participants; .78 (.72, .77, .85) for Dual heritage participants; and .71 (.70, .73, .72) for Māori participants. Although life satisfaction forms a key component of overall wellbeing, as noted below, it was also relevant to analyse this variable separately because it is more stable and less subject to situational influences and fluctuations than other components of overall wellbeing, such as positive affect (Eid & Diener, 2004), and thus may be more likely to reflect longer-term influences on positive youth development.

*Overall wellbeing.* Each participant's score for this variable was the average of their scores for four sub-factors in the YCP survey, each of which was itself the average of responses recorded for several items: life satisfaction (average of 3 items, as described above), purpose in life (average of 4 items), confidence (average of 4 items), and positive affect (average of 3 items). The future orientation items were derived from the Ryff Wellbeing Scale (Ryff & Keyes, 1995), and included items such as "I am serious about working hard now so that I have a good future" and "I often think about my future (what I want to do with my life)." The confidence items were derived from the Ryff Wellbeing Scale and the Rosenberg Self Esteem Scale (Rosenberg, 1965), and included items such as "I am proud of who I am" and "I feel I am able to do things as well as most people." For each of these future orientation and confidence items, participants responded on a 5-point scale ranging from 1 ("strongly disagree") to 5 ("strongly agree"). The positive affect items were derived from positive items on the Centre for Epidemiologic Studies Depression scale (CES-D) instrument (Radloff, 1977), and included questions about how many days in the last week the participant "was happy" or "enjoyed life". For each of these items, participants selected one of four responses, ranging from 1 ("less than 1 day" in the past week) to 4 ("5-7 days"). Internal consistency across all eleven items for wellbeing, averaged across the three years of the YCP, was .88 (.86, .88, .90) for all participants; .87 (.84, .88, .90) for NZE / Pākehā participants; .88 (.87, .88, .90) for Dual heritage participants; and .89 (.89, .90, .88) for Māori participants.

*Overall social support.* Each participant's score for this variable was the average of their scores for four sub-factors in the YCP survey: reliable alliance, guidance, reassurance of worth, and attachment. Each of these sub-factors was in turn the average of responses recorded for three items. All twelve items across the four sub-factors were derived from the Social Provisions Scale (Cutrona & Russell, 1987). Example items included "there are people I can depend on to help me if I really need it" (reliable alliance), "there is someone I can talk to about important decisions in my life" (guidance), "there is someone in my life who tells me I am special" (reassurance of worth), and "there are people in my life who I am close to" (attachment). For each of these items, participants responded on a 5-point scale ranging from 1 ("strongly disagree") to 5 ("strongly agree"). Internal consistency across all twelve items for social support, averaged across the three years of the YCP, was .91 (.88, .92, .94) for all participants; .92 (.88, .93, .94) for NZE / Pākehā participants; .91 (.88, .92, .93) for Dual heritage participants; and .90 (.86, .92, .93) for Māori participants.

*Negative affect.* Each participant's score for this variable was the average of their responses across four items in the YCP survey, with a higher score indicating more negative affect. The four items were derived from negative items on the CES-D instrument (Radloff, 1977), and included questions about how many days in the last week the participant "felt sad", "got upset by things that don't usually upset me", or "felt lonely". For each of these items, participants selected one of four responses, ranging from 1 ("less than 1 day"



in the past week) to 4 ("5-7 days"). Internal consistency across the three items, averaged across the three years of the YCP, was .78 (.76, .80, .79) for all participants; .78 (.76, .82, .78) for NZE / Pākehā participants; .79 (.79, .78, .81) for Dual heritage participants; and .80 (.75, .80, .84) for Māori participants.

*School connectedness.* Each participant's score for this variable was the average of their responses across six items in the YCP survey, with a higher score indicating greater connectedness. The six items were derived from the Psychological Sense of School Membership Scale (Goodenow & Grady, 1993) and the School Connectedness Scale (Blum, et al., 2002). Three of these items related to the participant's relationships with their teachers (e.g., "I always get an opportunity to talk with my teacher(s)"). The other three items related to their sense of school community (e.g., "I feel proud about my school"). For each item, participants responded on a 5-point scale ranging from 1 ("strongly disagree") to 5 ("strongly agree"). Internal consistency across the six items, averaged across the three years of the YCP, was .86 (.851, .85, .880) for all participants; .86 (.86, .85, .88) for NZE / Pākehā participants; .84 (.83, .82, .88) for Dual heritage participants; and .85 (.82, .89, .84) for Māori participants.

*Community connectedness.* Each participant's score for this variable was the average of their responses across four items in the YCP, with a higher score indicating greater connectedness. The four were derived from the Sense of Community Index (Chipuer & Pretty, 1999), and included items such as "my family and I know at least some of the people who live in our street." For each item, participants responded on a 5-point scale ranging from 1 ("strongly

disagree”) to 5 (“strongly agree”). Internal consistency across the four items, averaged across the three years of the YCP, was .74 (.71, .74, .77) for all participants; .75 (.71, .75, .78) for NZE / Pākehā participants; .72 (.67, .73, .76) for Dual heritage participants; and .70 (.70, .70, .71) for Māori participants.

In addition to the variables described above, strength of self, family connectedness, peer connectedness (including school peers, who are not included in the school connectedness variable), and positive affect would also have served as interesting outcome variables. However, the first three of these variables had unacceptably high levels of missing data (> five percent, as explained in more detail in the Results section). The positive affect variable had adequate data, but was not sufficiently reliable across all three ethno-cultural groups – for Dual heritage participants, average reliability across the three years of the YCP was .68 (.63, .68, .72), and for Māori average reliability was .62 (.64, .66, .57). Accordingly, these variables were considered to be unsuitable for inclusion in this study.

## **Results**

### **Initial analyses**

Before undertaking analyses to test the study’s predictions it was important to test the suitability of the dataset for this purpose, and prepare a final set of variables for analysis. This testing and preparation involved assessing the distribution of values for each variable, correcting for missing data, and factor analysing the outcome variables (i.e. condensing correlated outcome variables into orthogonal factors).

*Distribution of values*

An analysis of the distribution of key study variables indicated that although all variables showed some skewness, none of the skewness scores for outcome variables fell outside the desirable range of -2.0 to 2.0 (Tabachnick & Fidell, 2007). For the Time-use variables, 11 had skewness scores in the range between 2.05 and 2.46, indicating slight skewness, while two variables (both measuring time in an after-school programme) had higher scores (4.25 and 5.57), indicating moderate skewness.

The distribution analysis also identified some kurtosis in several of the variables: 27 time use and five outcome variables had kurtosis scores falling outside the desirable range. Of these, only two (both measuring time in an after-school programme) showed severe kurtosis, with scores of 18.90 and 32.69. Appendix B provides a full listing of skewness and kurtosis scores for all time use and outcome variables.

Because the analyses planned for this study assume normal distributions, I attempted to reduce skewness and kurtosis in the Time-use variables using three separate transformations (square root, logarithm, and inverse), as recommended by Tabachnick and Fidell (2007). Two of these transformations (square root and logarithm) succeeded in bringing skewness and kurtosis scores for all Time-use variables within the desirable -2 to 2 range. On the other hand, all of the transformations introduced some new skewness and kurtosis into the outcome variables. These findings suggested

that transformation of the Time-use variables may be beneficial, while transformation of the outcome variables would not be beneficial.

To further test whether transformation of the Time-use variables would make a significant difference to my analyses, I conducted sample correlational and MANOVA analyses using both non-transformed and transformed Time-use variables. These analyses produced very similar results, suggesting little additional benefit from transforming the Time-use variables. For example, correlations between transformed Time-use variables and non-transformed outcome variables for Year 1 data (reported in Appendix C) found similar patterns of significance as those using non-transformed Time-use variables.

In a similar vein, MANOVA analyses for both non-transformed Time-use variables and transformed Time-use variables found similar results: all showed significant main effects of sex (non-transformed  $F(7, 1310) = 10.90, p < .001$ ; log transformed  $F(7, 1310) = 12.30, p < .001$ ; square root transformed  $F(7, 1310) = 12.51, p < .001$ ) and ethno-cultural group (non-transformed  $F(28, 5252) = 3.24, p < .001$ ; log transformed  $F(28, 5252) = 4.05, p < .001$ ; square root transformed  $F(28, 5252) = 4.03, p < .001$ ), as well as a significant sex by ethno-cultural group interaction (non-transformed  $F(28, 5252) = 1.80, p < .01$ ; log transformed  $F(28, 5252) = 1.98, p < .01$ ; square root transformed  $F(28, 5252) = 1.98, p < .01$ ).

Although it is desirable to work with normally distributed data, Tabachnick and Fidell (2007) recommend that caution be applied in using

transformed variables, as such variables are difficult to interpret (for example, the square root of hours spent alone is inherently less meaningful than whole hours spent alone), and skewness and kurtosis are less problematic for analyses of large datasets ( $n > 200$ ). Because the YCP dataset offered a large sample size, and transformations appeared to offer only minimal benefits in terms of reducing skewness and kurtosis and increasing the number and type of significant relationships found between the study variables, it seemed appropriate to use non-transformed data for further analyses.

### *Missing values*

The problem of missing data was of some concern for the dataset – although many variables had acceptably low levels of missing data, for several variables more than five percent of the data was missing ( $n < 1685$ ): time spent in an after-school care programme, time spent in community groups, time working, time surfing / chatting on the net, time looking after someone in the family, time alone (in Year 1 only), and peer connectedness.

In an initial step to address the amount of missing data, I used logical inference based on other participant responses to recode some missing cases as “0 hours”. Specifically, across all three years, hours spent working in a job was re-coded from “missing” to “0 hours” for cases where participants had indicated that they did not have a job (219 cases in Year 1, 290 in Year 2, 261 in Year 3). Likewise, hours spent on community groups was re-coded from “missing” to “0 hours” for cases where participants had indicated that they did not belong to a community group (68 cases in Year 1, 132 in Year 2, 133 in

Year 3). For data from Years 2 and 3, time spent chatting or surfing on the net was re-coded from “missing” to “0 hours” for cases where participants indicated they did not use the Internet in their spare time (415 cases in Year 2, 335 in Year 3), and time spent in an after-school programme was re-coded from “missing” to “0 hours” for cases where participants indicated they did not attend school (5 cases in Year 2, 9 in Year 3). Table 1 reports descriptive statistics as measured after these appropriate recoding steps. Five variables still had high levels of missing values: time spent in an after-school care programme, time surfing / chatting on the net (in Year 3 only), time looking after someone in the family, time alone (in Year 1 only), and peer connectedness.

Table 1

*Means, Standard Deviations, and Sample Sizes (n), for Time Use (11 variables) and Outcomes (10 variables) for Years 1-3*

Variable	<u>Year 1<sup>b</sup></u>			<u>Year 2<sup>b</sup></u>			<u>Year 3<sup>b</sup></u>		
	n	M	SD	n	M	SD	n	M	SD
Time use (hrs/week)									
Looking after someone in family	1648	2.28	3.35	1509	2.03	2.95	1508	2.19	0.80
Doing chores	1707	2.65	2.71	1696	2.68	2.68	1695	2.75	0.57
Taking part in community groups	1728	2.35	3.34	1715	2.37	3.43	1727	2.70	3.19
Working in a job	1744	1.28	2.73	1733	1.79	3.47	1740	2.51	3.45
Doing homework	1711	2.71	2.68	1696	3.09	2.80	1719	3.09	3.34
Alone	1678	2.47	3.23	1685	2.43	3.20	1699	2.63	1.94
Gaming	1751	3.56	4.19	1742	4.82	6.89	1757	4.50	2.89
In an after-school care programme <sup>a</sup>	-	-	-	1375	0.62	2.10	1412	0.39	1.70
Watching TV,	-	-	-	1746	8.41	7.48	1756	8.31	1.81

Variable	<u>Year 1<sup>b</sup></u>			<u>Year 2<sup>b</sup></u>			<u>Year 3<sup>b</sup></u>		
	n	M	SD	n	M	SD	n	M	SD
Videos, or DVDs <sup>a</sup>									
Surfing/chat on net <sup>a</sup>	-	-	-	1721	3.83	6.18	1551	4.64	6.37
Talking or texting on phone/cell <sup>a</sup>	-	-	-	1748	7.87	9.59	1758	8.94	3.31
Outcomes (score)									
Community Connectedness	1754	3.67	0.80	1741	3.74	0.77	1714	3.75	0.77
Family Connectedness	1758	3.90	0.73	1741	3.75	0.78	1755	3.69	0.78
Peer Connectedness	1494	4.21	0.53	1473	4.21	0.53	1513	4.22	0.80
School Connectedness	1763	3.72	0.78	1743	3.66	0.75	1720	3.65	0.56
Overall Wellbeing	1768	4.14	0.51	1769	4.09	0.55	1768	4.08	6.57
Social Support	1766	4.39	0.48	1767	4.35	0.55	1770	4.38	9.66
Life Satisfaction	1770	4.08	0.74	1764	4.04	0.80	1770	4.03	6.52
Negative Affect	1710	1.62	0.70	1749	1.63	0.73	1733	1.58	6.65
Positive Affect	1762	3.13	0.78	1762	3.05	0.81	1763	3.07	0.69

<sup>a</sup> These variables were not included in the Year 1 survey

<sup>b</sup> These descriptive statistics describe the data following logical insertion of some missing "0 hour" values, as described in the main text above.

The combined time use and outcome variables listed in Table 1 were evaluated using the Missing Value Analysis function in SPSS 16.0, with EM estimation. This analysis indicated that missing values were not Missing Completely At Random for any of the three year groups (Little's MCAR tests - Year 1  $\chi^2(1484) = 2005.65, p < .001$ ; Year 2  $\chi^2(2484) = 3442.00, p < .001$ ; Year 3  $\chi^2(2268) = 3181.51, p < .001$ ).<sup>10</sup> Accordingly, because the missing values were not missing *completely* at random (i.e., in a pattern that could not be predicted

<sup>10</sup> Little's MCAR tests the null hypothesis that the data are Missing Completely At Random (MCAR). If the test result is significant ( $p < .05$ ), the data may be either Missing At Random or Not Missing At Random, but are not MCAR.

from any other variable values), it was important to determine if they were still Missing at Random (i.e., in a pattern predictable only from other Time-use variables, and not categorical or outcome variables (Tabachnick & Fidell, 2007, p. 63), which would make them acceptable for inclusion in the study; or if they were Not Missing at Random (i.e., in a pattern predictable from other variable values, such as ethno-cultural group or level of wellbeing), which would make them too problematic (biased / distorted) to include in the study.

Further analyses indicated that, across the three years of the study, several variables had particularly problematic patterns of non-random missing data: family connectedness, peer connectedness, and time in an after-school programme. For data from Year 1, separate variance t-tests suggested that data for time looking after someone in the family were Missing at Random with respect to all outcome variables except family connectedness, for which data for this time use variable were Not Missing at Random (indicated by the fact that time looking after family significantly differed between participants with missing and non-missing time data:  $t(136) = -2.1, p < .05$ ). Similarly, data for time alone were also Missing at Random with respect to all outcome variables except family connectedness, for which data were Not Missing at Random ( $t(103) = -2.2, p < .05$ ). Also in Year 1, levels of missing values for peer connectedness were predictable from three Time-use variables and five outcome variables, and appeared to differ markedly between ethno-cultural groups categories (cross-tabulation indicated 25%



missing values for Māori, 12% for NZE, 11% for Dual heritage), and thus could be inferred to be Not Missing at Random.

For Year 2 data, separate variance t-tests and cross-tabulations suggested that data for time looking after family was Missing at Random with respect to all outcomes, but varied between ethno-cultural group categories. Time in an after-school programme was Not Missing at Random with respect to overall wellbeing, peer connectedness, and life satisfaction, and varied between ethno-cultural group categories. Time alone was Not Missing at Random with respect to community, family, and peer connectedness (although overall levels of missing values were only five percent). Peer connectedness was Not Missing at Random with respect to three time use and three outcome variables, and also varied between ethno-cultural group categories.

Finally, for Year 3 data, separate variance t-tests and cross-tabulations suggested that data for time looking after family was Missing at Random with respect to all outcomes, but varied between ethno-cultural group categories. Time in an after-school programme was Not Missing at Random with respect to school connectedness and positive affect, and varied between ethno-cultural group categories. The variable of hours per week on the Internet was Not Missing at Random with respect to community and peer connectedness. Peer connectedness was Not Missing at Random with respect to one time use and four outcome variables, and also varied between ethno-cultural group categories.

In light of these findings, it seemed prudent to exclude time in after-school programme, peer connectedness, and family connectedness (as recommended by Tabachnick and Fidell (2007, p. 66)) – these variables all had problematic patterns of missing data, and were not critical to this study's research questions. Although other variables also showed some evidence of data missing in a pattern predictable from other variable values, these patterns of missing data were not consistent across the three years of the study, and did not appear sufficiently serious to warrant excluding the variables from further analyses.

I then used expectation-maximisation (EM) imputation in SPSS 16.0 to estimate missing values for the remaining time use and outcome variables for each year. EM is a form of maximum likelihood estimation, first discussed in depth by Dempster, Laird, and Rubin (1977), which enables more accurate estimates of the true covariance of variables than other missing value deletion or single imputation methods (SPSS, 2007). EM involves two steps: in the first, all possible values for the missing data are assigned a probability (based on estimated parameter values for the full set of non-missing data), and expected values are calculated; in the second, the parameter values are re-estimated using the expected missing data values calculated in the first step. The overall aim of the method is to maximise the expected log-likelihood of the data. Although multiple imputation methods are preferable when missing data levels are high, EM imputation is appropriate when up to five percent of data for each variable are missing (Scheffer, 2002; Tabachnick & Fidell, 2007). The

dataset resulting from this imputation process (the “completed dataset”) is used in all further analyses reported below.

### *Outcome factors*

As the tables in Appendix C indicate, several of the outcome variables were moderately correlated with each other. A factor analysis with varimax rotation indicated that these various outcomes could be condensed into 3 distinct factors: a wellbeing factor (comprising wellbeing, social support, life satisfaction, and school connectedness, with loading values ranging from .79 to .87), a community connectedness factor, and a negative affect factor. These factors held both for outcome values within each study year (enabling the calculation of identical distinct factor scores for each outcome factor for Y1, Y2, and Y3), and for the mean outcome values across the three study years (enabling the calculation of mean outcome factor scores). Appendix D presents the correlations between mean Time-use variables across the three study years and the three mean outcome factors. As can be seen, these three outcome factors were not significantly related to each other. Additional confirmatory factor analyses also indicated that this three-factor structure for outcomes was fairly consistent across the three study ethno-cultural groups (Māori, NZE / Pākehā, and Dual heritage). Accordingly, in the interests of conciseness, the remaining analyses in this section present results for the three outcome factors, rather than for the six separate outcome variables.

**Identifying between-group differences in participation rates**

To investigate differences in participation profiles between different groups of youth, in line with the initial goal of this study, I analysed differences between participant groups in socio-economic and demographic variables using a chi-square analysis technique. This analysis tested for differences between ethno-cultural groups and community group participation types on Year 1 age cohort (9-11, 12-13, or 14-15 year groups), sex, dichotomous school decile grouping (low (1-5) or high (6-10)), and dichotomous location type (urban (urban or secondary urban) or rural (minor urban or rural)).

***Chi-square analyses on completed dataset***

As reported in Table 2, some significant differences in socio-economic and demographic variables were found between ethno-cultural groups at the commencement of the YCP. In particular, more NZE / Pākehā participants were situated in older age groups and in higher decile groups than Dual heritage and Māori participants, while a higher percentage of Dual heritage and Māori participants were female.

There were also significant differences between participants in different community activity groups, as reported in Table 3. In particular, and in line with predictions, notably more males than females participated in only sports-related community activity groups, and more females participated in only arts or community-related activity groups.

Table 2

*Y1 Frequencies of Participant Characteristic Variables by Ethno-cultural group*

Variable		NZE n (%)	Dual n (%)	Māori n (%)	$\chi^2$ (df)
Age group	9-11	330 (36%)	113 (41%)	89 (52%)	17.16 (4)**
	12-13	295 (32%)	91 (33%)	44 (26%)	
	14-15	294 (32%)	74 (27%)	39 (23%)	
Sex	Male	468 (51%)	116 (42%)	79 (46%)	7.72 (2)*
	Female	451 (49%)	162 (58%)	93 (54%)	
Decile group	Low (1-5)	299 (34%)	171 (66%)	126 (77%)	157.30 (2)***
	High (6-10)	583 (66%)	89 (34%)	37 (23%)	
Location type	Urban	655 (71%)	194 (70%)	122 (71%)	0.23 (2)
	Rural	264 (29%)	84 (30%)	50 (29%)	

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

Contrary to predictions, there was not a significantly higher overall rate of participation for youth from higher decile schools; however, there were differences in participation types, with more youth from high decile than from low decile schools participating in only sports-related community activity groups or a mix of both arts / community-related and sports-related activity groups. Interestingly, and again contrary to predictions, there were no significant differences in community group participation types across the three ethno-cultural groups, between rural and urban areas, or across age cohorts.<sup>11</sup>

<sup>11</sup> Although no specific prediction was made for age cohort, it is interesting to note similar participation rates across youth aged 10 to 16, who might be expected to be interested in different kinds of out-of-school activities—for instance, older youth may have more opportunities to spend time independently or with friends in informal settings without adult supervision.

Table 3

*Y1 Frequencies of Participant Characteristic Variables by Activity Type*

Variable		Arts / Com n (%)	Sports n (%)	Mix n (%)	None n (%)	$\chi^2$ (df)
Ethnic group	NZE	147 (70%)	220 (71%)	178 (65%)	364 (67%)	5.03 (6)
	Dual	37 (18%)	58 (19%)	64 (23%)	114 (20%)	
	Māori	27 (12%)	32 (10%)	34 (12%)	73 (12%)	
Age group	9-11	120 (38%)	128 (34%)	149 (41%)	276 (40%)	10.69 (6)
	12-13	96 (31%)	132 (35%)	124 (34%)	202 (29%)	
	14-15	97 (31%)	116 (31%)	88 (24%)	213 (31%)	
Sex	Male	115 (37%)	233 (62%)	169 (47%)	325 (47%)	45.69 (3)***
	Female	198 (63%)	143 (38%)	192 (53%)	367 (53%)	
Decile group	Low (1-5)	160 (52%)	140 (40%)	150 (43%)	343 (52%)	20.32 (3)***
	High (6-10)	145 (48%)	214 (60%)	198 (57%)	315 (48%)	
Location type	Urban	246 (79%)	265 (71%)	272 (75%)	509 (74%)	6.23 (3)
	Rural	67 (21%)	111 (29%)	89 (25%)	183 (26%)	

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

In addition to identifying differences in participation rates, the results of the analyses above suggest that, although the YCP was nationally representative and sampled youth from different location types in equal proportions, there were some significant differences in the demographic and socio-economic profiles of youth in different ethno-cultural groups and youth who participated in different community groups. Accordingly, it was important to test whether these demographic and socio-economic variables also had an impact on youth psychological and social outcomes<sup>12</sup>—if so, this would suggest that these variables have important selection effects on activity

<sup>12</sup> As well as on time spent in community-based activities, and other potentially competing time uses—see analysis of this in Appendix E.

participation that should be controlled for when assessing the link between participation and outcomes. Demographic and socio-economic variables were thus included as covariates in the next stage of analyses.

### **Assessing the benefits of participation in community activity groups**

A second, major goal of this study was to investigate overall benefits of activity participation, as well as any differences in participation benefits between different groups of youth. These benefits and differences were tested in two rounds of analyses.

In the first round of analyses I ran a repeated measure MANCOVA to identify whether youth differed in their psychological and social wellbeing over time according to their ethno-cultural background or the type of activities they participated in (if any). This analysis was important for two reasons: it identified apparent relationships between activity participation and positive outcomes, and also identified whether youth differed in their general levels on the outcome variables over the three-year study period (differences that may, in turn, influence any apparent participation-outcome relationship).

Then, to control for the influence of baseline outcome indicators (and other relevant variables, such as time use and demographic and socio-economic variables) on both activity participation and later outcomes, I ran a second round of analyses, using a propensity score matching technique. Compared to techniques such as MANCOVA, propensity score matching is better able to identify the specific effects of a “treatment” (such as activity

participation) by controlling for selection effects or biases in comparison groups. Such selection biases pose a key limitation for many observational studies (Hill et al., 2005).

### *Repeated measure MANCOVA results*

To identify any inter-group differences in outcomes across the three years of the study – and, more specifically, to test my predictions that participation in arts and community activities would be linked to more positive outcomes for youth overall, and in particular to more positive outcomes for Māori and Dual heritage youth compared to NZE / Pākehā youth—I ran a repeated measures MANCOVA analysis. This analysis included:

- three time of measurement variables: Years 1, 2, and 3
- three dependent variables: wellbeing, negative affect, and community connectedness outcome factors for Years 1, 2, and 3;
- two independent variables (fixed factors): ethno-cultural group and community activity type, recorded in Year 1; and
- four covariates: sex; age cohort (9-11, 12-13, or 14-15); location type (urban (urban or secondary urban) or rural (minor urban or rural)); and school decile grouping (low (decile 1-5) or high (decile 6-10)).

Results from this analysis indicated that the multivariate main effects of all variables were significant (see Table 4), except for location type and time of



measurement. Time of measurement interacted significantly with two covariates: age and sex.

Table 4

*Multivariate Tests for Outcomes Across Y1-Y3*

Effect	Pillai's Trace	F	df <sub>1</sub>	df <sub>2</sub>
Ethnic group	.012	2.484*	6	2540
Community group	.027	3.858***	9	3813
Age group	.095	44.640***	3	1269
Sex	.027	11.939***	3	1269
Decile group	.045	19.711***	3	1269
Time * Age	.021	4.426***	6	1266
Time * Sex	.015	3.120**	6	1266

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

Follow-up univariate tests on the significant multivariate main effects across Years 1, 2, and 3 outcomes (reported in Table 5) indicated differences across ethno-cultural groups and across different community group participants for community connectedness. In addition, participants in different community groups significantly differed in their wellbeing and negative affect. Participants of different age groups, decile groups, and sex also differed significantly in terms of wellbeing, and those of different age groups and decile groups additionally differed in terms of community connectedness. Overall, these univariate findings indicated that participation in community-based activities seemingly affected different groups of youth in different ways – thus validating this study's attempt to identify patterns of differences and similarities between youth, rather than assuming that all young people obtain the same developmental benefits from participation.

The univariate tests also showed that participant outcomes significantly differed over time (across Years, 1, 2 and 3) following a decreasing linear pattern. This effect had not been significant at the multivariate level. Time and community group also showed a significant interaction that had not been significant at the multivariate level: wellbeing appeared to decrease over time for participants in only sports activities, while wellbeing appeared to increase for those participating in a mixture of sports and arts or community activities.

Levene's test indicated that the equality of variance assumption in these analyses was violated only for the Year 1 wellbeing factor and the three negative affect outcome factors ( $p > .05$ ). Accordingly, I used the relatively conservative SPSS 18.0 pair-wise comparison, analysing Least Significant Differences, to test significance in post-hoc analyses for outcomes (reported in

Table 6).<sup>13</sup>

---

<sup>13</sup> Further analyses of the model, excluding covariates in order to allow testing for post-hoc differences using Bonferroni and Dunnett's 2-sided tests of significance, produced similar results for effects of community activity type, but did not identify any significant differences between ethno-cultural groups (including at either the multivariate or univariate level). This difference in results when covariates were excluded indicated the importance of maintaining the covariates in the model for post-hoc type testing, and hence the use of the Least Significant Differences tests.



Table 5

*Significant F-tests for Univariate Follow-up Tests Across Y1-Y3*

Outcome factor	Effect	MS	F	df	Partial $\eta^2$
<b>Effects from IVs</b>					
Wellbeing	Community group	7.027	3.761*	3	.009
Community connectedness	Community group	8.599	4.778**	3	.011
Negative affect	Community group	6.168	3.969**	3	.009
Community connectedness	Ethnic group	11.720	6.513**	3	.010
Negative affect	Time (linear - decreasing)	3.371	4.145*	1	.003
Wellbeing	Time (linear) * Community group (decreasing for sports; increasing for mix)	2.098	4.206**	3	.010
<b>Effects from Covariates</b>					
Wellbeing	Age group	173.007	92.586***	1	.068
Community connectedness	Age group	49.434	27.469***	1	.021
Wellbeing	Sex	22.821	12.213***	1	.010
Wellbeing	Decile group	10.346	5.537*	1	.004
Community connectedness	Decile group	98.242	54.591***	1	.041
Community connectedness	Time (linear) * Age group	6.212	11.794**	1	.009
Wellbeing	Time (linear) * Sex	4.959	9.941**	1	.008
Negative affect	Time (linear) * Sex	3.964	4.874*	1	.004

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

Table 6

*Significant Mean Difference Post-hoc Tests for Outcomes Across Y1-Y3*

Outcome factor	Effect	Comparison	Mean difference	<u>95% Simultaneous confidence interval</u>	
				Lower	Upper
Wellbeing	Community activity type	Sports > None	.233**	.082	.383
Wellbeing	Community activity type	Mix > None	.176*	.030	.322
Community connectedness	Community activity type	Arts / Community > None	.220**	.020	.380
Community connectedness	Community activity type	Sports > None	.226**	.078	.373
Community connectedness	Community activity type	Mix > None	.190*	.047	.334
Negative affect	Community activity type	Arts / Community > Sports	.253**	.082	.424
Negative affect	Community activity type	Mix > Sports	.228**	.071	.384
Community connectedness	Ethnic group	Māori > NZE	.264**	.117	.410
Community connectedness	Ethnic group	Māori > Dual	.169*	.004	.335

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

The results indicated that, across all three years of the YCP, community connectedness was higher for Māori youth than NZE / Pākehā or Dual heritage youth. Furthermore, across all participants, youth participating in sports (either alone or in combination with arts or community activities) reported higher wellbeing and community connectedness than those participating in no activity at all. Youth participating in only arts or community activities also reported higher community connectedness than those participating in no group activities. Interestingly, however, youth

participating in arts or community activities (either alone or in combination with sports activities) reported higher negative affect than youth participating in only sports activities.

Overall, these MANCOVA analyses revealed some interesting differences between various groups of youth involved in the YCP. Of particular note is the finding that youth not participating in any community group activities at all appeared to report worse outcomes over the three years of the study than youth participating in some form of community group activity. This finding suggests, in line with predictions, that participation provides significant psychological and social benefits for youth. Another notable finding, again in line with predictions, is that participation in arts and community activities was linked to more positive outcomes compared to non-participation – particularly with respect to community connectedness. However, arts or community activities were not the only types of activities that appeared to be beneficial for youth: participation in sports and mixed activities was also linked with greater wellbeing and community connectedness. Notably, there was no support for the prediction that participation in arts and community activities would be linked to more positive outcomes for Māori and Dual heritage youth compared to NZE / Pākehā youth – although Māori youth did report greater community connectedness than both Dual heritage and NZE / Pākehā youth, there was no significant interaction between ethno-cultural group and activity type.

Despite these largely confirmatory results, it is important to recall (as the chi-square results reported earlier showed) that youth in this study differed significantly in terms of their socio-economic and demographic characteristics – characteristics that were also significantly related to, and thus may partially explain, differences in outcomes in the MANCOVA analyses. It is also worth noting that these youth reported significant differences in their patterns of time use across a range of out-of-school activities,<sup>14</sup> which may have had an additional confounding impact on their psychological and social outcomes over time.

Accordingly, in order to control for these multiple differences between groups of youth participating in this study and to better test the robustness of the finding that participation in community activities is beneficial, I conducted a further round of analyses using propensity score matching.

#### *Analyses on samples matched by propensity scores*

Propensity score matching (Rosenbaum & Rubin, 1983) is a specialised technique that reduces the confounding variance and selection effects that are generally problematic in datasets collected through subject-variable studies. The technique allows a particular “treatment” to be isolated as a causal factor for a set of outcomes. In this case, the broad “treatment” I wanted to test was

---

<sup>14</sup> MANCOVA analyses on time use data collected in the YCP survey suggested that youth differed significantly in the way they spent their time. As these results are somewhat tangential to the focus of this study, they are presented in Appendix E, rather than in the main body of results.

participation in various community activities, compared to a “control” of no participation in any activity.

*The propensity score matching process*

Propensity score matching works on the basis that participants have – because of their differing socio-economic, demographic, time use, and psychological profiles – different propensities to be in the treatment (activity participation) or control (no participation) groups, making these groups non-comparable overall. Using propensity score matching, it is possible to create sub-samples of highly similar individuals, which are differentiated overall only by their membership in the treatment or control groups. Subsequent analyses of mean differences between the two groups then allow the researcher to more confidently conclude that any obtained differences are due to the single difference (treatment vs. control) that exists between the two groups. The complete process involves four key stages, which I describe briefly below, before presenting results of the matched group comparisons.

The first stage of the matching and analysis process involves calculating a propensity score for each participant. To do this, I ran a logistic regression predicting membership in the treatment group (activity participation) at the first measurement point (either Year 1 or Year 2, depending on the analysis) from a combination of the participant characteristic (socio-economic and demographic), time use, and outcome variables available for that measurement point. The likelihood of membership



in the treatment group, calculated through the regression analysis, formed a new variable: the propensity score.

The second stage involves matching each participant in the treatment group to a participant in the control group who has a very similar propensity score. To do this, I ran a propensity score matching syntax in SPSS 18.0, based on the macro prepared by Painter (2004).<sup>15</sup> I modified the macro to change the order of matching (to begin with individuals with propensity scores closest to the mean treatment score) and to enable “matching with replacement”, in which each individual control case may be matched more than once to different treatment cases. Although this approach has the disadvantage of increasing variance, it has the advantage of increasing the average quality (closeness) of matching and thus decreasing bias between treatment and control groups, and is a widely recognised method for propensity score matching (Caliendo & Kopeinig, 2005; Dehejia & Wahba, 2002; Hill, Waldfogel, Brooks-Gunn, & Han, 2005). From an initial set of analyses using both matching techniques (without and with replacement), I found that matching with replacement produced much better-matched sub-samples of the treatment and control groups, enabling me to make more robust comparisons of the groups.

The third stage involves identifying whether there are any significant background differences between the matched treatment and control sub-

---

<sup>15</sup> This macro was recommended by Rudner and Peyton (2006).

samples that would need to be controlled for when comparing outcomes between the groups. Ideally, if sufficiently close matches between individual propensity scores have been made, there should be no significant difference between the groups on the variables entered into the logistic regression equation used to calculate the propensity score. To test this assumption, I ran chi-square analyses of the frequency of each of the participant characteristic variables and MANOVA analyses of the initial time use and outcome variables in the matched treatment and control groups. Where I found significant differences on any variable, I re-analysed the samples with a restricted delta range – that is, I limited the treatment and control comparison groups to include only participants for whom the difference between their propensity scores and that of their matched treatment / control was small (0.15 or less). If a significant difference persisted on a variable after this delta range restriction, I then entered that variable as a covariate in the final stage of analysis.

The final stage involves testing mean group differences between the matched sub-samples on selected outcome variables. To do this, I ran MANOVA analyses (or MANCOVA analyses if I had found, in stage three, that a variable from the first measurement point would need to be controlled for) to compare the matched treatment and control groups on outcome variables from the second measurement point (Year 2 or Year 3, depending on the analysis). If a significant difference were found at this stage, this would mean that, having controlled for many other potential selection effects, there

was still a “treatment benefit” from participation for the particular group of youth and activity (treatment) types under investigation.

I repeated this process numerous times to compare different groupings of participants (all participants together, or divided by sex, ethno-cultural group, or community activity participation type) across different treatment time periods (treatment effect of Year 1 participation on Years 2 and 3 outcome factors; treatment effect of Year 2 participation on Year 3 outcome factors; treatment effect of participation in Years 1 and 2 on Years 2 and 3 outcome factors; and treatment effect of participation across Years 1, 2, and 3 on Year 3 outcome factors). Because this resulted in a large number of analyses (approximately 50), I adjusted my significance criterion from  $p \leq .05$  to  $p \leq .01$ .<sup>16</sup>

Table 7 presents only the significant results from the final stage MANOVA / MANCOVA analyses. The table columns report the following key information: the groupings of participants, treatment time periods, and treatment and control groups under investigation; the number of unique cases in the matched treatment and control sub-samples (generally this is smaller for the controls, as some individual cases were matched more than once to a control case with a comparable propensity score); how closely matched the propensity scores in each sub-sample were (indicated by the delta range, and

---

<sup>16</sup> This is less conservative than a Bonferroni adjustment, which would have resulted in a criterion of  $p \leq .001$ . However, because the tests were not perfectly independent, as the Bonferroni adjustment assumes, it seemed reasonable to use this intermediate value.

the mean and standard deviations for the treatment and control groups); and MANOVA results (treatment benefits (deficits) – that is, outcome variables from the second measurement point on which the treatment group reported significantly higher (lower) response scores than the control group – and the significance and effect size of these benefits).

In line with my overall prediction on the benefits of activity participation, these results indicated that, across all participants, ongoing participation in any form of community activity had clear “treatment benefits” over non-participation. Youth who participated consistently in any activity over the first two years reported greater wellbeing in Year 2, and youth who participated across all three years reported greater wellbeing in Year 3. The relationship between activity participation and “doing well” appeared to be particularly robust for Māori youth: those who participated in any activity in Year 1 reported lower negative affect scores in Year 3.

I had also predicted that participation in arts and community activities would have been linked with more positive outcomes than no participation, or participation in other activities. This prediction was only partially supported by the results from the propensity matching analyses. In contrast with predictions, youth who participated in arts or community activities in Year 1 actually reported some worse outcomes (in the form of higher negative affect, but no differences in wellbeing or community connectedness) in Year 3 compared to youth who had not participated in any activities. However, the relationship differed between males and females. Consistent with predictions,

males who participated in arts or community activities appeared to benefit from participation: those who participated in Year 2 reported greater community connectedness in Year 3. In contrast, there were no significant benefits from such participation for females; in fact, females participating in a mixture of sports and arts or community activities in Year 2 reported more negative affect in Year 3.

Finally, I had expected to find more positive outcomes for Māori and Dual heritage youth who participated in arts or community activities compared to NZE / Pākehā youth who participated in such activities. This prediction received some support from the results: Māori and Dual heritage youth who participated in a combination of arts or community activities and sports in Year 1 reported greater wellbeing in Year 3, whereas NZE / Pākehā youth who participated in arts or community activities (in Year 2) reported lower wellbeing a year later.

Two unanticipated results in Table 7 are also worth noting. Firstly, disrupted participation was associated with worse outcomes than not only continued participation, but also no participation at all: youth who participated in Year 1 but stopped participating in Year 2 reported more negative affect in Year 3. Secondly, Year 3 negative affect scores were higher for Dual heritage participants (in Year 2) compared to non-participants. Although I had not made specific predictions for these analyses, I would not have anticipated that participation (of any type or duration) would have been associated with more negative outcomes than non-participation.

Table 7

*Significant Treatment Benefits of Different Treatment Types for Participant Groups*

Group	Treatment (n)	Control (n)	Delta range	Mean propensity scores (SD)	Treatment benefit [deficit]	p	Partial eta <sup>2</sup>
All	Any activity Y1 and Y2 (556)	No activity Y1 or Y2 (230)	.0000-.0050	T: .65 (.146) C: .65 (.146)	Y2 Wellbeing Factor <sup>c</sup>	.007	.006
All	Any activity every year for 3 years <sup>a</sup> (208)	No activity over Y1-Y2-Y3 (56)	.0000-.0168	C: .76(.028) T: .76 (.028)	Y3 Wellbeing Factor <sup>d</sup>	.001	.026
All	No activity Y1, some activity Y2 (139)	No activity Y1 or Y2 (125)	.0000-.0050	T: .34 (.136) C: .34 (.136)	[Y3 Neg. Affect factor] <sup>e</sup>	.006	.028
All	Arts / Comm. Activities Y1 (109)	No activity Y1 (71)	.0000-.0013	C: .31 (.033) T: .31 (.033)	[Y3 Neg. Affect factor] <sup>f</sup>	.008	.032
Female only	Mixed activities Y2 (122)	No activity Y2 (89)	.0000-.0477	C: .39 (.179) T: .39 (.179)	[Y3 Neg. Affect Factor]	.001	.042
Male only	Arts / Comm. activity Y2 (69)	No activity Y2 (47)	.0000-.0783	C: .32 (.196) T: .32 (.194)	Y3 Comm. Connect. Factor	.005	.057
Māori only	Any activity Y1 (81)	No activity Y1 (38)	.0001-.1500	T: .41 (.17) C: .42 (.16)	Y3 Neg. Affect Factor	.006	.046
Dual only	Any activity Y2 (148)	No activity Y2 (69)	.0000-.0511	C: .62 (.194) T: .62 (.195)	[Y3 Neg. Affect Factor]	.008	.023
Māori / Dual only <sup>b</sup>	Mixed activities Y1 (98)	No activity Y1 (56)	.0000-.0975	C: .44 (.173) T: .44 (.177)	Y3 Wellbeing Factor	.007	.037
NZE / Pākehā only	Arts / Comm. activity Y2 (126)	No activity Y2 (87)	.0000-.1687	C: .33 (.151) T: .33 (.158)	[Y3 Wellbeing Factor]	.009	.027

Notes to Table 7:

- a Because this analysis spanned 3 years, time use and outcome variables from both Year 1 and Year 2 were used in the logistic regression formula for calculating propensity scores.
- b Because of the relatively small numbers of Dual heritage and Māori participants participating in each community activity type, these two ethno-cultural groups were combined for the purposes of the ethnic group \* community group analysis.
- c Controlling for the following covariates: Y1Sex, Y1Community Connectedness Factor.
- d Controlling for the following covariates: Y1Sex, Y1 Wellbeing Factor, Y2 Neg. Affect Factor.
- e Controlling for the following covariates: Y1Age.
- f Controlling for the following covariates: Y1Decile, Y1Time looking after family.

## Discussion

Extracurricular activities are an important feature in many young people's lives – indeed, the majority of youth in Aotearoa / New Zealand are involved in some form of sporting, community, or arts-based activity out of school hours (AHRG, 2008). Past research has suggested that these activities provide an important activity setting and developmental context for youth, and are associated with a range of positive youth outcomes (e.g., Blomfield & Barber, 2009; Eccles, et al., 2003; Feldman & Matjasko, 2005; Heath, 2001; Mahoney, et al., 2006; Marsh & Kleitman, 2002; Zaff, et al., 2003).

However, most previous research has relied on cross-sectional analysis to identify links between activity participation and positive outcomes, and very few studies have focused on youth in Aotearoa / New Zealand, or differences between youth from differing ethno-cultural backgrounds. These limitations have made it difficult to verify whether all youth experience the same longer-term benefits from activity participation (and thus whether such participation should be widely encouraged and facilitated).

Accordingly, a major goal of this study was to investigate the *longitudinal* links between participation in community-based extracurricular activities and positive youth psychological and social outcomes, and to examine whether these links differed across a diverse group of youth (differentiated by ethno-cultural group, type of community group participation, and sex). Encouragingly, results indicated that, overall, youth who participated in community-based activities *did* experience greater wellbeing in subsequent years – especially if they continued participating over two or three years. Results also suggested that youth diversity was reflected in different youth experiences: some young people (especially males and Māori or Dual ethnic heritage youth) benefited more than others from participating in certain types of community-based activities.

A further goal of this study was to investigate whether different groups of youth participated more, or in different types of activities, compared to others. Results indicated that males and females tended to participate in different kinds of activities, as did youth from different socio-economic backgrounds; but there were no significant differences in overall participation rates between NZE / Pākehā, Māori, and Dual ethnic heritage youth, or between urban and rural youth. These findings suggest that key influences on participation in community-based activities are likely to be more related to young people's sex and socio-economic status than to their ethno-cultural group or location, which may be relevant to both policy-makers and researchers.



These findings, and their implications, are explored in more depth below. In accordance with the order of analyses presented in the Results section, I begin by discussing differences in participation rates, and then turn to reviewing participation benefits.

### **Group differences in participation rates**

An initial goal of this study was to better understand the context of community-based activity participation in Aotearoa / New Zealand by investigating youth differences in participation rates. In particular, analyses focused on participation differences between ethno-cultural groups, between males and females, and between youth from different socio-economic and geographic contexts.

#### ***Differences in participation rates between ethno-cultural groups***

Based on previous studies looking at differences in participation between ethno-cultural groups (e.g., Baker, 2008; Eitle & Eitle, 2002; Wylie, et al., 2008), in this study I had expected to find that more Māori and Dual heritage youth than NZE / Pākehā youth would participate in sports-only activities. However, this prediction was not supported by the data, which indicated no significant differences in the proportions of Māori, Dual heritage, and NZE / Pākehā youth participating in sports, arts or community, or mixed activities. Regardless of ethno-cultural background, approximately three out of every five young people in this study were participating in some form of community-based activity, with a fairly even spread over the three broad

activity group types (on average across youth, 16% participated in arts or community activities, 23% in sports activities, and 21% in a mixture of both).

Of course, it is possible that this broad similarity in participation profiles across ethno-cultural groups belies some more specific differences in activity type between ethno-cultural groups – for instance, relatively more Māori and Dual heritage youth than NZE / Pākehā may participate in sports such as rugby, or in specific arts or community activities such as kapa haka or church groups (e.g., as suggested by Crooks, et al., 2008; Wylie, et al., 2008). More detailed examination of community-based activity patterns could help to clarify whether such differences exist.

However, it is also possible that youth throughout Aotearoa / New Zealand face very similar activity options, and perceive these options in similar ways. Indeed, in line with this explanation, Hohepa (2006) found that Māori and NZE / Pākehā participants perceived very similar types of benefits from, and barriers to, participation in a variety of sports and physical activity. Youth from the different ethno-cultural groups also reported similar strategies for engaging in these activities. Likewise, Edwards et al. (2003) found that extracurricular activities in general, and sports in particular, were popular among both Māori and NZE / Pākehā youth. Young people from both ethno-cultural groups reported these activities to be important in their lives as sources of enjoyment and development. Thus, it may be the case that youth in Aotearoa / New Zealand do not feel internally or externally

“directed” to participate in specific kinds of activities because of their ethno-cultural grouping.

*Differences in participation rates between sexes*

In addition to the predictions for ethno-cultural groups noted above, I had also expected to find some differences between males and females in this study. Specifically, based on previous research findings, I had expected to find that males would participate more in sports activities, and that females would participate more in arts or community activities. Both of these predictions were supported by this study’s results: 28% of males, but only 16% of females, participated in only sports activities; conversely, 22% of females, but only 14% of males, participated in only arts or community activities. Similar proportions of males and females participated in a mixture of activities (20%) or no activities at all (40%).

These findings are consistent with those from previous studies in North America and Aotearoa / New Zealand (e.g., Denault & Poulin, 2009b; Feldman & Matjasko, 2005; Wylie, et al., 2008), and emphasise the significant role that sports play in young male New Zealanders’ lives – nearly half the males in this study were involved in a community-based sports activity (either exclusively or in combination with some arts-focused or community activity).<sup>17</sup>

---

<sup>17</sup> It is possible that many of those who were not engaged in community-based sports played sports through school, so this proportion likely underestimates the actual sporting participation rate for males.

The higher rate of sports group participation for males likely reflects broader societal messages promoting men's sports (which are given greater media coverage than women's sports, and often receive more funding) and emphasising the masculinity of sporting activity (especially relative to arts and community service activities, which are often portrayed as more feminine (e.g., see Gardner, et al., 2009)). These societal messages reach youth not only through national and community-level channels such as the media, but may also be perpetuated by schools and within family and peer groups (Eder & Parker, 1987; White & Gager, 2007).

*Differences in participation rates between youth from different locations and socio-economic backgrounds*

Finally, with respect to group differences in participation, I had also expected activity participation rates to differ according to demographic factors such as school location and decile. Specifically, in line with Barker and Schoggen's (1973) work on community behavioural settings, I had predicted that youth in rural areas would participate more in activities than youth from urban areas. However, there were no significant differences in participation between urban and rural youth in this study: approximately 60% of youth in each location type participated in some form of activity. Relatively more rural youth than urban youth did appear to participate in only sports activities (25% of rural youth, versus 21% of urban youth) compared to only arts or community activities (15% of rural youth versus 19% of urban youth); but this difference was not significant, and similar proportions of both urban and

rural youth participated in a mixture of sports and arts or community activities (20%).

These similarities between urban and rural areas are interesting, and could warrant further investigation of youth opportunities in different geographical areas. Barker and Schoggen's (1973) analyses of their in-depth community studies suggested that youth from smaller communities receive more encouragement to participate in community-based activities, and face less competition for "space" in these activities, because they are relatively more unique and influential in their setting (rather than being "one among many", as in a larger urban area). However, in Aotearoa / New Zealand the effect of such encouragement may be somewhat mitigated by the paucity of opportunities in rural areas relative to urban settings – for example, there are likely to be fewer music teachers and bands, theatre groups, youth service organisations, and sports clubs in small rural New Zealand towns than in the cities. Indeed, in their study of New Zealand youth from varied ethnic backgrounds, Edwards et al. (2003) found that youth in rural areas perceived themselves to be isolated from peers, sports and other activities, and social services. Thus, urban youth may feel less socially motivated, but may have many more opportunities, to participate in community-based activities compared to rural youth, whereas rural youth may be highly motivated but have few choices of activity groups to join.

With respect to decile-related differences, I had predicted that, because of their higher family socio-economic status and related access to resources

(e.g., Denault & Poulin, 2009a), more youth from higher decile schools would participate in community-based activities than youth from lower decile schools. This prediction was supported by the results, which showed significant differences in activity group participation: slightly more youth from higher decile schools (64%) participated in some form of community-based activity than did youth from lower decile schools (57%). In particular, more youth from higher decile schools participated in only sports-related community activity groups (25%) or a mix of both arts or community-related and sports-related activity groups (23%) compared to youth from lower decile schools (for which proportions were 18% and 19%, respectively).

The lower participation in sports among youth from low decile schools is interesting, and may be related to the costs of participating in community sports clubs, which could include club membership fees and the costs of travelling around and beyond the wider community for sports competitions. It may be the case that youth from lower decile schools still engage in sports (and do so to a similar degree to youth from high decile schools), but play sports more informally, or only at school, where they do not face community club costs. As White and Gager (2007) note, costs are likely to be more of a barrier to activity participation for community-based than for school-based activities. Recent evidence from Aotearoa / New Zealand suggests that youth living in low income communities are generally situated *closer* to recreational facilities than those in higher income communities, but do not access these

facilities in equal numbers, which may be due to cost barriers (Utter & Denny, 2010).

Secondly, youth in low-income families may hold different time use priorities, and have different values surrounding activity participation, compared to youth in higher-income settings. For instance, youth from lower-income families may need to work in a part-time job to help support themselves or their family economically, or may be more likely to be expected to assist in running the household (e.g., by caring for siblings and doing cooking and housework) while their parents work. Parents in these families may also place higher value on school-based education than extracurricular activity participation, because they see formal education as an important route to future work opportunities and social mobility for their children (Edwards, et al., 2003).

In line with these suggestions, Hohepa et al.'s (2006) research into barriers to participation in physical activity and sports in Aotearoa / New Zealand indicated that key reasons youth offer for not being more involved in sports include lack of accessibility, distance to travel, safety of neighbourhoods, and having too many other duties at home or work. All of these factors appear likely to be greater constraints for youth from lower decile schools and from families with lower SES.

### **Apparent participation benefits**

Having identified these areas of difference in participation rates between some groups of youth, a further significant goal of this study was to

investigate the benefits of participation for these youth – while controlling for key selection factors that may have influenced both their likelihood of participation and their later outcomes. Based on past research, I had predicted that, overall, participation in community-based extracurricular activities would be positively linked to more positive outcomes. Results from both repeated-measure multivariate analyses and analysis of propensity-matched samples supported this prediction. Specifically, the repeated-measures MANCOVA analysis (investigating the association between ethno-cultural group and community group participation type and the outcome factors of composite wellbeing, community connectedness, and negative affect) indicated that youth participating in any kind of community activity group reported higher community connectedness than those not participating in any activity at all, and that many participants (specifically, those engaged in some kind of sporting activity) also experienced greater composite wellbeing (a factor encompassing higher school connectedness, social support, life satisfaction, and overall wellbeing). This finding was supported by the MANCOVA analyses of the samples matched by propensity scores, which also indicated that youth who participated in any activity for two or more years later reported higher composite wellbeing compared with those who participated in no activities at all over that period.

These results are particularly striking because they suggest that the benefits for New Zealand youth from participating in community activities can be seen not only during but *after* participation – that is, they persist over



time (as proposed by McGee et al. (2006)) – and that these benefits are evident even when other demographic and behavioural factors are controlled for.

Thus, these findings are more robust than those from previous studies that have been limited by correlational analyses and the impact of selection effects, and support the thesis that *New Zealand youth who participate in community-based activities “do better” and “feel more connected”*. Here, “doing better” means youth score higher on a composite measure of overall wellbeing, life satisfaction, social support, and school connectedness. “Feeling more connected” means youth report higher connectedness not only to their schools, but also to their communities.

In addition, the study results suggest that *more* participation is more beneficial. By looking at different durations of participation, analyses of the propensity-matched samples showed that the beneficial effects of participation were much stronger after three years of continuous participation ( $\epsilon^2 = .026$ ) than after two ( $\epsilon^2 = .006$ ). This result suggests that the benefits of extracurricular activity participation may accumulate over time, as youth consolidate and expand social networks, and further refine the personal and interpersonal skills they learn through participation. This finding may also help to fill an important gap in existing literature on activity participation in Aotearoa / New Zealand; for instance, research by the New Zealand Ministry of Youth Development (McLaren, 2002) concluded that “[w]hile the youth development literature quite strongly emphasises the value of longer programmes over shorter ones, the evidential basis for this assertion appears

weak or nonexistent” (p. 9). While this study does not test the specific effects of any one particular activity group over time, it does suggest that ongoing programmes may be more beneficial.

Interestingly, some of the young people in this study who discontinued their participation in a community activity later reported a *worse* outcome: youth who participated in any activity in Year 1, but stopped participating the next year, reported more negative affect in the final year of the YCP survey compared to youth who had not participated in any activities across the three years. This result was somewhat surprising, as positive youth development theory suggests that even one year of participation should be associated with greater benefits than no participation at all. However, the reason that these youth *stopped* participating in their activity may have been that they experienced a life change that negatively impacted them, leading both to their cessation in the activity and to later negative affect – for example, they may have shifted to a new neighbourhood, or experienced a sudden drop in family income precluding ongoing participation, or have chosen not to continue because of pressure from parents or peers (e.g., see Patrick, et al., 1999). Because of these possible situational influences, it is difficult to discern whether the lower affect that these youth reported in Year 3 was related to having negative experiences in the activity, or to feeling strongly disappointed at having to stop participating in the activity, or to an external factor – or some combination of these. Further qualitative investigation into the types of experiences New Zealand youth typically have in community-

based activities, and their reasons for continuing or discontinuing in activities, would help to identify the best explanation for these results.

### **Differences in participation benefits**

Another important goal of this study was to examine whether the benefits of participation identified above differed for different groups of youth. Although there seem likely to be important differences between youth experiences in community-based activities – in particular, between those participating in different types of activities, between youth from different ethno-cultural groups, and between males and females (e.g., Denault & Poulin, 2009a; Eitle & Eitle, 2002; Larson & Verma, 1999) – past research on the differential benefits of activity participation across groups has been limited, and has returned mixed results. The findings from this study provide some new insights on how youth may differ in Aotearoa / New Zealand.

#### ***Differences between youth participating in different activity types***

Results from the repeated measures MANCOVA analyses indicated that youth participating in a mixture of both sports and arts or community activities, or in sports alone, reported higher wellbeing than those participating in no activity groups at all. In contrast, youth participating in only arts or community activities did no better on any of the outcomes than non-participants, and in fact reported higher negative affect than youth participating in only sports activities. A similar pattern was found in the analyses of the propensity-matched samples, in which youth participating in

arts or community activities later reported higher negative affect than non-participants.

These results suggest that participating in sports may be relatively more beneficial for young people in Aotearoa / New Zealand (compared to participating in arts or community activities, or not participating at all), while participating in arts or community activities may be linked with more experiences of negative affect (or heightened expression of that affect).

Although some previous studies have also looked into differences between these types of activities, the outcomes examined in those studies have largely focused on school-related factors (such as academic performance) and risky behaviours (e.g., B. L. Barber, et al., 2001; Barnes, et al., 2007). Thus, this study sheds some new light on the ways in which sports and arts or community activities may differ in their impact on youth doing well and feeling connected.

#### *Effects of participating in sports activities*

The apparent benefits of sports participation in this study may be attributable to a range of features of sports activity groups, including time intensity, physical health effects, psychological impacts, and social factors (such as perceived status and enhanced integration).

Firstly, sports may be relatively more time-intensive than other activities (e.g., as proposed by McNeal, 1995), involving frequent practice sessions, regular competitions, and other club-related events (awards ceremonies, fundraisers, social events, competition-related travel, etc.). In

support of this contention, analyses on youth time use data on the present sample (see Appendix E) indicate that sporting youth in this study did spend significantly more time per week in their activity groups than did youth participating only in arts or community activities (this difference was not large in absolute terms, but may underestimate actual participation intensity because of the restricted range of participation hours included in the YCP survey (0 to “10+” per week)). In line with the predictions of positive youth development theory (e.g., Larson, 2000), greater time demand or intensity should increase the amount of time young people spend in the positive activity setting each week, and thus enhance the benefits of participation. Greater participation intensity in sports may also decrease young people’s opportunities to engage in anti-social activities (although, notably, past studies (e.g., Eccles, et al., 2003) have indicated that sports participation is also linked with *higher* levels of some potentially anti-social behaviours, such as higher alcohol consumption).

Time intensity aside, sports activities may provide relatively higher benefits for youth because of their beneficial effects on physical health and capabilities, which may mediate some of the effects on psychological wellbeing. For instance, Hohepa, Schofield, and Kolt’s (2006) qualitative study on youth participation in sports and physical activity in Aotearoa / New Zealand suggested that young people experience a range of physical and related psychological benefits from sports. These included an enhanced sense of physical appearance (related to improved fitness and strength), increased

sense of physical proficiency, and greater sense of self-worth. Youth made comments such as “[you] just feel better about yourself”, “[sport] calms me down, release[s] anger”, and “[sport] [m]akes you want to try new things, expand...” (Hohepa, et al., 2006, p. 330). Studies on youth in other countries have found similar results, indicating that youth who are more physically active not only perform better on a range of health indicators (such as maintaining healthy weight and diet) but also *feel* physically healthier and fitter – and may thus feel less depressed, and more satisfied with their lives (e.g., Piko & Keresztes, 2006).

In addition to this health-related mechanism, the benefits of sports activities may also be mediated by psychological mechanisms such as increased opportunities for “flow”. For instance, Larson (2000) notes that youth participating in extracurricular activities such as sports reported a range of positive psychological experiences, including feeling focused, energised, involved, and rewarded through sporting success. Such experiences fit Csikszentmihalyi’s (1990) description of the state of flow – frequent experiences of which are associated with greater overall wellbeing.

Finally, the higher beneficial effects of sports may be attributable to social factors, such as the status (which McNeal (1995), proposes to be a moderator of participation benefits) accorded to sports participation and achievement in Aotearoa / New Zealand. For instance, in an analysis of sport and culture in the country, Laidlaw (1999) proposed that “the only genuinely all-embracing expression of New Zealand nationalism is through sport” (p.

13), with rugby, in particular, holding a special status spanning across ethno-cultural and socio-economic groups. There is evidence that some of this wider societal respect and enthusiasm for sports is internalised by New Zealand youth—for instance, Hohepa et al. (2006) reported that youth were motivated to participate in sports because they perceived sports to offer social recognition and mobility (including through making national teams in the future), as well as opportunities for self-development.

More generally, youth who see sports as not only a respected but a *normative* activity in Aotearoa / New Zealand may be motivated to participate by their desire for social integration. For instance, in a study of New Zealand youth from varied ethnic backgrounds, Edwards et al. (2003) found that youth perceived sports participation to be a “vehicle for being accepted and popular” (p. 18). “Fitting in” with others, and feeling popular with and connected to peers, can be particularly important during adolescence, shaping young people’s choice of activity groups and other uses of leisure time (Eccles, et al., 2003).<sup>18</sup>

#### *Effects of participating in arts or community activities*

In contrast to sports activities, arts or community activities are much less likely to offer opportunities for physical activity, and more likely to have

---

<sup>18</sup> In this respect, team sports may be particularly beneficial for youth, as these sports necessitate group work and foster the development of interpersonal bonds and a sense of social inclusion and affiliation (Scanlan & Lewthwaite, 1986). Future studies on extracurricular activity participation could test this prediction by investigating the relative benefits of participation in individual and team sport activities.

lower social status in the Aotearoa / New Zealand context. These differences may in part contribute to the greater negative affect reported by arts or community activity participants in this study – for instance, these youth may have low overall levels of physical activity as a result of their focus on arts or community groups, or may be perceived negatively by other youth for their failure to participate in sports.

There may also be other features of arts or community activities that relate to higher reported levels of negative affect among participants. For instance, it may be the case that participants in such activities develop a heightened sense of both self and social awareness, and increase their emotional expressiveness (e.g., see Heath, 2001), resulting in greater emotional expressivity overall. This may impact on not only their levels of reported negative affect, but also other emotions (potentially even positive affect – they may experience more “highs” as well as “lows”). Compared to the other outcomes captured in this study, affect is more likely to fluctuate over relatively short time periods, making it more sensitive to youth experiences of “highs” and “lows”. Unfortunately, it was not possible to assess emotional range and variability for activity participants using the final dataset for this study.<sup>19</sup>

It is also possible that the negative affect results for arts or community activity participants in this study are largely attributable to youth

---

<sup>19</sup> Although the YCP did collect a measure of positive affect, for instance, this could not be isolated as a single outcome variable in this study’s analyses because of missing data.



participation in performing arts (rather than community) activities.<sup>20</sup> Other studies have found similar negative associations specifically for arts participants. For instance, Barber et al. (2001) found that youth participating in performing arts activities were more likely to experience later psychological distress, and engage in risky behaviours such as alcohol use. One reason proposed for such negative outcomes is that arts participants experience stress and anxiety related to performance pressures. Although it seems likely that participants in sports activities would also face performance pressures, the group nature of most teenage sporting participation in Aotearoa / New Zealand (e.g., in rugby and netball teams) may create an environment that supports positive coping strategies for performance-related stress. In contrast, arts activities may place more emphasis on individual performance and heighten the public salience of any “mistakes” (e.g., by placing youth performers on stage). These activities may also require greater time alone in rehearsals, restricting youth access to support networks and increasing opportunities to ruminate on negative emotions (e.g., see Larson (1990), for discussion of negative emotions associated with time alone in various activities – especially for youth).

Notably, as discussed further below, males and females demonstrated different patterns of association between participation in arts or community

---

<sup>20</sup> As explained in the method section, the broad category of “arts or community” activities included dance group, drama group, music band, kapa haka or Polynesian club, church youth group, scouts, guides or similar, and other.

activities and negative affect – specifically, only female participants reported significantly higher negative affect. Thus, it may be the case that the observed association between participation in arts or community activities and later negative affect across *all* youth was driven primarily by the association for the females in the sample.

*Differences in participation benefits between ethno-cultural groups*

In the Aotearoa / New Zealand context, recent research by Fox (2010) found that, among Māori and Pasifika youth, those who participated in arts-related activities experienced more positive outcomes (including greater connectedness and wellbeing) than those who did not. Accordingly, I expected to find similar, special benefits of participation in arts and community activities for the Māori and Dual Heritage youth in this study.

This study's results agreed to some extent with this prediction. For instance, analyses of the propensity-matched samples indicated that Māori and Dual heritage youth who participated in arts or community activities combined with sports activities in the first year of the YCP reported greater wellbeing than Māori and Dual heritage non-participants two years later (although notably this relationship did not hold for arts or community participation alone). They also appeared to do better relative to NZE / Pākehā youth, who reported *lower* wellbeing a year after participating in arts or community activities.

This interesting finding stands in contrast to results from some research into differences between ethno-cultural groups in North America,

which has indicated that majority group (i.e., “white”) youth benefit from participating in extracurricular activities, while youth from minority ethno-cultural groups do not (Chambers & Schreiber, 2004; Eitle & Eitle, 2002; Feldman & Matjasko, 2005). It may be the case that minority youth in Aotearoa / New Zealand experience more positive outcomes than minority youth elsewhere because of greater local endorsement of multiculturalism (e.g. Ward & Masgoret, 2008), which may create a more supportive environment.

There are several possible reasons why Māori and Dual heritage may experience different outcomes from participation compared to NZE / Pākehā youth. One is that participation in arts activities may help affirm and enrich a sense of ethnic identity for Māori and Dual heritage youth, leading to more positive self-concepts and a greater sense of wellbeing. This may be particularly the case if arts activities are linked to traditional cultural practices (e.g., as in kapa haka (Edwards, et al., 2003)). Māori and Dual heritage youth may also be particularly likely to benefit from participating in arts activities such as music because music not only provides them with an outlet for expression and self-reflection, but also helps to connect them to “mainstream” culture (engendering a sense of belonging) while at the same time supporting group distinctiveness and Māori connections (e.g., through identifying with popular Māori music or musicians (Tipene-Clarke, 2005)).

Community activities, too, may enhance ethnic identification, because they help to connect young New Zealanders to their wider community

(McLaren, 2002), which may have shared ethno-cultural values. For instance, in line with Baker's (2008) projections for minority group youth, participation in church youth groups may be especially beneficial for Māori and Dual heritage youth; these groups may help these individuals not only to connect in meaningful and supportive ways with other youth and adults in their communities (e.g., as found for participants in community, service, and faith-based activities in a study by Larson et al. (2006)), but also to engage in cultural learning and identity development.

It is important to note, however, that the Māori and Dual heritage youth who benefited from arts or community group participation in this study were also participating in sports activities. This suggests that these youth were connecting with their communities in multiple ways and building multiple skill-bases, creating a very "well-rounded" developmental experience for themselves. Their participation in sports, in particular, may have been important for social acceptance from certain peer groups (perhaps "balancing out" their potentially less socially popular arts participation), thus contributing to a greater sense of school connectedness, social support, and overall wellbeing. As discussed earlier, within the Aotearoa / New Zealand context sporting participation can be strongly connected to youth status and esteem, and this could be particularly the case for Māori and Dual heritage youth (e.g., Edwards, et al., 2003; Laidlaw, 1999; Te Rito, 2007).

The importance of sports as a "balance" for participation in arts or community activities may also be relevant for NZE / Pākehā youth. For

instance, NZE / Pākehā youth who participated in a mixture of arts or community and sports activities did not show any notable differences in wellbeing from non-participants, whereas those who participated in arts or community activities alone surprisingly reported lower wellbeing. For this latter group of youth, it may have been the case that either the intrinsic benefits of participating in arts or community activities were fewer than those for Māori and Dual heritage youth (due to participation-related ethnic identification being less salient or relevant), or that the benefits of these activities may have been negated by experienced or perceived social stigma related to their non-participation in sporting activities – or both.

Finally, one unexpected finding related to differences between ethno - cultural groups was that Dual heritage youth who participated in any activity in Year 2 reported higher negative affect scores in Year 3 than non-participants (as shown in the analyses of propensity matched samples). Neither Māori nor NZE / Pākehā youth showed a similar pattern; in fact, Māori youth participating in community-based activities (in Year 1) had *lower* negative affect in Year 3. One possible explanation for the different outcomes for Dual heritage youth is that these youth were more likely than others to be grappling with complex ethnic identity issues. Such issues may have been heightened through their participation in groups that made ethnic identity more salient, or that challenged youth to reflect on their general sense of identity.

*Differences in participation benefits between sexes*

Interestingly, the analyses on propensity-matched samples suggested not only that the benefits from participating in arts or community activities differed between ethno-cultural groups, but also between sexes. Specifically, males who participated in arts or community activities later reported greater community connectedness, but there was no apparent participation benefit for females. Because little research has focused on differences in activity participation benefits between males and females, I had not predicted any differences for this study. However, one previous study reports a similar pattern of results to those found here (albeit for a different outcome variable) – namely, that males, but not females, who participated in performing arts activities engaged in fewer risky behaviours (in particular, drinking alcohol and skipping school) later in life (Eccles & Barber, 1999).

These benefits of arts or community activities for males may relate to the role these activities can play in providing young men with a social network outside of school and with positive adult role models. Heath (2001) proposes that arts activities, in particular, can benefit youth by helping them to improve their ability to communicate effectively and to become critically aware of social norms, thus supporting positive engagement with their community. This may be particularly important for young males, who may not otherwise be strong in these areas, or may not have the opportunity to build these skills in other contexts or activity settings (e.g., in school groups, at home interacting with parents and siblings, or with peers, prevailing norms

for masculine behaviour may preclude practicing communicative skills and critical self and social awareness). It may also be the case that many young men gain a sense of community connectedness through participating in sporting activities on either a formal or informal basis at school or through community clubs; and arts or community activities may provide an alternative route to building this sense of connectedness for males who do not participate in sport.

Another, unexpected sex difference in this study's results was that females participating in a mixture of sports and arts or community activities in Year 2 reported worse outcomes (in the form of more negative affect) in Year 3 compared to non-participants; but no similar relationship occurred for males. While the positive youth development model would not have predicted that any participants in a combination of activities would do worse than those not participating at all, it is possible that these females may have been suffering from stress and lower affect related to "overload", in line with the predictions of the over-scheduling hypothesis.<sup>21</sup> It is unclear why males engaged in a mixture of activities would not have had similar experiences to

---

<sup>21</sup> Univariate analyses of differences in time spent in community groups each week, for each year of the study, confirmed that participants in a mixture of sports and arts or community activities did spend significantly more hours per week in community groups (in year 1,  $F(3) = 325.61, p < .001$ ; in year 2,  $F(3) = 380.00, p < .001$ ; and in year 3,  $F(3) = 393.49, p < .001$ ). However, this additional time was not substantial (approximately 1 hour more than sports only participants, and 2 hours more than arts or community only participants), did not equate to a high intensity overall (on average, 5 hours per week), and there was no significant difference in the pattern of time spent on activities between males and females.

females, although it is possible that the sexes differ in the types and effectiveness of coping strategies they adopt when faced with overloading stress (indeed, past studies have indicated that female youth in their later years of high school consistently report higher negative affect than males (e.g., see Nolen-Hoeksema & Girgus, 1994), which may suggest they are more prone to triggers of depression than males, or more likely to express negative feelings).

### **Study implications**

The results discussed above have some important implications for both theories and policies surrounding youth activity participation, particularly in the Aotearoa / New Zealand setting.

#### ***Implications for theory***

This study's results support the predictions of positive youth development theory, which posits multiple benefits for youth from participating in extracurricular activities. In particular, the theory suggests that these activities help youth to develop in positive ways and experience greater wellbeing by providing them with opportunities for growth and by facilitating the development of strength of self, interpersonal skills, and positive social networks (Larson, 2000). Given that the particular activities investigated in this study were community-based, it seems likely that the social networks that youth built through participating in these activities helped them to build connections with their communities (not only through relationships with co-participating peers – who may not have been school



peers – but also with the adults and community organisations supporting the activities). These relationships could explain the results from the repeated measure MANCOVA analysis, which showed a significant association between activity participation and greater community connectedness.

In addition, the results provide some support for the implication from positive youth development theory that more participation is more beneficial. As Theokas and Lerner (2006) explain, the theory proposes that extracurricular activities can offer youth a range of beneficial resources and experiences, and “the more exposure a youth has to these resources and experiences, the more likely he or she will develop positively” (p. 61). Although this study did not focus on the implications of different intensity of participation (as captured, for example, in a measure of hours per week on each activity), its longitudinal nature enabled it to assess another important measure of “participation dosage”: duration (as captured in a measure of participation continuity over the three survey years). Results indicated that a longer duration of participation was more strongly associated with beneficial outcomes.

Although these results do not represent a direct test of the zero-sum hypothesis – which proposed that participation in extracurricular activities is a direct substitute for other youth activities, whether beneficial or otherwise (Coleman, 1959) – they may suggest that participation does not generally involve a substitution away from other beneficial youth activities, as indicated by the positive outcomes associated with participation across youth in the

study. However, the mechanism through which these beneficial outcomes are achieved is not clear; for instance it may be the case, in line with one interpretation of the zero-sum hypothesis, that participation in community-based activities was beneficial for the youth in this study because it resulted in them spending less time in anti-social or “wellbeing-reducing” activities. Additionally, the fact that participants in some activities appeared to experience greater negative affect a year later could possibly be interpreted as evidence that these youth were spending less time in supportive environments (e.g., with family) as a result of their activity participation, leading to greater emotional vulnerability. Because this study’s focus was on outcomes, rather than on mechanisms, it is difficult to draw clear conclusions about potential substitution effects. Future research may usefully extend this study’s findings by exploring the mechanisms through which the outcomes found in this study (such as higher wellbeing, community connectedness, or negative affect, and differential outcomes for different youth) are produced.

This study’s results are also somewhat ambiguous with respect to the over-scheduling hypothesis, which could not be directly tested with the participation indicators used in the analyses (for instance, these did not include a measure of high number of hours of participation). One interesting result was that young women with a greater breadth of involvement in community-based activities in Year 2 – as indicated by their participation in a mixture of sports and arts or community activities – appeared to “do worse” a year later, exhibiting more negative affect than non-participants. A potential

explanation for this unanticipated outcome is that these girls were “suffering” from over-scheduling, with their high levels of activity participation resulting in stress and depressed emotions. This would be consistent with Nelson and Gastic (2009)’s proposal that students with a greater breadth of participation may have been doing comparatively worse than other youth – a surprising finding from their study – because of the stresses of feeling over-extended and being in a “high visibility” position that rendered them more prone to peer victimisation. However, a brief analysis of time use data indicated that these girls were participating only slightly more in activities on an hourly basis each week, and not at a level of intensity that would appear alarming.<sup>22</sup> Furthermore, this relationship between participation in mixed activities and negative affect was not evident for other groups of youth; in fact, many youth involved in mixed activities showed more beneficial outcomes than non-participants. Accordingly, it is difficult to draw any compelling conclusions with regard to the over-scheduling hypothesis – this study does not appear to provide any evidence to support it. Future research into the mechanisms behind the important outcomes found in this study may shed further light on the over-scheduling debate.

In summary, the key theoretical implications for extracurricular activity participation from this study’s results support positive youth

---

<sup>22</sup> As discussed in footnote 21, participants in a mixture of sports and arts or community activities only spent an average of five hours per week in community groups – about an hour more than youth participating in sports alone. Furthermore, there was no significant difference in this time use between males and females

development theory, which predicts that participation is associated with positive outcomes, and that more participation is more beneficial. Importantly, although this theory was developed in a North American context, this study's results indicate that it may also be applicable across Māori, Dual heritage, and NZE / Pākehā youth in Aotearoa / New Zealand. Of particular note is that, as discussed in the results section, the measures used in this study appeared to display structural equivalence across the three ethno-cultural groups. Rigorous testing of the survey questions prior to the implementation of the YCP also helped to improve its cross-cultural validity, and confirm equivalence of the study's key constructs.

Accordingly, future work in the Aotearoa / New Zealand context may focus on further expansion and exploration of positive youth development theory using constructs similar to those used in the YCP. As part of this research, these constructs could be re-situated in locally and culturally relevant terms—for example, similar concepts could be drawn from a kaupapa Māori framework to help explore the mechanisms through which activity participation contributes to positive development specifically in Māori and Dual heritage youth. Tipene Clarke (2005) provides several suggestions for such mechanisms, including *whakamana* (empowerment and identity-building through strengthened linkages to family and the community and feeling of being valued), *kotahitanga* (unity derived from teamwork and building of mutually-beneficial relationships), and *nga hononga* (feeling of place and connectedness within social and community networks).

*Implications for policy*

Overall, the benefits of participation found across the youth in this study suggest that policy makers, community leaders, teachers, and parents should encourage and facilitate participation in community-based activities for youth throughout Aotearoa / New Zealand. Results also suggest that such encouragement should be focused not only on getting youth to *start* participating, but to *continue* (for instance, the benefits of three years of continuous participation appear to be stronger than participation over a shorter time period).

It may also be possible to draw more nuanced recommendations for young males and females and for Māori and Dual heritage youth from this study's results. For instance, it appears that relatively few young men participate in arts or community activities, despite the fact that participating in arts or community activities is associated with greater community connectedness for them. Thus, it may be beneficial to provide more support for young men to participate in art or community activities – especially for those who do not participate in sports. It may also be important to examine more closely the societal reasons behind current disparities in participation rates (in particular, young men participating more in sports, and young women participating more in arts or community activities). While differences in participation between males and females are not concerning per se, and may reflect valid and self-empowering youth choices, there is little evidence from this study justifying a greater emphasis on sports participation for

males – many of the potential benefits of sports participation should apply just as equally for females (and vice versa, benefits of other activity participation should apply for males). Value and attitude-related barriers to participation for both males and females could usefully be reviewed to ensure that youth do not feel wrongly discouraged from participating in activities that would benefit them. For instance, Hohepa et al.'s (2006) research into sports participation among New Zealand youth suggested that many young women were deterred from greater involvement because of perceived competitiveness and performance pressure, and a lack of options – factors that may be related to the way that sports activities are promoted among youth, and the types of activities offered.

Similarly, some policy-makers may wish to provide Māori and Dual heritage youth with greater opportunities and support for participating more in both arts or community and sporting activities.<sup>23</sup> At present, it appears that these youth are participating in community activities at similar rates to NZE / Pākehā youth. From one perspective, such “equality” in participation across different activity types can be seen as a positive and laudable feature of current youth environments in Aotearoa / New Zealand – for instance, it suggests that *all* Māori and NZE / Pākehā youth are being encouraged or

---

<sup>23</sup> Although this study has not assumed that Māori and Dual heritage youth fall within a single grouping based on Māori ethnic identification, results do not indicate any clear pattern of differences between these two groups. This lies in contrast with Ward (2006)'s findings that Dual heritage youth generally “fall between” Māori and NZE / Pākehā groups, in line with an acculturation perspective on multiple ethnic identities.

enabled to engage in a wide variety of community-based activities (rather than some being channelled into particular activities based on ethno-cultural biases), and that the majority of these youth are taking up such opportunities.

Finally, analyses of current participation rates in light of participant characteristics suggest that there may be socio-economic barriers to activity participation that the Government and communities in Aotearoa / New Zealand would do well to address. In particular, the observation that youth in higher decile schools have a higher overall activity participation rate indicates that youth in lower-income communities may be deprived of opportunities to participate in affordable activities – and thus deprived of important psychological and social benefits associated with participation. Hohepa et al. (2006) drew similar conclusions from a qualitative study of activity involvement, identifying “greater accessibility to, and availability of, activity opportunities [...] around the neighbourhood” as important needs expressed by youth from lower-income areas (p. 332).

It is also important to note that, in contrast with much previous research, this study focused on community-based rather than school-based extracurricular activities. It found a number of benefits very similar to those that have previously been associated with school-based activities, suggesting that youth wellbeing and connectedness are enhanced through participating in a broad range of formal activities outside of school hours. Thus, it may be beneficial to encourage youth to look beyond activities available in their schools when considering extracurricular options, and to become involved in

activities offered in their communities, too. In order to provide opportunities for such involvement, this study's positive results suggest that not only schools but also communities should foster youth extracurricular activity participation. In particular, community members could help youth do better and feel more connected by providing space, time, and leadership for activity groups appropriately tailored to local needs.

### **Limitations of the present study**

When considering the results and potential implications set out above, it is important to bear in mind some of this study's limitations. These include modest effect sizes, potential influence from other contexts, and cultural considerations.

#### *Effect sizes*

As noted above, this study's results identify clear benefits of activity participation for New Zealand youth. However, this pattern of participation benefits was not consistent across all analyses. Although the overall relationship between participation in any activity and positive outcomes was clear and consistent in analyses across all youth combined, this relationship became more variable when different groups of youth participating in different activities were examined in different years. A key reason for this may have been the smaller sample sizes obtained when youth were separated into different activity, sex, and ethno-cultural groupings – for example, although the overall sample size was over 1700, analyses on propensity score-matched samples for some more specific groupings involved less than 150



matched participants. The discussion of results above assumes that all significant findings in the analyses represent real effects of activity participation on youth outcomes; however, the inconsistent pattern of results suggests that the effects observed for different groups of youth were not as reliable as those observed for youth overall.

In addition, as with many studies on the influence of a single behavioural factor on later youth outcomes, the effect sizes established in this study were relatively small, explaining less than six percent of the variance in outcomes between youth. However, although this seems very modest, it is consistent with the effect sizes found in similar studies on the factors influencing positive youth development (e.g., Marsh & Kleitman, 2002; McLaren, 2002; Theokas & Lerner, 2006).

There are several reasons why effect sizes for participation in community-based activities are likely to be small. Firstly, relative to the time that youth spend at school or in unstructured out-of-school activities, the time spent in community-based activities is minimal – across youth in this study, it averaged 4 hours per week (compared with approximately 30-35 hours per week at school). Positive youth development theory predicts that there would be positive “spill over” effects from participation in community-based activities – that is, these activities would not only influence youth during the (minimal) time they were participating, but would also influence broader youth attitudes, behaviours, and peer networks (which are highly influential in young people’s outcomes (Prinstein & Dodge, 2008)). However, such spill-

over effects would likely be weaker for community-based activities than those from school-based extracurricular activities (or activities within the home environment). For example, peer groups from community activities may not go to the same schools as each other. Given that youth spend much of their time at school, the beneficial effects of positive peer networks established through community groups could potentially be negated by less positive peer networks at school (which may in turn be reinforced through school-based extracurricular activities). Consistent with this suggestion, Marsh and Kleitman (2002) observed larger effect sizes for school-based activities than community-based activities (particularly in relation to variables linked with school connectedness – a component of the composite wellbeing factor analysed in this study – and school performance).

One implication of this explanation for the small effect sizes is that more participation should be associated with stronger effects. This was certainly the case with respect to greater participation duration in this study: as noted in the Results section, an additional year of participation in community-based activities was associated with a more than four-fold increase in effect size for wellbeing (.026 compared to .006). Unfortunately, because the YCP survey only assessed a limited range of hours of participation per week, it was not possible to identify a high-intensity participation (for example, 15-20 hours per week) group to compare effect sizes relative to a low-intensity participation group. Such a comparison may have also revealed that more intense participation was associated with

stronger effects on positive outcomes (though potentially only up to a threshold level, as discussed by Marsh and Kleitman (2005)), and also have shed more light on the validity of the zero-sum model of participation.

A second possible explanation for small effect sizes is that the attitudes, beliefs, and skills that youth developed in community-based activity settings were relatively less influential to the positive outcomes tested in this study than those developed in school and home settings – not so much because of the time spent in these settings, but because of the social importance of the people involved and the relative priority or dependence that youth place on them. For example, the youth in this study may have been at an age where their levels of community connectedness were influenced more strongly by the values and activities of their parents and families (which may have included, for example, going to church, meeting frequently with family friends in the neighbourhood, and making evaluative statements about safe and desirable community locations to spend time in or people to spend time with) than by their own experiences in community-based activities.

Nevertheless, despite the relatively small effects that activity participation may have on youth outcomes, these activities are still important features of young people's lives, and warrant consideration as one of the many elements contributing to positive youth development in Aotearoa / New Zealand.

*Influence of other contexts*

The relative importance of family and school settings in youth's lives, noted above as a potential limiting factor on the effect sizes observed in this study, may have also partially confounded the overall positive association between activity participation and outcomes. For instance, family context may influence both young people's desire and ability to participate in community-based activities on the one hand (Edwards, McCreanor, & Moewaka-Barnes, 2007), and their psychological and social outcomes on the other (McCreanor, Watson, & Denny, 2006).

This study attempted to control for such confounding effects by using propensity scores to match youth with different time use profiles (including chores and family care, which may capture key proxies of familial influence). Results from the analyses on time use, presented in Appendix E, provide support for the assumption that these variables captured some important variability in family context. For example, analyses indicated that Māori and Dual heritage youth spent more time looking after their families and doing chores than did NZE / Pākehā youth. This difference may reflect differences in underlying cultural values (Ward, 2006), wherein Māori families may display more collectivist tendencies and place more emphasis on positive youth development through the development of strong family bonds (encouraging more time with family – see Edwards et al. (2007)), whereas NZE / Pākehā families may display more individualist tendencies and place more emphasis on positive youth development through the development of

autonomy (encouraging more time on outside activities). Accordingly, controlling for time use difference likely helped to control for familial and cultural influences on participation and outcomes. The study also controlled for school decile, which captures a measure of average school and family socio-economic status. However, it is also possible that *other* important aspects of family and school context were not controlled for in the propensity matching process, and may have influenced the results.

### *Cultural considerations*

A final area of limitation for this study relates to its ability to draw cross-cultural conclusions. As noted earlier, considerable care was taken in both the initial development of the YCP and the execution of this study's analysis of YCP data to ensure validity across the ethno-cultural groups included (with a particular focus on Māori and NZE / Pākehā, as the dominant ethno-cultural groups in Aotearoa / New Zealand and parties to the nation's guiding document, *Te Tiriti o Waitangi* / the Treaty of Waitangi). Care was also taken to establish construct and structural equivalence of key variables. However, it is still important to recognise that the study's findings may not be equally applicable across all Māori and NZE / Pākehā youth.

One important consideration is that the ethno-cultural categories adopted in this study are very broad, and the resulting groups may not necessarily be culturally homogeneous. To distinguish between Māori who also identified as NZE / Pākehā and those who did not, this study identified a group of "Dual heritage" youth, and (where possible) analysed responses

from these youth separately from those of either Māori or NZE / Pākehā youth. However, within the group of Dual heritage youth there may be other important distinctions; for instance, some of these youth may prioritise one ethno-cultural grouping over the other in practice (as suggested by Kukutai and Callister (2009), who found that very few youth who identified as both Māori and NZE / Pākehā were unable to prioritise one ethno-cultural group when asked; of those who could, approximately half identified more as Māori, and the remainder more as NZE / Pākehā). Dual heritage youth may also be differentially influenced by whether their father or mother is NZE / Pākehā (e.g., see Kukutai, 2007). Likewise, there may be important variations within each of the ethno-cultural groupings of Māori and NZE / Pākehā, related to factors such as the strength of their particular ethnic identity, the broader family composition, and community influences (Kukutai, 2004). As Cohen (2009) observes, these various dimensions within ethno-cultural groups are in many respects also different forms of “culture” (broadly conceived). Thus, ethnic identification provides only one of the lines along which cultural groups may be parsed, and any given ethno-cultural group may comprise individuals who differ in terms of their religious, socio-economic, or geographic “cultures”. This study has captured some important cultural differences by considering variables such as ethno-cultural group, school decile, geographical area, and even sex, but there are likely to be other significant differences within these groups that may be explored in future research.

Another important cultural consideration is that this study has been undertaken from a particular cultural perspective (the author is NZE / Pākehā), and draws on a largely positivist paradigm of psychological research. Accordingly, the approach taken likely represents NZE / Pākehā cultural values more than Māori values, and the variables and outcomes tested may not be those that all participants would have viewed as the most important with respect to understanding positive youth development (e.g., as emphasised by Waldegrave, 1998). For example, in a qualitative study with Māori youth, Ware (2009) identified five key characteristics (*āhuatanga*) that young people felt were important personal indicators of their positive development: *māia* (potential), *ahu whakamua* (foresight), *manawanui* (resilience), *ihumanea* (innovativeness) and *māhaki* (humility). With the possible exception of resilience, these indicators are not well assessed in constructs such as general wellbeing and negative affect. Indeed, the characteristic of māhaki / humility may stand in direct contrast to a characteristic such as confidence, which is one of the components of wellbeing measured in the YCP. Thus, the conclusions and theoretical and policy implications drawn from this study need to be understood in light of the viewpoint from which they have been offered, and are open to critique and discussion from other cultural perspectives.

### **Future directions**

In order to overcome some of the above limitations, and further expand understanding of the role of community-based activities in helping

youth in Aotearoa / New Zealand to do well and feel connected, there are a number of directions that future studies could take. Some of these could involve exploring the existing (and very large and rich) YCP dataset in different ways. For example, it would be interesting to look more closely at the effects of activity participation for at-risk youth, to establish if the pattern of effects is different for these youth, or if effect sizes are larger than those identified across all youth in this study. Such findings may identify community-based activities as an avenue for developing more pro-social behaviour and better psychological outcomes for young people from disadvantaged backgrounds, or for those with currently anti-social peer influences.

It may also be possible to use the existing YCP dataset to explore mechanisms (i.e., mediators) through which participation in extracurricular activities influences youth wellbeing and connectedness, as well as other moderators of this influence. For example, variables such as presence and number of delinquent friends (which may be lower for activity participants, in turn influencing positive youth developmental paths), strength of ethnic identity (which may be bolstered by participation in some activities, in turn fostering greater wellbeing), and performance at school could be investigated as potential mediating factors. In addition, more detailed analyses of youth time use and outcomes at different ages may help in identifying any “critical times” at which activity participation is most influential, thus exploring the



role of participant age (and developmental stage) as a moderator of the relationship between participation and positive outcomes.

Researchers may also consider analysing different groupings of extracurricular activities. School-based and community-based activities could be compared, to determine if each setting offers different types or levels of benefit. For instance, past research has indicated that school-based activities may have more of an impact on school achievement than do community-based activities (e.g., Marsh & Kleitman, 2002); conversely, it may be the case that community-based activities are more important for building connectedness. In addition to exploring these different settings, activities could be clustered not according to whether they involve arts or sports, but according to other defining features such as whether they emphasise teamwork over individual practice, or whether they feature a strong adult presence. Such features may be more strongly related to different developmental outcomes for youth than whether or not the activity is based around physical tasks (a distinguishing feature between the sport and non-sport groupings used in this study). Past research into extracurricular activity participation has also suggested that features such as different “opportunity structures” (Hansen, et al., 2003), level of formality, level of supervision, and level of challenge (e.g., Larson, et al., 2006; McLaren, 2002) are other important defining features of activities that offer different levels of benefits for young people.

Unfortunately, it would be difficult to investigate these features using the data available from the YCP survey, which identifies activities by broad categories such as “marching” and “music”, rather than by more nuanced aspects of structure and leadership. Instead, these types of features could be more readily assessed with a detailed case study type approach, or with a mixed methods design (necessarily involving a much smaller sample than that in the YCP). Thus, future research would benefit from supplementing the data available in the YCP with additional, more detailed information.

Further, detailed information from qualitative studies would also be beneficial for better understanding the factors influencing youth commencement of activity participation, and continuation in these activities. For instance, interviews and focus groups with youth could focus on topics such as the decision process that youth go through when deciding what types of activities to participate in, and their perceived support from family and friends (which past research suggests is an important predictor of greater participation (e.g., see Edwards, et al., 2003; McLaren, 2002) and which may be particularly important for Māori youth (e.g., see Edwards, et al., 2007). Although the family connectedness and social support variables in the YCP do collect some information on family support for extracurricular activities (see Appendix A), qualitative studies with youth would assist in interpreting and expanding on this data. Data from further investigations could also be triangulated with that collected from similar interviews and focus groups with teachers, family members (encompassing the wider family or whanau),

and community activity leaders, in order to build a more comprehensive picture of how best to facilitate youth access to positive developmental opportunities through ongoing participation in extracurricular activities.

## **Conclusion**

In summary, this study sought to identify whether young New Zealanders who participate in community-based activities do better (measured in terms of higher general wellbeing, perceived social support, and life satisfaction) and feel more connected (to their communities and schools) than youth who do not participate. Analyses of data collected over a three-year period from over 1700 young people aged between 10 and 15 suggest that activity participants did indeed do better, and felt more connected to their schools and communities, than did non-participants.

Another goal of this study was to identify differences in youth outcomes between different groups of activity participants. Results indicated that youth who appeared to benefit most from activity participation were those participating in sports, young men participating in arts or community activities, and Māori and Dual heritage youth participating in a combination of arts or community activities. Comparisons of participation rates indicated that many more young men participated in sports than did young women, more of whom participated in arts or community activities. Overall, youth from higher decile schools participated more in a range of community-based activities than did youth from lower decile schools.

These findings are consistent with, but also build upon, previous studies in this area, and help provide a better understanding of the impacts of activity participation for young people in Aotearoa / New Zealand. In particular, the study's findings suggest that although participation in community activities is only a *part* of the bigger picture of positive youth development (as evidenced by the modest effect sizes obtained in this study), it is still important for enhancing youth wellbeing and connectedness. Thus, providing more opportunities and encouragement to participate in community-based activities should be considered an important component in community programmes aimed at helping young people in Aotearoa / New Zealand to do well and feel connected.



### References

- AHRG. (2008). *Youth'07: The Health and Wellbeing of Secondary School Students in New Zealand - Initial Findings*. Auckland: Adolescent Health Research Group, University of Auckland.
- Azjen, I., & Driver, B. L. (1992). Application of the theory of planned behaviour to leisure choice. *Journal of Leisure Research*, 24(3), 207-224.
- Baker, C. N. (2008). Under-represented college students and extracurricular involvement: the effects of various student organizations on academic performance. *Social Psychology of Education*, 11(3), 273-298.
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice Hall.
- Barber, B. K., Stolz, H. E., & Olsen, J. A. (2005). Parental support, psychological control, and behavioral control: assessing relevance across time, method, and culture. *Monographs of the Society for Research in Child Development*, 70(4).
- Barber, B. L., Eccles, J. S., & Stone, M. R. (2001). Whatever happened to the jock, the brain, and the princess? Young adult pathways linked to adolescent activity involvement and social identity. *Journal of Adolescent Research*, 16(5), 429-455.
- Barker, R. G., & Gump, P. V. (1964). *Big School, Small School: High School Size and Student Behavior*. Stanford, CA: Stanford University Press.
- Barker, R. G., & Schoggen, P. (1973). *Qualities of Community Life*. San Francisco, CA: Jossey-Bass.
- Barnes, G. M., Hoffman, J. H., Welte, J. W., Farrell, M. P., & Dintcheff, B. A. (2007). Adolescents' time use: effects on substance use, delinquency and sexual activity *Journal of Youth and Adolescence*, 36(5), 697-610.
- Benard, B. (1993). Fostering resiliency in kids. *Educational Leadership*, 51(3), 44-48.
- Blomfield, C. J., & Barber, B. L. (2009). Performing on the stage, the field, or both? Australian adolescent extracurricular activity participation and self-concept. *Journal of Adolescence*, 32(3), 733-739.
- Blum, R. W., McNeely, C. A., & Rinehart, P. M. (2002). *Improving the odds: The untapped power of schools to improve the health of teens*. Minneapolis, MN.
- Blyth, D. A., Hill, J. P., & Thiel, K. S. (1982). Early adolescents' significant others: grade and gender differences in perceived relationships with

- familial and nonfamilial adults and young people. *Journal of Youth and Adolescence*, 11(6), 425-450.
- Bonneau, C., Ee, B., & Lauzon, J. (2006). First Nations learners and extracurricular activities: barriers and bridges to participation. *Educational Insights*, 10(1), 1-19.
- Bourdieu, P. (1977). *Outline of a Theory of Practice*. Cambridge: Cambridge University Press.
- Bronfenbrenner, U. (1979). *Ecology of Human Development*. Cambridge, MA: Harvard University Press.
- Caliendo, M., & Kopeinig, S. (2005). *Some Practical Guidance for the Implementation of Propensity Score Matching*. Bonn, Germany: Forschungsinstitut zur Zukunft der Arbeit - Institute for the Study of Labor.
- Chambers, E., & Schreiber, J. (2004). Girls' academic achievement: varying associations of extracurricular activities. *Gender and Education*, 16(3), 327-346.
- Chipuer, H. M., & Pretty, G. M. H. (1999). A review of the sense of community index: current uses, factor structure, reliability, and further development. *Journal of Community Psychology*, 27(6), 643-658.
- Cohen, A. B. (2009). Many forms of culture. *American Psychologist*, 64(3), 194-204.
- Coleman, J. S. (1959). Academic achievement and the structure of competition. *Harvard Educational Review*, 29(1), 330-351.
- Cooper, H., Valentine, J., Nye, B., & Lindsay, J. (1999). Relationships between five after-school activities and academic achievement. *Journal of Educational Psychology*, 91(2), 369-378.
- Crooks, T., Smith, J. K., & Flockton, L. (2008). *National Education Monitoring Report 47: Music*. Dunedin, New Zealand: University of Otago Educational Assessment Research Unit.
- Csikszentmihalyi, M. (1990). *Flow: The Psychology of Optimal Experience*. New York, NY: Harper and Row.
- Cutrona, C. E., & Russell, D. W. (1987). The provisions of social relationships and adaptation to stress. In W. H. Jones & D. Perlman (Eds.), *Advances in Personal Relationships* (pp. 37-67). Greenwich CT: JAI Press.

- Dehejia, R. H., & Wahba, S. (2002). Propensity score-matching methods for nonexperimental causal studies. *The Review of Economics and Statistics*, 84(1), 151-161. Retrieved from <http://www.jstor.org/stable/3211745>
- Dempster, A. P., Laird, N. M., & Rubin, D. B. (1977). Maximum likelihood from incomplete data via the EM algorithm. *Journal of the Royal Statistical Society. Series B (Methodological)*, 39(1), 1-38.
- Denault, A.-S., & Poulin, F. (2009a). Predictors of adolescent participation in organized activities: a five-year longitudinal study. *Journal of Research on Adolescence*, 19(2), 287-311.
- Denault, A.-S., & Poulin, F. (2009b). Intensity and breadth of participation in organized activities during the adolescent years: multiple associations with youth outcomes. *Journal of Youth and Adolescence*, 38(9), 1199-1213.
- Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The Satisfaction With Life Scale. *Journal of Personality Assessment*, 49(1), 71-75.
- Dorofaeff, T. F., & Denny, S. (2006). Sleep and adolescence: do New Zealand teenagers get enough? *Journal of Paediatrics and Child Health*, 42(9), 515-520.
- Dotterer, A. M., McHale, S. M., & Crouter, A. C. (2007). Implications of out-of-school activities for school engagement in African American adolescents. *Journal of Youth and Adolescence*, 36(4), 391-401.
- Dworkin, J. B., Larson, R., & Hansen, D. (2003). Adolescents' accounts of growth experiences in youth activities. *Journal of Youth and Adolescence*, 32(1), 17-26.
- Eccles, J., & Barber, B. L. (1999). Student council, volunteering, basketball, or marching band: what kind of extracurricular involvement matters? *Journal of Adolescent Research*, 14(1), 10-43.
- Eccles, J., Barber, B. L., Stone, M., & Hunt, J. (2003). Extracurricular activities and adolescent development. *Journal of Social Issues*, 59(4), 865-889.
- Eccles, J., & Templeton, J. (2002). Extracurricular and other after-school activities for youth. *Review of Research in Education*, 26(1), 113-180.
- Eder, D., & Parker, S. (1987). The cultural production and reproduction of gender: the effect of extracurricular activities on peer-group culture. *Sociology of Education*, 60(3), 200-213.
- Edwards, S., Jensen, V., Peterson, V., Barnes, H. M., Anae, M., Watson, P., et al. (2003). *Themes in Young People's Accounts of Wellbeing in Their Lives* (No. HRC 00/256). Auckland, New Zealand: Centre for Social and Health Outcomes Research and Evaluation & Te Ropu Whariki Te



Runanga, Wananga, Hauora me te Paekaka Massey University, and the Alcohol and Public Health Research Unit/Whariki, University of Auckland.

- Edwards, S., McCreanor, T., & Moewaka-Barnes, H. (2007). Maori family culture: a context of youth development in Counties/Manukau. *Kotuitui: New Zealand Journal of Social Sciences Online*, 2(1), 1-14.
- Eid, M., & Diener, E. (2004). Global judgments of subjective well-being: situational variability and long-term stability. *Social Indicators Research*, 65(3), 245-277.
- Eitle, T. M., & Eitle, D. J. (2002). Race, cultural capital, and the educational effects of participation in sports. *Sociology of Education* 75(2), 123-146.
- Engel-Yeger, B., Jarus, T., & Law, M. (2007). Impact of culture on children's community participation in Israel. *American Journal of Occupational Therapy*, 61(4), 421-428.
- Feldman, A. F., & Matjasko, J. L. (2005). The role of school-based extracurricular activities in adolescent development: a comprehensive review and future directions. *Review of Educational Research*, 75(2), 159-210.
- Feldman, A. F., & Matjasko, J. L. (2007). Profiles and portfolios of adolescent school-based extracurricular activity participation. *Journal of Adolescence*, 30(2), 313-332.
- Fox, S. H. (2010). *Ancient Ways in Current Days: Ethno-Cultural Arts and Acculturation*. Unpublished Doctoral thesis, Victoria University, Wellington, New Zealand.
- Fredricks, J. A., Alfeld-Liro, C. J., Hruda, L. Z., Eccles, J. S., Patrick, H., & Ryan, A. M. (2002). A qualitative exploration of adolescents' commitment to athletics and the arts. *Journal of Adolescent Research*, 17(1), 68-97.
- Fredricks, J. A., & Eccles, J. S. (2006b). Extracurricular involvement and adolescent adjustment: impact of duration, number of activities, and breadth of participation. *Applied Developmental Science*, 10(3), 132-146.
- Gardner, M., Roth, J., & Brooks-Gunn, J. (2008). Adolescents' participation in organized activities and developmental success 2 and 8 years after high school: do sponsorship, duration, and intensity matter? *Developmental Psychology*, 44(3), 814-830.
- Gardner, M., Roth, J., & Brooks-Gunn, J. (2009). Sports participation and juvenile delinquency: the role of the peer context among adolescent

boys and girls with varied histories of problem behavior. *Developmental Psychology*, 45(2), 341-353.

- Goodenow, C., & Grady, K. E. (1993). The relationship of school belonging and friends' values to academic motivation among urban adolescent students. *The Journal of Experimental Education*, 62(1), 60-71.
- Gordon, W. R., & Caltabiano, M. L. (1996). Urban-rural differences in adolescent self-esteem, leisure boredom, and sensation-seeking as predictors of leisure-time usage and satisfaction. *Adolescence*, 31(124), 883-901.
- Hansen, D. M., & Larson, R. (2007). Amplifiers of developmental and negative experiences in organized activities: dosage, motivation, lead roles, and adult-youth ratios. *Journal of Applied Developmental Psychology*, 28(4), 360-374.
- Hansen, D. M., Larson, R. W., & Dworkin, J. B. (2003). What adolescents learn in organized youth activities: a survey of self-reported developmental experiences. *Journal of Research on Adolescence*, 13(1), 25-55.
- Harrison, P. A., & Narayan, G. (2003). Differences in behavior, psychological factors, and environmental factors associated with participation in school sports and other activities in adolescence. *The Journal of School Health*, 73(3), 113-120.
- Hattie, J. (2002). *Schools Like Mine: Cluster Analysis of New Zealand Schools*. Auckland, NZ: University of Auckland.
- Hawe, P., Shiell, A., & Riley, T. (2009). Theorizing interventions as events in systems. *American Journal of Community Psychology*, 43(3), 267-276.
- Heath, S. B. (2001). Three's not a crowd: plans, roles, and focus in the arts. *Educational Researcher*, 30(7), 10-17.
- Hill, J. L., Waldfogel, J., Brooks-Gunn, J., & Han, W. J. (2005). Maternal employment and child development: A fresh look using newer methods. *Developmental Psychology*, 41(6), 833-850.
- Hohepa, M., Schofield, G., & Kolt, G. S. (2006). Physical activity: what do high school students think? *Journal of Adolescent Health*, 39(3), 328-336.
- Jose, P., Ryan, N., & Pryor, J. (under review). Does social connectedness lead to a greater sense of well-being in adolescence? *Journal of Research on Adolescence*, (Submitted 2010).
- Kort-Butler, L. A., & Hagemen, K. J. (2010). School-based extracurricular activity involvement and adolescent self-esteem: a growth-curve

- analysis. *Journal of Youth and Adolescence*. doi:10.1007/s10964-010-9551-4
- Kreager, D. A. (2007). Unnecessary roughness? School sports, peer networks, and male adolescent violence. *American Sociological Review*, 72(5), 705-724.
- Kukutai, T. (2004). The problem of defining an ethnic group for public policy: who is Maori and why does it matter? *Social Policy Journal of New Zealand*, (23), 86-108.
- Kukutai, T., & Callister, P. (2009). A "main" ethnic group? Ethnic self-prioritisation among New Zealand youth. *Social Policy Journal of New Zealand*, (36), 16-31.
- Laidlaw, C. (1999). Sport and national identity: race relations, business, professionalism. In B. Patterson (Ed.), *Sport, Society and Culture in New Zealand* (pp. 11-18). Wellington: Victoria University Stout Research Centre.
- Larson, R. (1990). The solitary side of life: an examination of the time people spend alone from childhood to old age. *Developmental Review*, 10(2), 155-183.
- Larson, R. (2000). Toward a psychology of positive youth development. *American Psychologist*, 55(1), 170-183.
- Larson, R., Hansen, D. M., & Moneta, G. (2006). Differing profiles of developmental experiences across types of organized youth activities. *Developmental Psychology*, 42(5), 849-863.
- Larson, R., & Verma, S. (1999). How children and adolescents spend time across the world: work, play, and developmental opportunities. *Psychological Bulletin*, 125(6), 701-736.
- Libbey, H., Ireland, M., & Resnick, M. (2002). Social connectedness: is protection cumulative? *Journal of Adolescent Health*, 30(2), 102-102.
- Luthar, S. S., Shoum, K. A., & Brown, P. J. (2006). Extracurricular involvement among affluent youth: a scapegoat for "ubiquitous achievement pressures"? *Developmental Psychology*, 42(3), 583-597.
- Mahoney, J. L., Cairns, B. D., & Farmer, T. (2003). Promoting interpersonal competence and educational success through extracurricular activity participation. *Journal of Educational Psychology*, 95(2), 409-418.
- Mahoney, J. L., Harris, A. L., & Eccles, J. S. (2006). Organized activity participation, positive youth development, and the over-scheduling hypothesis. *Social Policy Report*, XX(IV), 3-30.

- Marsh, H. W. (1992). Extracurricular activities: beneficial extension of the traditional curriculum or subversion of academic goals? *Journal of Educational Psychology*, 84(4), 553-562.
- Marsh, H. W., & Kleitman, S. (2002). Extracurricular school activities: the good, the bad, and the nonlinear. *Harvard Educational Review*, 72(4), 464-511.
- Marsh, H. W., & Kleitman, S. (2005). Consequences of employment during high school: character building, subversion of academic goals, or a threshold? *American Educational Research Journal*, 42(2), 331-369.
- Mason, M. J., Schmidt, C., Abraham, A., Walker, L., & Tercyak, K. (2009). Adolescents' social environment and depression: social networks, extracurricular activity, and family relationship influences. *Journal of Clinical Psychology in Medical Settings*, 16(4), 346-354.
- McCreanor, T., Watson, P. D., & Denny, S. J. (2006). "Just accept us how we are more": experiences of young Pakeha with their families in Aotearoa New Zealand. *Social Policy Journal of New Zealand*, (27), 156-170.
- McGee, R., Williams, S., Howden-Chapman, P., Martin, J., & Kawachi, I. (2006). Participation in clubs and groups from childhood to adolescence and its effects on attachment and self-esteem. *Journal of Adolescence*, 29, 1-17.
- McLaren, K. (2002). *Building Strength: Youth Development Literature Review*. Retrieved from [www.myd.govt.nz/about-myd/publications/building-strengths.html](http://www.myd.govt.nz/about-myd/publications/building-strengths.html).
- McNeal, R. B. (1995). Extracurricular activities and high school dropouts. *Sociology of Education*, 68(1), 62-80.
- Nelson, I. A., & Gastic, B. (2009). Street ball, swim team and the sour cream machine: a cluster analysis of out of school time participation portfolios. *Journal of Youth and Adolescence*, 38(9), 1172-1186.
- Nolen-Hoeksema, S., & Girgus, J. S. (1994). The emergence of gender differences in depression during adolescence. *Psychological Bulletin*, 115(3), 424-443.
- O'Donnell, C. R., Tharp, R. G., & Wilson, K. (1993). Activity settings as the unit of analysis: a theoretical basis for community intervention and development. *American Journal of Community Psychology*, 21, 501-520.
- Painter, J. (2004). Macro for Propensity Matching in SPSS. Retrieved September 1, 2010, from <http://www.unc.edu/~painter/SPSSsyntax/propen.txt>

- Patrick, H., Allison M. Ryan, Alfeld-Liro, C., Fredricks, J. A., Hruda, L. Z., & Eccles, J. S. (1999). Adolescents' commitment to developing talent: the role of peers in continuing motivation for sports and the arts. *Journal of Youth and Adolescence*, 28(6), 741-763.
- Piko, B. F., & Keresztes, N. (2006). Physical activity, psychosocial health and life goals among youth. *Journal of Community Health*, 31(2), 136-145.
- Prinstein, M. J., & Dodge, K. A. (2008). *Understanding Peer Influence in Children and Adolescents*. New York, NY: Guilford Press.
- Radloff, L. S. (1977). The CES-D scale: a self-report depression scale for research in the general population. *Applied Psychological Measurement*, 1(3), 385-401.
- Rosenbaum, P. R., & Rubin, D. B. (1983). The central role of the propensity score in observational studies for causal effects. *Biometrika*, 70(1), 41-55.
- Rosenberg, M. (1965). *Society and the Adolescent Self-Image*. Princeton, New Jersey: Princeton University Press.
- Rudner, L. M., & Peyton, J. (2006). Consider propensity scores to compare treatments. *Practical Assessment, Research and Evaluation*, 11(9), 1-9.
- Ryff, C. D., & Keyes, C. L. M. (1995). The structure of psychological well-being revisited. *Journal of Personality and Social Psychology*, 69(4), 719-727.
- Scanlan, T. K., & Lewthwaite, R. (1986). Social psychological aspects of competition for male youth sport participants: IV. Predictors of enjoyment. *Journal of Sport Psychology*, 8(1), 25-35.
- Scheffer, J. (2002). Dealing with missing data. *Research Letters in the Information and Mathematical Sciences*, 3(1), 153-160.
- Shannon, C. S. (2006). Parents' messages about the role of extracurricular and unstructured leisure activities: adolescents' perceptions. *Journal of Leisure Research*, 38(3), 398-420.
- Shulruf, B., Tumen, S., & Tolley, H. (2008). Extracurricular activities in school, do they matter? *Children and Youth Services Review*, 30(4), 418-426.
- SPARC. (2008). *Sportfit: New Zealand Secondary School Sport and Recreation Co-ordinators Manual*. Retrieved from [http://www.sparc.org.nz/Documents/Young%20People/Sport\\_and\\_Recreation\\_Coordinators\\_Manual.pdf](http://www.sparc.org.nz/Documents/Young%20People/Sport_and_Recreation_Coordinators_Manual.pdf).
- SPSS. (2007). *SPSS Missing Value Analysis™ 16.0*. Chicago, IL: SPSS Inc.

- Tabachnick, B. G., & Fidell, L. S. (2007). *Using Multivariate Statistics* (5th ed.). Boston: Allyn & Bacon.
- Te Rito, P. R. (2007). *Maori leadership: what role can rugby play?* Unpublished Masters thesis, Auckland University of Technology, Auckland, New Zealand.
- Theokas, C., & Lerner, R. M. (2006). Observed ecological assets in families, schools, and neighborhoods: conceptualization, measurement, and relations with positive and negative developmental outcomes. *Applied Developmental Science, 10*(2), 61-74.
- Tipene-Clarke, R. (2005). He korero o nga rangatahi - Voices of Maori youth. *ChildreNZ Issues, 9*(2), 37-42.
- Urban, J. B., Lewin-Bizan, S., & Lerner, R. M. (2009). The role of neighborhood ecological assets and activity involvement in youth developmental outcomes: differential impacts of asset poor and asset rich neighborhoods. *Journal of Applied Developmental Psychology, 30*(5), 601-614.
- Utter, J., & Denny, S. (2010). *Youth'07: The Health and Wellbeing of Secondary School Students in New Zealand. Differences for Young People in Neighbourhoods of High and Low Deprivation*. Auckland: The University of Auckland.
- Waldegrave, C. (1998). The challenges of culture to psychology and post modern thinking. In McGoldrick (Ed.), *Re-visioning Family Therapy: Race, Culture, and Gender in Clinical Practice*. New York: Guilford Press.
- Ward, C. (2006). Acculturation, identity and adaptation in dual heritage adolescents. *International Journal of Intercultural Relations, 30*(2), 243-260.
- Ward, C., & Masgoret, A.-M. (2008). Attitudes toward Immigrants, Immigration, and Multiculturalism in New Zealand: A Social Psychological Analysis1. *International Migration Review, 42*(1), 227-248.
- Ware, F. J. R. (2009). *Youth Development: Maui Styles*. Unpublished Masters thesis, Te Kunenga ki Pūrehuroa: Massey University, Palmerston North, New Zealand.
- White, A. M., & Gager, C. T. (2007). Idle hands and empty pockets? Youth involvement in extracurricular activities, social capital, and economic status. *Youth & Society, 39*(1), 75-111.
- Wylie, C., Hipkins, R., & Hodgen, E. (2008). *On the Edge of Adulthood: Young People's School and Out-of-School Experiences at 16* (No. RMR-901).

Wellington, New Zealand: New Zealand Council for Educational Research.

Youniss, J., McLellan, J. A., Su, Y., & Yates, M. (1999). The role of community service in identity development. *Journal of Adolescent Research*, 14(2), 248-261.

Zaff, J., Moore, K., Papillo, A., & Williams, S. (2003). Implications of extracurricular activity participation during adolescence on positive outcomes. *Journal of Adolescent Research*, 18(6), 599-630.





### Appendix A: Survey items for time use and outcome variables used in this study

Variable	Sub-factor	Questions <sup>a</sup>
Time use <sup>b</sup>	<i>n / a</i>	How many hours each week do you spend...
		(None, 1-2 hours, 3-5 hours, 6-10 hours, more than 10 hours, or N / A – does not apply to me?)
		422. Looking after someone in your family / whanau
		423. Doing household chores
		424. Taking part in community groups (e.g. scouts, sports, etc.) outside of school hours
		425. Working in a job
		426. Doing school / kura homework
		427. Alone
		428. In an after school care programme
		About how many hours per week do you spend...
		(None, up to 2 hours, 3 to 5 hours, 6 to 10 hours, 11 to 15 hours, 16 to 20 hours, 21 to 25 hours, or more than 25 hours?)
		304. ...talking or texting on your telephone / cell phone?
		318. ...gaming (e.g. Playstation, X-box, Gamecube, Computer Games, etc)?
		319. ...watching TV, Videos, or DVDs?
		326. ...surfing or chatting on the net?
Wellbeing	Purpose in life / Direction	Please tell us how much you agree with these:
		(Strongly disagree, Disagree, Neither disagree nor agree, Agree, or Strongly agree?)
		27. I often think about my future (what I want to do with my life)
		30. I work hard now to create a good future for myself
		33. I'm the sort of person who sets goals and works hard to achieve them
	Positive relations with others	37. I am serious about working hard now so that I have a good future
		28. I find it easy to get on well with other people
		31. Most people think I am a nice person
	Confidence	34. I'm good at keeping my relationships positive with others
		29. I feel confident and positive about myself
		32. I am proud of who I am
		35. I feel I have a number of good qualities
		36. I feel I am able to do things as well as most people

Variable	Sub-factor	Questions <sup>a</sup>
Social support	Reliable alliance	Please tell us how much you agree with these: (Strongly disagree, Disagree, Neither disagree nor agree, Agree, or Strongly agree?)
		15. There are people I can depend on to help me if I really need it
		24. There are people who I can count on if I get into trouble
	Guidance	26. If something went wrong, someone would help me
		16. There is someone I can talk to about important decisions in my life
		20. There are people in my life who I am comfortable talking with about my problems
	Reassurance of worth	21. There is someone who I trust who I can turn to for advice about problems
		17. There is someone I can talk to about important decisions in my life
		23. There is someone in my life who tells me I am good at things
	Sense of security / Attachment	25. There is someone in my life who tells me I am a good person
		18. There are people in my life who make me feel safe
		19. There are people in my life who accept and understand me
Strength of self	Personal identity (reverse coded)	22. There are people in my life who I am close to
		Please tell us how much you agree with these: (Strongly disagree, Disagree, Neither disagree nor agree, Agree, or Strongly agree?)
		91. I don't really know what my interests are
		93. I tend to change a lot what I like and what I don't like
		95. I change the way I feel and act so that I sometimes wonder who the "real" me is
	Interpersonal autonomy	92. I easily change my mind if other people disagree with me
		94. I tend to change the way I act or think so that I am more like those around me
Positive affect		96. It is easy for other people to talk me into doing things that I don't want to do
		Please tell us on how many days have you felt these ways in the last week:
		(Less than 1 day, 1-2 days, 3-4 days, or 5-7 days?)
		39. I was happy
		41. I enjoyed life
		43. I felt hopeful about the future

Variable	Sub-factor	Questions <sup>a</sup>
Negative affect		<p>Please tell us on how many days have you felt these ways in the last week:</p> <p>(Less than 1 day, 1-2 days, 3-4 days, or 5-7 days?)</p> <p>38. I got upset by things that don't usually upset me</p> <p>40. I felt sad</p> <p>42. I could not stop feeling bad, even when others tried to cheer me up</p> <p>44. I felt lonely</p>
Life satisfaction		<p>Please tell us how much you agree with these:</p> <p>(Strongly disagree, Disagree, Neither disagree nor agree, Agree, or Strongly agree?)</p> <p>45. I am happy with my life</p> <p>46. So far I have the important things I want in life</p> <p>47. There is very little that I would change in my life</p>
Family connectedness	Family cohesion	<p>Please tell us how often these statements apply:</p> <p>(Never / almost never, Not often, Sometimes, Often, or Always / almost always?)</p> <p>138. For my Family / Whanau, spending time together is very important</p> <p>139. We can easily think of things to do together as a Family / Whanau</p> <p>140. My Family / Whanau like to spend free time together</p> <p>141. My Family / Whanau ask each other for help</p> <p>142. We like to do things just as a Family / Whanau</p>
	Family identity	<p>152. It means a lot to me to be a member of my Family / Whanau</p> <p>153. We are proud to be members of our Family / Whanau</p>
	Family mutual activities	<p>154. Do you and your Family / Whanau have meals together?</p> <p>155. Do you and your Family / Whanau spend time going out together (e.g. to the movies)</p> <p>156. Do you and your Family / Whanau have holidays together?</p> <p>157. Do Family / Whanau members watch you play sport or perform in other areas?</p>
School connectedness	Teacher relationship quality	<p>Please tell us how much you agree with these:</p> <p>(Strongly disagree, Disagree, Neither disagree nor agree, Agree, or Strongly agree?)</p> <p>181. I feel that my teacher(s) respect me</p> <p>182. My teacher(s) understand me</p> <p>183. I always get an opportunity to talk with my teacher(s)</p>
	Sense of school community	<p>196. I feel I am treated with as much respect as other students</p> <p>199. I like going to school / kura</p> <p>200. I feel proud about my school / kura</p>

Variable	Sub-factor	Questions <sup>a</sup>
Community connectedness		How much do you agree with these: (Strongly disagree, Disagree, Neither disagree nor agree, Agree, or Strongly agree?)
		414. My neighbourhood is a good place for young people to grow up in
		415. I feel safe walking around my neighbourhood at night
		416. My family and I know at least some of the people who live in our street
		417. My family and I can count on our neighbours for help
Peer connectedness	School peer relationship	201. How well do you get on with your classmates? (Not at all well, Not very well, OK, Fairly well, or Really well?)
		202. How well do you get on with the other students in your school / kura? (Not at all well, Not very well, OK, Fairly well, or Really well?)
	Happiness with close friends	284. How happy are you with the number of close friends you have in school / kura? (Very unhappy, Unhappy, Ok, Happy, or Very happy?)
		285. How happy are you with the number of close friends you have outside of school / kura (not school mates)? (Very unhappy, Unhappy, Ok, Happy, or Very happy?)
	Support from friends	Please tell us how much you agree with these: (Strongly disagree, Disagree, Neither disagree nor agree, Agree, or Strongly agree?)
		287. My friends and I help each other out
		288. I can trust my friends with personal problems
		289. My friends understand and accept me for who I am

<sup>a</sup> Question numbers apply to Year 3 survey, but wording was consistent across all years

<sup>b</sup> Questions on time in an after-school care programme, surfing the net, talking or texting on the phone, and watching TV, videos, or DVDs were not asked in the Year 1 survey

Appendix B: Skewness and kurtosis measures for time use and outcome variables

Table B.1

*Skewness and Kurtosis of Non-Transformed Time-use variables (Hours per week) and Outcome Variables*

Variable <sup>a</sup>	n	Mean	SD	Skewness		Kurtosis	
				Statistic	Std. Error	Statistic	Std. Error
Y1 Community Connectedness	1754	3.67	.80	-.52	.06	.36	.12
Y1 Family Connectedness	1758	3.90	.73	-.77	.06	.41	.12
Y1 Life Satisfaction	1770	4.08	.74	-.94	.06	.90	.12
Y1 Negative Affect	1710	1.62	.70	1.44	.06	1.70	.12
Y1 Overall Ryff Wellbeing	1768	4.14	.51	-.82	.06	1.60	.12
Y1 Overall Social Support	1766	4.39	.48	-1.21	.06	3.17	.12
Y1 Peer Connectedness (incl. school peers)	1494	4.21	.53	-.61	.06	.19	.12
Y1 Positive Affect	1762	3.13	.78	-.92	.06	.19	.12
Y1 School Connectedness (no school peers)	1763	3.72	.78	-.63	.06	.41	.12
Y1 Gaming	1751	3.56	4.16	1.20	.06	.25	.12
Y1 Time1: Spent looking after someone in the family	1648	2.28	3.35	2.09	.06	3.74	.12
Y1 Time2: Doing household chores	1707	2.65	2.71	2.30	.06	5.51	.12
Y1 Time3: Taking part in community groups	1660	2.87	3.40	1.58	.06	1.94	.12

Variable <sup>a</sup>	n	Mean	SD	<u>Skewness</u>		<u>Kurtosis</u>	
				Statistic	Std. Error	Statistic	Std. Error
Y1 Time4: Working in a job	1525	1.47	2.87	2.46	.06	5.88	.13
Y1 Time5: Doing homework	1711	2.71	2.68	2.25	.06	5.31	.12
Y1 Time6: Alone	1678	2.47	3.23	1.92	.06	3.20	.12
Y2 Community Connectedness	1741	3.74	.77	-.34	.06	.04	.12
Y2 Family Connectedness	1741	3.75	.78	-.54	.06	.00	.12
Y2 Life Satisfaction	1764	4.04	.80	-.96	.06	1.08	.12
Y2 Negative Affect	1749	1.63	.73	1.42	.06	1.46	.12
Y2 Overall Ryff Wellbeing	1769	4.09	.55	-.87	.06	2.18	.12
Y2 Overall Social Support	1767	4.35	.55	-1.51	.06	4.91	.12
Y2 Peer Connectedness (incl. school peers)	1473	4.21	.53	-.55	.06	.24	.13
Y2 Positive Affect	1762	3.05	.81	-.81	.06	-.04	.12
Y2 School Connectedness (no school peers)	1743	3.66	.75	-.47	.06	.52	.12
Y2 Gaming	1742	4.82	6.89	2.05	.06	3.62	.12
Y2 Talking or texting on phone / cell	1748	7.87	9.59	1.15	.06	-.16	.12
Y2 Watching TV, Videos, or DVDs	1746	8.41	7.48	1.16	.06	.59	.12
Y2 Hours per week surfing / chatting on the net	1306	5.05	6.65	1.94	.07	3.39	.14
Y2 Time1: Spent looking after someone in the family	1509	2.03	2.95	2.26	.06	5.07	.13
Y2 Time2: Doing household chores	1696	2.68	2.68	2.21	.06	5.20	.12

Variable <sup>a</sup>	n	Mean	SD	<u>Skewness</u>		<u>Kurtosis</u>	
				Statistic	Std. Error	Statistic	Std. Error
Y2 Time3: Taking part in community groups	1583	3.07	3.49	1.43	.06	1.42	.12
Y2 Time4: Working in a job	1443	2.15	3.70	1.89	.06	2.49	.13
Y2 Time5: Doing homework	1696	3.09	2.80	1.76	.06	3.06	.12
Y2 Time6: Alone	1685	2.43	3.20	2.09	.06	3.94	.12
Y2 Time7: In an after-school care programme	1370	.63	2.12	4.25	.07	18.90	.13
Y3 Community Connectedness	1714	3.75	.77	-.43	.06	.34	.12
Y3 Family Connectedness	1755	3.69	.78	-.43	.06	-.11	.12
Y3 Life Satisfaction	1770	4.03	.80	-.88	.06	.76	.12
Y3 Negative Affect	1733	1.58	.69	1.55	.06	2.04	.12
Y3 Overall Ryff Wellbeing	1768	4.08	.57	-.78	.06	1.66	.12
Y3 Overall Social Support	1770	4.38	.56	-1.15	.06	2.52	.12
Y3 Peer Connectedness (incl. school peers)	1513	4.22	.54	-.53	.06	-.06	.13
Y3 Positive Affect	1763	3.07	.80	-.78	.06	-.10	.12
Y3 School Connectedness (no school peers)	1720	3.65	.78	-.55	.06	.40	.12
Y3 Gaming	1757	4.50	6.52	2.08	.06	4.01	.12
Y3 Talking or texting on phone / cell	1758	8.94	9.66	.95	.06	-.53	.12
Y3 Watching TV, Videos, or DVDs	1756	8.31	7.22	1.18	.06	.71	.12
Y3 Hours per week surfing / chatting on the net	1216	5.91	6.65	1.74	.07	2.65	.14

Variable <sup>a</sup>	n	Mean	SD	<u>Skewness</u>		<u>Kurtosis</u>	
				Statistic	Std. Error	Statistic	Std. Error
Y3 Hours per week chatting to net friends	532	5.20	6.57	1.96	.11	3.49	.21
Y3 Time1: Spent looking after someone in the family	1508	2.19	3.19	2.18	.06	4.36	.13
Y3 Time2: Doing household chores	1695	2.75	2.71	2.17	.06	5.02	.12
Y3 Time3: Taking part in community groups	1594	3.40	3.75	1.29	.06	.83	.12
Y3 Time4: Working in a job	1479	2.95	4.35	1.32	.06	.38	.13
Y3 Time5: Doing homework	1719	3.09	3.04	1.80	.06	2.92	.12
Y3 Time6: Alone	1699	2.63	3.31	1.91	.06	3.06	.12
Y3 Time7: In an after-school care programme	1403	.42	1.81	5.57	.07	32.69	.13

a. All Time-use variables have been analysed subsequent to recoding into continuous (hours per week), rather than categorical, variables



Table B.2

*Skewness and Kurtosis of Transformed Time-use variables (Square Root Hours per Week) and Outcome Variables*

Transformed variable <sup>a</sup>	n	Mean	SD	<u>Skewness</u>		<u>Kurtosis</u>	
				Statistic	Std. Error	Statistic	Std. Error
SQRT Y1 Community Connectedness	1754	1.90	.22	-.99	.06	1.70	.12
SQRT Y1 Family Connectedness	1758	1.97	.20	-1.10	.06	1.43	.12
SQRT Y1 Life Satisfaction	1770	2.01	.20	-1.33	.06	2.49	.12
SQRT Y1 Overall Social Support	1766	2.09	.12	-1.67	.06	6.53	.12
SQRT Y1 Peer Connectedness (incl. school peers)	1494	2.045	.13	-.82	.06	.91	.13
SQRT Y1 School Connectedness (no school peers)	1763	1.92	.21	-1.05	.06	1.60	.12
SQRT Y1 Strength of Self	1758	1.56	.25	-.10	.06	-.36	.12
SQRT Y1 Gaming	1751	1.43	1.23	.29	.06	-1.08	.12
SQRT Y1 Time1: Spent looking after someone in the family	1648	1.07	1.06	.72	.06	-.21	.12
SQRT Y1 Time2: Doing household chores	1707	1.44	.77	.54	.06	1.26	.12
SQRT Y1 Time3: Taking part in community groups	1660	1.32	1.07	.31	.06	-.72	.12
SQRT Y1 Time4: Working in a job	1525	.66	1.02	1.32	.06	.60	.13
SQRT Y1 Time5: Doing homework	1711	1.47	.74	.57	.06	1.35	.12

Transformed variable <sup>a</sup>	n	Mean	SD	<u>Skewness</u>		<u>Kurtosis</u>	
				Statistic	Std. Error	Statistic	Std. Error
SQRT Y1 Time6: Alone	1678	1.19	1.02	.52	.06	-.35	.12
SQRT Y2 Community Connectedness	1741	1.92	.21	-.74	.06	1.05	.12
SQRT Y2 Family Connectedness	1741	1.93	.21	-.90	.06	1.03	.12
SQRT Y2 Life Satisfaction	1764	2.00	.22	-1.45	.06	3.18	.12
SQRT Y2 Negative Affect	1749	1.26	.26	1.06	.06	.36	.12
SQRT Y2 Overall Social Support	1767	2.08	.14	-2.29	.06	11.27	.12
SQRT Y2 Overall Wellbeing	1769	2.02	.14	-1.41	.06	5.45	.12
SQRT Y2 Peer Connectedness (incl. school peers)	1473	2.05	.13	-.77	.06	1.03	.13
SQRT Y2 Positive Affect	1762	1.73	.26	-1.17	.06	.90	.12
SQRT Y2 School Connectedness (no school peers)	1743	1.90	.21	-.96	.06	2.03	.12
SQRT Y2 Strength of Self	1761	1.53	.25	.03	.06	-.24	.12
SQRT Y2 Gaming	1742	1.68	1.42	.86	.06	.12	.12
SQRT Y2 Talking or texting on phone / cell	1748	2.2	1.74	.52	.06	-.99	.12
SQRT Y2 Watching TV, Videos, or DVDs	1746	2.59	1.30	.29	.06	-.55	.12
SQRT Y2 Hours per week surfing / chatting on the net	1306	1.78	1.37	.73	.07	-.04	.14
SQRT Y2 Time1: Spent looking after someone in the family	1509	1.02	1.00	.69	.06	-.14	.13

Transformed variable <sup>a</sup>	n	Mean	SD	<u>Skewness</u>		<u>Kurtosis</u>	
				Statistic	Std. Error	Statistic	Std. Error
SQRT Y2 Time2: Doing household chores	1696	1.45	.77	.45	.06	1.08	.12
SQRT Y2 Time3: Taking part in community groups	1583	1.38	1.09	.23	.06	-.84	.12
SQRT Y2 Time4: Working in a job	1443	.86	1.18	1.05	.06	-.23	.13
SQRT Y2 Time5: Doing homework	1696	1.58	.77	.37	.06	.64	.12
SQRT Y2 Time6: Alone	1685	1.2	.99	.56	.06	-.06	.12
SQRT Y2 Time7: In an after-school care programme	1370	.27	.75	2.89	.07	7.79	.13
SQRT Y3 Community Connectedness	1714	1.92	.21	-.89	.06	1.77	.12
SQRT Y3 Family Connectedness	1755	1.91	.21	-.79	.06	.76	.12
SQRT Y3 Life Satisfaction	1770	2.00	.22	-1.32	.06	2.52	.12
SQRT Y3 Negative Affect	1733	1.23	.25	1.17	.06	.72	.12
SQRT Y3 Overall Social Support	1770	2.09	.14	-1.70	.06	6.72	.12
SQRT Y3 Overall Wellbeing	1768	2.01	.15	-1.25	.06	4.14	.12
SQRT Y3 Peer Connectedness (incl. school peers)	1513	2.05	.13	-.72	.06	.46	.13
SQRT Y3 Positive Affect	1763	1.73	.25	-1.12	.06	.80	.12
SQRT Y3 School Connectedness (no school peers)	1720	1.90	.22	-.99	.06	1.80	.12
SQRT Y3 Strength of Self	1766	1.49	.25	.05	.06	-.34	.12

Transformed variable <sup>a</sup>	n	Mean	SD	<u>Skewness</u>		<u>Kurtosis</u>	
				Statistic	Std. Error	Statistic	Std. Error
SQRT Y3 Hours per week chatting to net friends	532	1.90	1.26	.95	.11	.28	.21
SQRT Y3 Gaming	1757	1.59	1.41	.83	.06	.03	.12
SQRT Y3 Talking or texting on phone / cell	1758	2.45	1.71	.31	.06	-1.12	.12
SQRT Y3 Watching TV, Videos, or DVDs	1756	2.59	1.26	.28	.06	-.47	.12
SQRT Y3 Time1: Spent looking after someone in the family	1508	1.06	1.03	.70	.06	-.15	.13
SQRT Y3 Time2: Doing household chores	1695	1.47	.77	.43	.06	1.04	.12
SQRT Y3 Time3: Taking part in community groups	1594	1.46	1.13	.18	.06	-.91	.12
SQRT Y3 Time4: Working in a job	1479	1.08	1.33	.73	.06	-1.03	.13
SQRT Y3 Time5: Doing homework	1719	1.54	.84	.37	.06	.42	.12
SQRT Y3 Time6: Alone	1699	1.27	1.01	.49	.06	-.23	.12
SQRT Y3 Time7: In an after-school care programme	1403	.19	.62	3.79	.07	14.77	.13
SQRTY1 Negative Affect	1710	1.25	.25	1.06	.06	.48	.12
SQRTY1 Positive Affect	1762	1.75	.24	-1.27	.06	1.24	.12

a. All Time-use variables have been analysed subsequent to recoding into continuous (hours per week), rather than categorical, variables

Table B.3

*Skewness and Kurtosis of Transformed Time-use variables (Logarithm Hours per Week) and Outcome Variables*

Transformed variable <sup>a</sup>	n	Mean	SD	Skewness		Kurtosis	
				Statistic	Std. Error	Statistic	Std. Error
LOGY1 Community Connectedness	1754	.66	.08	-1.25	.06	2.62	.12
LOGY1 Family Connectedness	1758	.69	.07	-1.29	.06	2.14	.12
LOGY1 Gaming	1751	.48	.40	.19	.06	-1.27	.12
LOGY1 Life Satisfaction	1770	.70	.07	-1.57	.06	3.63	.12
LOGY1 Negative Affect	1710	.41	.10	.96	.06	.17	.12
LOGY1 Overall Social Support	1766	.73	.04	-2.00	.06	9.34	.12
LOGY1 Overall Wellbeing	1768	.71	.05	-1.43	.06	4.82	.12
LOGY1 Peer Connectedness (incl. school peers)	1494	.71	.05	-.96	.06	1.47	.13
LOGY1 Positive Affect	1762	.61	.10	-1.42	.06	1.74	.12
LOGY1 School Connectedness (no school peers)	1763	.67	.08	-1.28	.06	2.41	.12
LOGY1 Strength of Self	1758	.53	.10	-.26	.06	-.39	.12
LOGY1 Time1: Spent looking after someone in the family	1648	.36	.35	.65	.06	-.51	.12
LOGY1 Time2: Doing household chores	1707	.48	.26	.43	.06	.59	.12

Transformed variable <sup>a</sup>	n	Mean	SD	Skewness		Kurtosis	
				Statistic	Std. Error	Statistic	Std. Error
LOGY1 Time3: Taking part in community groups	1660	.44	.36	.23	.06	-.98	.12
LOGY1 Time4: Working in a job	1525	.22	.34	1.28	.06	.32	.13
LOGY1 Time5: Doing homework	1711	.49	.25	.45	.06	.63	.12
LOGY1 Time6: Alone	1678	.40	.34	.46	.06	-.61	.12
LOGY2 Community Connectedness	1741	.67	.08	-.97	.06	1.81	.12
LOGY2 Family Connectedness	1741	.67	.08	-1.11	.06	1.77	.12
LOGY2 Gaming	1742	.53	.43	.52	.06	-.77	.12
LOGY2 Talking or texting on phone / cell	1748	.67	.50	.24	.06	-1.31	.12
LOGY2 Watching TV, Videos, or DVDs	1746	.83	.38	-.24	.06	-.78	.12
LOGY2 Hours per week surfing / chatting on the net	1306	.57	.42	.38	.07	-.88	.14
LOGY2 Life Satisfaction	1764	.70	.08	-1.74	.06	4.66	.12
LOGY2 Negative Affect	1749	.41	.11	.96	.06	.074	.12
LOGY2 Overall Social Support	1767	.73	.05	-2.81	.06	16.32	.12
LOGY2 Overall Wellbeing	1769	.70	.05	-1.78	.06	8.11	.12
LOGY2 Peer Connectedness (incl. school peers)	1473	.71	.05	-.93	.06	1.66	.13
LOGY2 Positive Affect	1762	.60	.10	-1.31	.06	1.34	.12

Transformed variable <sup>a</sup>	n	Mean	SD	Skewness		Kurtosis	
				Statistic	Std. Error	Statistic	Std. Error
LOGY2 School Connectedness (no school peers)	1743	.66	.08	-1.23	.06	3.10	.12
LOGY2 Strength of Self	1761	.52	.10	-.13	.06	-.31	.12
LOGY2 Time1: Spent looking after someone in the family	1509	.34	.33	.65	.06	-.41	.13
LOGY2 Time2: Doing household chores	1696	.48	.26	.36	.06	.44	.12
LOGY2 Time3: Taking part in community groups	1583	.46	.36	.15	.06	-1.07	.12
LOGY2 Time4: Working in a job	1443	.29	.39	.99	.06	-.47	.13
LOGY2 Time5: Doing homework	1696	.53	.26	.26	.06	.04	.12
LOGY2 Time6: Alone	1685	.40	.33	.49	.06	-.38	.12
LOGY2 Time7: In an after-school care programme	1370	.09	.25	2.84	.07	7.24	.13
LOGY3 Community Connectedness	1714	.67	.08	-1.16	.06	2.82	.12
LOGY3 Family Connectedness	1755	.66	.08	-.97	.06	1.38	.12
LOGY3 Hours per week chatting to net friends )	532	.60	.39	.55	.11	-.77	.21
LOGY3 Gaming	1757	.51	.43	.53	.06	-.82	.12
LOGY3 Talking or texting on phone / cell	1758	.75	.49	.00	.06	-1.33	.12
LOGY3 Watching TV, Videos, or DVDs	1756	.83	.36	-.27	.06	-.66	.12
LOGY3 Hours per week surfing / chatting on the net	1216	.67	.39	.21	.07	-.88	.14

Transformed variable <sup>a</sup>	n	Mean	SD	Skewness		Kurtosis	
				Statistic	Std. Error	Statistic	Std. Error
LOGY3 Life Satisfaction	1770	.69	.08	-1.59	.06	3.77	.12
LOGY3 Negative Affect	1733	.40	.10	1.06	.06	.38	.12
LOGY3 Overall Social Support	1770	.73	.05	-2.09	.06	1.38	.12
LOGY3 Overall Wellbeing	1768	.70	.05	-1.56	.06	6.15	.12
LOGY3 Peer Connectedness (incl. school peers)	1513	.72	.05	-.84	.06	.90	.123
LOGY3 Positive Affect	1763	.60	.10	-1.27	.06	1.22	.12
LOGY3 School Connectedness (no school peers)	1720	.66	.08	-1.26	.06	2.42	.12
LOGY3 Strength of Self	1766	.51	.10	-.10	.06	-.40	.12
LOGY3 Time1: Spent looking after someone in the family	1508	.35	.34	.63	.06	-.45	.13
LOGY3 Time2: Doing household chores	1695	.49	.26	.32	.06	.38	.12
LOGY3 Time3: Taking part in community groups	1594	.49	.37	.08	.06	-1.13	.12
LOGY3 Time4: Working in a job	1479	.36	.44	.67	.06	-1.20	.13
LOGY3 Time5: Doing homework	1719	.52	.28	.25	.06	-.07	.12
LOGY3 Time6: Alone	1699	.42	.34	.41	.06	-.54	.12
LOGY3 Time7: In an after-school care programme	1403	.06	.21	3.72	.07	13.93	.13

a. All Time-use variables have been analysed subsequent to recoding into continuous (hours per week), rather than categorical, variables



Appendix C: Correlations between non-transformed and transformed Y1 variables

Table C.1

*Correlations Between Y1 Time-use variables (Non-Transformed) and Y1 Outcomes*

Variable <sup>a</sup>	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1 Looking after someone in family	1.00	.35**	.20**	.20**	.18**	.08**	.04	.03	-.01	.09**	.07*	.07**	-.02	.12**	.01	.00
2 Doing household chores		1.00	.19**	.23**	.31**	.15**	.05	.05	.02	.08**	.05	.08**	.04	.07**	.05*	.01
3 Taking part in community groups			1.00	.17**	.21**	.10**	.03	.13**	.09**	.11**	.11**	.05*	.16**	.05	.04	.05*
4 Working in a job				1.00	.13**	.18**	.05	-.08**	-.10**	-.06*	.03	-.12**	.05*	.11**	-.09**	-.09**
5 Doing homework					1.00	.15**	.03	.08**	.04	.07**	.10**	.10**	.02	.03	.047	.02
6 Alone						1.00	.16**	-.16**	-.13**	-.23**	-.14**	-.12**	-.04	.16**	-.13**	-.19**
7 Gaming							1.00	-.08**	-.09**	-.08**	-.10**	-.12**	.00	.07**	-.02	-.06**
8 Overall Ryff Wellbeing								1.00	.64**	.45**	.49**	.50**	.22**	-.17**	.36**	.60**
9 Overall Social Support									1.00	.41**	.44**	.38**	.25**	-.17**	.27**	.47**

Variable <sup>a</sup>	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
10 Family Connectedness										1.00	.35**	.44**	.22**	-.14**	.28**	.45**
11 Peer Connectedness											1.00	.42**	.26**	-.09**	.24**	.38**
12 School Connectedness												1.00	.19**	-.09**	.27**	.42**
13 Community Connectedness													1.00	-.09**	.12**	.20**
14 Negative Affect														1.00	-.35**	-.21**
15 Positive Affect															1.00	.37**
16 Life Satisfaction																1.00

<sup>a</sup>. All Time-use variables have been analysed subsequent to recoding into continuous (hours per week), rather than categorical, variables

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

Table C .2

*Correlations Between Transformed (Square Root) Y1 Time-use variables and Y1 Outcomes*

Transformed variable <sup>a</sup>	1a	2a	3a	4a	5a	6a	7a	8	9	10	11	12	13	14	15	16
1a Looking after someone in family	1.00	.29**	.20**	.19**	.16**	.08**	.05	.01	-.02	.10**	.05	.06*	-.00	.10**	.00	-.01
2a Doing household chores		1.00	.19**	.16**	.26**	.14**	.05	.06**	.05*	.09**	.08*	.09**	.053*	.05	.053*	.03
3a Taking part in community groups			1.00	.16**	.20**	.10**	.03	.14**	.11**	.14**	.13**	.06**	.18**	.03	.05	.06*
4a Working in a job				1.00	.09**	.17**	.03	-.08**	-.09**	-.05	.02	-.12**	.06*	.10**	-.09**	-.09**
5a Doing homework					1.00	.14**	.01	.10**	.07**	.09**	.11**	.12**	.03	.01	.06*	.03
6a Alone						1.00	.15**	-.18**	-.13**	-.25**	-.15**	-.20**	-.02	.13**	-.14**	-.21**
7a Gaming							1.00	-.08**	-.09**	-.07**	-.12**	-.12**	-.00	.07**	-.01	-.07**
8 Overall Ryff Wellbeing								1.00	.64**	.45**	.49**	.50**	.22**	-.17**	.36**	.60**

Transformed variable <sup>a</sup>	1a	2a	3a	4a	5a	6a	7a	8	9	10	11	12	13	14	15	16
9 Overall Social Support								1.00		.41**	.44**	.38**	.25**	-.17**	.27**	.47**
10 Family Connectedness									1.00		.35**	.44**	.22**	-.14**	.29**	.45**
11 Peer Connectedness (incl. school peers)										1.00		.42**	.26**	-.10**	.24**	.38**
12 School Connectedness (excl. school peers)											1.00		.19**	-.10**	.27**	.42**
13 Community Connectedness													1.00	-.09**	.12**	.20**
14 Negative Affect														1.00	-.35**	-.21**
15 Positive Affect															1.00	.37**
16 Life Satisfaction																1.00

a. All Time-use variables used are the square root of the continuous (hours per week) variable

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

Table C .3

*Correlations Between Transformed (Logarithm) Y1 Time-use variables and Y1 Outcomes*

Transformed variable <sup>a</sup>	1b	2b	3b	4b	5b	6b	7b	8	9	10	11	12	13	14	15	16
1b Looking after some in family	1.00	.29**	.20**	.20**	.16**	.080**	.05	.01	-.02	.095**	.04	.06*	.00	.10**	.00	-.01
2b Doing household chores		1.00	.19**	.16**	.26**	.14**	.05*	.06*	.05	.08**	.06*	.08**	.05*	.05	.05*	.02
3b In community groups			1.00	.16**	.20**	.09**	.03	.14**	.11**	.15**	.13**	.06*	.18**	.03	.05	.06*
4b Working in a job				1.00	.09**	.17**	.03	-.08**	-.09**	-.05	.02	-.13**	.06*	.10**	-.09**	-.09**
5b Doing homework					1.00	.14**	.01	.10**	.07**	.08**	.11**	.12**	.03	.01	.06*	.03
6b Alone						1.00	.16**	-.18**	-.13**	-.25**	-.16**	-.20**	-.02	.13**	-.14**	-.21**
7b Gaming							1.00	-.08**	-.09**	-.07**	-.12**	-.12**	.00	.07**	.00	-.07**
8 Overall Ryff Wellbeing								1.00	.64**	.45**	.49**	.50**	.22**	-.17**	.36**	.60**

Transformed variable <sup>a</sup>	1b	2b	3b	4b	5b	6b	7b	8	9	10	11	12	13	14	15	16
9 Overall Social Support									1.00	.41**	.44**	.38**	.25**	-.17**	.27**	.47**
10 Family Connectedness									1.00		.35**	.44**	.22**	-.14**	.28**	.45**
11 Peer Connectedness											1.00	.42**	.26**	-.09**	.24**	.38**
12 School Connectedness (incl. school peers)												1.00	.19**	-.09**	.27**	.42**
13 Community Connectedness (excl. school peers)													1.00	-.09**	.12**	.20**
14 Negative Affect														1.00	-.35**	-.21**
15 Positive Affect															1.00	.37**
16 Life Satisfaction																1.00

<sup>a</sup>. All Time-use variables used are the logarithm of the continuous (hours per week) variable

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

Appendix D: Correlations between mean outcome factors and mean Time-use variables

Table D .1

*Correlations Between Mean Y1-3 Time-use variables and Outcome Factors*

Variable (Mean value Y1-Y3)	1	2	3	4	5	6	7	8	9	10
1 Looking after someone in the family	1.00	.46**	.14**	.22**	.19**	.11**	.07*	.01	.15**	.00
2 Doing chores		1.00	.16**	.18**	.31**	.13**	.09**	.00	.14**	.05
3 Taking part in community groups			1.00	.11**	.21**	.01	-.02	.14**	.01	.22**
4 Working in a job				1.00	.14**	.23**	-.00	-.18**	.06*	.08**
5 Doing homework					1.00	.16**	.01	.07**	.04	.09**
6 Alone						1.00	.18**	-.30**	.21**	.07**
7 Gaming							1.00	-.14**	.03	-.04
8 Wellbeing Factor								1.00	.01	-.01
9 Negative Affect Factor									1.00	-.00
10 Community Connectedness Factor										1.00

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





### **Appendix E: MANCOVA analyses on time use**

Differences in underlying patterns of time use were a potential confounding factor in my analyses of the benefits of participation in this study. Accordingly, to determine if the youth surveyed in the YCP significantly differed in the amount of time they spent in community-based activity groups and other out-of-school activities, I ran a MANCOVA on Year 1 time use, and a repeated measures MANCOVA on Years 2 and 3 time use (for Year 1, a greater number of socio-economic and demographic covariates were available than for later study years, enabling a more nuanced, separate analysis).

#### *Year 1 time use*

To identify inter-group differences in Year 1 time use, I ran a MANCOVA with Year 1 time use indicators (seven in total) as dependent variables, Year 1 ethno-cultural group and community activity type as independent variables or fixed factors, and Year 1 sex, age cohort (9-11, 12-13, or 14-15), dichotomous location type (urban (urban or secondary urban) or rural (minor urban or rural)), and dichotomous school decile grouping (low (1-5) or high (6-10)) as covariates. This MANCOVA indicated that the main effects of all independent variables and covariates were significant, but ethno-cultural group and community activity type did not interact (see Table 8).

Table 8

*Multivariate Tests for Time Use in Year 1*

Effect	Pillai's Trace	F	df <sub>1</sub>	df <sub>2</sub>
<b>Main effects</b>				
Ethno-cultural group	.035***	3.254	14	2532
Community group	.289***	19.306	21	3801
<b>Covariates</b>				
Age	.090***	17.824	7	1265
Sex	.152***	32.473	7	1265
Decile	.020**	3.612	7	1265
Location	.015**	2.674	7	1265

\*\* p < .01, \*\*\* p < .001

Follow-up univariate tests on the significant main effects for Year 1 time use (reported in Table 9) indicated that participants from different ethno-cultural groups spent significantly different amounts of time alone and looking after someone in their family. In addition, participants who were involved in different types of community groups differed in the amount of time they spent looking after someone in their family, doing community group activities, working, and doing homework. Reported time use also differed according to participant age, sex, decile and location, as detailed in Table 9. Notably, there were no Time-use variables for which participants from all possible groupings reported the same amount of time use (in other words, all of the Time-use variables indicated at least one significant difference between participants with different ethnic, activity group, or socio-demographic characteristics).

Table 9

*Significant F-tests for Univariate follow-up Tests for Time Use in Year 1*

Time use	Effect	MS	F	df <sub>1</sub>	Partial $\eta^2$
<b>Main effects</b>					
Looking after someone in family	Ethno-cultural group	96.346	9.936***	2	.015
Alone	Ethno-cultural group	50.813	5.484**	2	.009
Looking after someone in family	Community activity type	28.649	2.955*	3	.007
In community groups	Community activity type	1055.081	152.838***	3	.265
Working on a job	Community activity type	24.044	3.304*	3	.008
Doing homework	Community activity type	37.059	5.450**	3	.013
<b>Covariates</b>					
In community groups	Age	175.440	25.414***	1	.020
Working on a job	Age	330.572	45.425***	1	.035
Doing homework	Age	77.654	11.421**	1	.009
Alone	Age	592.432	63.937***	1	.048
Working on a job	Sex	52.312	7.188**	1	.006
Alone	Sex	51.940	5.606*	1	.004
Gaming	Sex	3130.449	207.020***	1	.140
Looking after someone in family	Decile	45.755	4.719*	1	.004
Chores	Decile	52.565	7.777**	1	.006
Alone	Decile	40.046	4.322*	1	.003
Gaming	Decile	122.153	8.078**	1	.006
Working in a job	Location	61.094	8.395**	1	.007

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

In order to establish which groupings of participants by ethno-cultural group and community activity were reporting higher or lower time use for each variable, I conducted post-hoc tests (reported in Table 10). To obtain the post-hoc test results in SPSS, I was obliged to re-run the MANCOVA analysis without the covariates (i.e., as a MANOVA). I used the conservative Dunnett's C measure to test significance, as a Levene's test on the univariate analysis indicated that the equality of variance assumption was violated ( $p < .05$ ) for five Year 1 Time-use variables (that is, all variables except time doing household chores and time working in a job). The resulting analyses indicated that, in Year 1 of the YCP, NZE / Pākehā youth spent significantly more time alone, and less time looking after a family member, than Māori or Dual heritage youth. In addition, youth who did not participate in any community groups spent less time looking after a family member or doing chores than youth who participated in a mixture of sport and non-sport community activities, and less time doing sport than those who participated in sports community groups. Finally, youth who participated in sports groups, either exclusively or in combination with other non-sports groups, spent more time in community activities overall than did youth participating only in arts or community activities, or youth not participating in any activities.

Table 10

*Significant Mean Difference Post-hoc Tests for Time Use in Year 1*

Time use	Effect	Comparison	Mean difference	<u>95% Simultaneous confidence interval</u>	
				Lower	Upper
Looking after family	Ethno-cultural group	Dual > NZE	.9052*	.3342	1.4761
Looking after family	Ethno-cultural group	Māori > NZE	1.2605*	.4631	2.0578
Alone	Ethno-cultural group	Dual > Māori	.7817*	.0645	1.4989
Alone	Ethno-cultural group	NZE / Pākehā > Māori	.8239*	.2311	1.4166
Looking after family	Community activity type	Mix > None	.7169*	.1044	1.3295
Chores	Community activity type	Mix > None	.5693*	.0600	1.0785
In community groups	Community activity type	Sport > None	4.2654*	3.7243	4.8066
In community groups	Community activity type	Mix > None	4.7059*	4.1410	5.2708
In community groups	Community activity type	Sport > Arts / Community	1.4164*	.6693	2.1635
In community groups	Community activity type	Mix > Arts / Community	1.8569*	1.0924	2.6214
Working on a job	Community activity type	[n.s. in post-hoc]			
Doing homework	Community activity type	Sport > None	.6758*	.1768	1.1749

\*  $p < .05$

*Years 2 and 3 time use*

To identify inter-group differences across time use in Years 2 and 3, I ran a repeated measures MANCOVA analysis. This analysis included time of measurement (Year 2 or 3), Years 2 and 3 time use indicators (ten in total) as dependent variables, Year 2 ethno-cultural group and community activity type as independent variables or fixed factors, and Year 2 sex, age cohort (10-11, 12-13, 14-15, or 16-17 year groups), and dichotomous school decile grouping (low (1-5) or high (6-10)) as covariates. Results indicated that the main effects of all independent variables and covariates were significant (see Table 11).

Table 11

*Significant Multivariate Test Results for Time Use Across Years Two and Three*

Effect	Pillai's Trace	F	df <sub>1</sub>	df <sub>2</sub>
Ethno-cultural group	.070	4.542***	20	2490
Community group	.254	11.525***	30	3738
Age	.232	37.552***	10	1244
Sex	.200	31.005***	10	1244
Decile	.039	5.004***	10	1244
Time	.030	3.864***	10	1244
Time * Ethnicity	.027	1.696*	20	2490
Time * Community Group	.076	3.226***	30	3738
Time * Age	.054	7.136***	10	1244
Time * Sex	.023	2.875**	10	1244
Time * Decile	.020	2.490**	10	1244
Time * Ethnicity * Community Group	.070	1.480*	60	7494

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

Additionally, time of measurement and each of the covariates and independent variables significantly interacted. Time of measurement, ethno-cultural group, and community activity type also showed a three-way interaction.

Follow-up univariate tests on the significant main effects on time uses in Years 2 and 3 (reported in Table 12) indicated differences between ethno-cultural groups for seven of the ten Time-use variables (all except time in community groups, time alone, and time working). In addition, participants in different community groups significantly differed in the amount of time spent in community groups, on the net, and working. Participants of different ages, sex, and deciles also significantly differed on a number of Time-use variables.

For the factor of time (from Year 2 to Year 3), three significant patterns across all participants were identified: increasing time spent working, and decreasing time spent gaming and time spent watching TV, videos, or DVDs. The patterns of change in time use differed across ethno-cultural groups for time spent doing homework (which increased for NZE / Pākehā and Māori, and decreased for Dual heritage youth) and time spent watching TV, videos, or DVDs (which decreased for Māori and Dual heritage youth, but not for NZE / Pākehā). The patterns also differed across community activity type for time spent in community groups (which increased for youth involved in sports only, and decreased for those involved in arts or community activities), and time spent on the net (which increased for youth involved in sports

activities and those not involved in any activities, but decreased for those involved in only arts or community activities). Finally, patterns of changing time use differed across ethno-cultural groups within community group types (a three-way interaction) for time spent doing homework and time spent on the net. Time on homework decreased for all Dual heritage activity participants, for NZE / Pākehā youth who were not participating in any activity, and for Māori youth who were participating in a mixture of sports and arts or community activities. In contrast, time on homework increased for all NZE / Pākehā activity participants, for Māori participants doing either sports or arts or community activities, or not participating in any activities at all.

Table 12

*Significant F-tests for Univariate Follow-up Tests on Time Use Across Y2-Y3*

Time use	Effect (pattern)	MS	F	df	Partial $\eta^2$
<b>Effects from IVs</b>					
Looking after someone in family	Ethno-cultural group	163.474	17.833***	2	.028
Doing chores	Ethno-cultural group	123.178	14.804***	2	.023
Homework	Ethno-cultural group	41.635	3.928*	2	.006
On the net	Ethno-cultural group	187.589	3.684*	2	.006
Gaming	Ethno-cultural group	342.473	6.107**	2	.010
Talking or texting on phone	Ethno-cultural group	1451.380	11.218***	2	.018
Watching TV, videos, or DVDs	Ethno-cultural group	1107.102	15.568***	2	.024
In community groups	Community activity type	1569.958	129.751***	2	.224
Working on a job	Community activity type	49.953	2.929*	3	.007
On the net	Community activity type	140.250	2.754*	.3	.007



Time use	Effect (pattern)	MS	F	df	Partial $\eta^2$
Watching TV, videos, or DVDs	Ethno-cultural group x community group	154.243	2.169*	1	.010
Working on a job	Time ( <i>increasing</i> )	144.342	17.949***	1	.014
Gaming	Time ( <i>decreasing</i> )	261.133	12.272	1	.010
Watching TV, videos, or DVDs	Time ( <i>decreasing</i> )	353.868	12.726***	1	.010
Doing homework	Time * Ethnicity ( <i>increasing for NZE / Pākehā and Māori, decreasing for Dual</i> )	30.829	6.229**	2	.010
Watching TV, videos, or DVDs	Time * Ethnicity ( <i>slightly increasing / stable for NZE, decreasing for Dual and Māori</i> )	103.602	3.726*	2	.006
In community groups	Time * Community Group ( <i>increasing for sports, decreasing for arts / com and mix</i> )	135.458	23.813***	2	.054
On the net	Time * Community Group ( <i>increasing for sports, mix, and none, decreasing for arts / com</i> )	82.440	4.152**	2	.010
Doing homework	Time * Ethnicity * Community Group ( <i>NZE: increasing for sports, mix, arts / com, decreasing for none; Dual: decreasing for sports, mix, arts / com, stable for none; Māori: increasing for sports, arts / com, none, decreasing for mix</i> )	14.663	2.963**	6	.014
On the net	Time * Ethnicity * Community Group ( <i>NZE: increasing for all; Dual: decreasing for sports, arts / com, increasing for mix, none; Māori: decreasing for arts / com, mix, increasing for sports, none</i> )	55.041	2.772*	6	.013
<b>Effects from Covariates</b>					
Looking after someone in family	Age	184.988	20.180***	1	.016
Doing chores	Age	82.571	9.924**	1	.008
In community groups	Age	216.430	17.938***	1	.014
Working on a job	Age	3845.143	225.475***	1	.153
Doing homework	Age	467.640	44.118***	1	.034

Time use	Effect (pattern)	MS	F	df	Partial $\eta^2$
Alone	Age	1277.898	96.968***	1	.072
On the net	Age	1822.320	35.783***	1	.028
Gaming	Age	273.603	4.879*	1	.004
Talking or texting on phone	Age	8343.904	64.490***	1	.049
Looking after someone in family	Sex	71.677	7.819**	1	.006
Working on a job	Sex	139.286	8.168**	1	.006
Gaming	Sex	10568.433	188.471***	1	.131
Talking or texting on phone	Sex	5769.276	44.591***	1	.034
Watching TV, videos, or DVDs	Sex	607.591	8.544***	1	.007
Looking after someone in family	Decile	59.277	6.467*	1	.005
In community groups	Decile	86.559	7.174**	1	.006
Doing homework	Decile	146.625	13.833***	1	.011
On the net	Decile	351.428	6.901**	1	.005
Gaming	Decile	1070.157	19.085***	1	.015
In community groups	Time * Age	31.946	5.616*	1	.004
Working on a job	Time * Age	361.725	44.982***	1	.035
Talking or texting on phone	Time * Age	326.289	7.145**	1	.006
Working on a job	Time * Sex	43.653	5.428*	1	.004
Talking or texting on phone	Time * Sex	205.808	4.507*	1	.004
Watching TV, videos, or DVDs	Time * Sex	377.345	13.570***	1	.011
Doing chores	Time * Decile	19.400	4.306*	1	.003
In community groups	Time * Decile	39.229	6.896**	1	.005
Gaming	Time * Decile	281.126	13.212***	1	.010
Watching TV, videos, or DVDs	Time * Decile	116.703	4.197*	1	.003

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

Levene's test indicated that equality of variance assumption was violated for *all* Year 2 Time-use variables ( $p < .05$ ). Accordingly, as with the Year 1 time use analyses, I used the conservative Dunnett's C measure to test significance in post-hoc analyses (reported in Table 13). Results indicated that, across Years 2 and 3 of the YCP, NZE / Pākehā youth spent significantly less time looking after a family member, doing chores, and on the phone than Māori or Dual heritage youth. In addition, Māori spent more time on chores than Dual heritage youth, and Dual heritage youth spent more time than NZE / Pākehā youth gaming and Watching TV, videos, or DVDs. Youth participating only in arts or community-type groups spent less time in these groups, and more time alone, than youth participating in a mixture of sports and non-sports groups or only participating in sports groups. Finally, youth participating in a mixture of activities spent less time watching TV, videos, or DVDs than youth participating in only sports activities and those youth not participating in any activities at all.

Table 13

*Significant Mean Differences From Post-hoc Tests on Time Use Across Y2-Y3*

Time use	Effect	Comparison	Mean difference	<u>95% Simultaneous confidence interval</u>	
				Lower	Upper
Looking after someone in the family	Ethno-cultural group	Dual > NZE	.6821*	.3048	1.0594
Looking after someone in the family	Ethno-cultural group	Māori > NZE	1.2551*	.6937	1.8165

Time use	Effect	Comparison	Mean difference	<u>95% Simultaneous confidence interval</u>	
				Lower	Upper
Doing chores	Ethno-cultural group	Dual > NZE	.5124*	.1657	.8590
Doing chores	Ethno-cultural group	Māori > NZE	1.1090*	.5878	1.6303
Doing chores	Ethno-cultural group	Māori > Dual	.5966*	.0025	1.1908
Gaming	Ethno-cultural group	Dual > NZE	1.2238*	.2367	2.2109
Talking or texting on phone	Ethno-cultural group	Dual > NZE	2.1465*	.7089	3.5840
Talking or texting on phone	Ethno-cultural group	Māori > NZE	1.9951*	.3081	3.6821
Watching TV, videos, or DVDs	Ethno-cultural group	Dual > NZE	2.3036*	1.2232	3.3840
In community groups	Community group type	Mix > None	4.0534*	3.5443	4.5626
In community groups	Community activity type	Mix > Arts / Community	1.5285*	.8205	2.2366
In community groups	Community group type	Sport > None	3.6316*	3.1117	4.1514
In community groups	Community group type	Sport > Arts / Community	1.1067*	.3909	1.8225
In community groups	Community group type	Arts / Community > None	2.5249*	1.9997	3.0501
Alone	Community group type	Arts / Community > Sport	.7045*	.0410	1.3680
Alone	Community group type	Arts / Community > Mix	.7778*	.0786	1.4771
Watching TV, videos, or DVDs	Community group type	Sport > Mix	1.4047*	.0538	2.7556
Watching TV, videos, or DVDs	Community group type	None > Mix	1.5832*	.3366	2.8297

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