

BRIEF REPORT

A Propensity Score Matching Study of Participation in Community Activities: A Path to Positive Outcomes for Youth in New Zealand?

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Extracurricular activities are important in many young people's lives and have been associated with positive academic, psychological, and social outcomes. However, most previous research has been limited to school-based activities in the North American context. This study expands existing literature by analyzing longitudinal data from more than 1,300 young Māori and European New Zealanders, using propensity score matching techniques to control for selection effects. Results suggest that youth participating in community-based activities experienced greater social support than nonparticipants. For Māori youth, participating in nonsports activities was associated with later benefits, while for New Zealand European youth, benefits were associated with sports activities. Participants of different ages reported different types of benefits. These findings highlight points of similarity and difference between New Zealand and North American youth and provide a better understanding of the positive impacts of community-based activities for young people.

Keywords: youth, extracurricular activities, well-being, community, New Zealand

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It is increasingly common for young people to be involved in extracurricular activities (Bohnert, Fredricks, & Randall, 2010). Evidence from North America suggests that participation in such activities is associated with a range of benefits (e.g., Eccles & Templeton, 2002; Feldman & Matjasko, 2007; Mahoney, Harris, & Eccles, 2006), but less is known about activity participation in other contexts. To address this gap, this study used a propensity-score matching design to investigate youth of different ages and ethnicities engaged in different community-based activities¹ in New Zealand over a 3-year period.

Why Is Activity Participation Beneficial?

According to Bronfenbrenner's (1979) bio-ecological model, youth are "nested" in various developmental contexts (such as

activity groups) that expose them to a range of developmentally significant opportunities and learning environments. The more a young person is exposed to experiences that enforce prosocial norms, encourage positive life goals, help build healthy relationships with peers and adults, and stimulate self-development, the more likely they are to follow a positive developmental trajectory (Mahoney et al., 2006).

Emerging from this perspective, the positive youth development model (e.g., Hansen, Larson, & Dworkin, 2003; Larson, 2000) posits that activity participation is beneficial for youth for three key reasons: it provides youth with challenges, thereby promoting personal growth; most activities are formally organized and supervised, providing youth with structure, exposure to societal norms, and positive role models; and activities are often social, providing youth with opportunities to work in teams and build networks with other youth and adults. Because these experiences seem to be cumulatively beneficial, more participation is predicted to lead to more beneficial outcomes.²

Consistent with these models, a considerable body of evidence shows that youth who participate in extracurricular activities experience desirable outcomes (for reviews see Eccles, Barber, Stone, & Hunt, 2003; Eccles & Templeton, 2002; Feldman & Matjasko, 2007; Mahoney et al., 2006). Benefits of participation

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¹ Community-based activities are a less well-researched developmental domain than school-based activities. However, they warrant special study because they expose youth to adults and peers who may not be at their school and also are prevalent in New Zealand.

² See Appendix B in the online supplemental materials for tests on the effects of more participation.

have been found in three broad areas: better school performance (e.g., Denault & Poulin, 2009); more positive psychological outcomes, such as more positive self-concept or higher self-esteem (Blomfield & Barber, 2009) and less negative affect (Mason, Schmidt, Abraham, Walker, & Tercyak, 2009); and prosocial outcomes, such as healthy attachment to friends and family (McGee, Williams, Howden-Chapman, Martin, & Kawachi, 2006).

Differences Between Youth

However, variations in outcomes between groups of youth have been noted. For example, Lleras (2008) found that girls (but not boys) who participated in arts activities during school earned more in later employment than nonparticipants. In poorer neighborhoods, Urban, Lewin-Bizan, and Lerner (2009) found that activity participation was beneficial for girls but appeared to be iatrogenic for boys. Drawing from these findings, in this study we predicted that activity participation would be related to more positive outcomes for girls than for boys (Hypothesis 1).

Developmental theory also predicts differences in outcomes between youth of different ages. Bohnert et al. (2010) have proposed that older adolescents tend to invest more time in the activities they excel in or enjoy most; thus, they may benefit more from their more selective participation. In addition, Fauth, Roth, and Brooks-Gunn (2007) suggested that, as they age, young people spend increasing amounts of time away from home. Accordingly, we assumed that older youth would be more engaged in community activities and predicted higher community connectedness for older participants (Hypothesis 2).

Broad ecological factors such as culture are also likely to influence the impact of participation on young people's outcomes. The limited studies reporting ethno-cultural differences have suggested that only majority group youth (in particular, European Americans) benefit from participation (e.g., Chambers & Schreiber, 2004; Feldman & Matjasko, 2005). However, some studies have found different effects for specific types of activities; for example, Lleras (2008) found that African and Hispanic Americans who participated in arts activities later earned more than did European American participants.

Few studies have explored differences in participation outcomes among youth—especially those from ethnic minorities—outside of North America (Fredericks & Simpkins, 2011). Outcomes for minority groups in New Zealand and elsewhere are likely to be moderated by their ethnic identification (e.g., Ward, 2006). Thus, in this study we predicted similar results to those found in North America, that minority youth (Māori) who participated in community activities would benefit less overall than majority (New Zealand European) youth (Hypothesis 3a) but that minority youth participating specifically in arts and cultural (nonsports) activities would have similar or better outcomes (Hypothesis 3b).

Differences Between Activities

Consistent with theoretical predictions, outcomes have also been found to differ by activity type (e.g., Blomfield & Barber, 2009; Feldman & Matjasko, 2007; Larson, Hansen, & Moneta, 2006; Mahoney et al., 2006). Larson et al. (2006) investigated the experiences youth reported in different activities and found that community-, service-, and faith-based activities provided access to

beneficial social factors (such as positive adult networks), while sports and arts activities were linked with personal growth factors such as building initiative.

In this vein, the present study compared three categories of community-based activities: sports, nonsports (including arts, cultural activities, and church or other youth groups), and mixed activities (sports and nonsports). Since mixed activities expose youth to the widest range of positive developmental influences, we predicted that they would be associated with more positive outcomes overall than participation in activities of a single type (Hypothesis 4).

Our Approach

To test the hypotheses outlined above, we analyzed the longitudinal relationships between youth participation in community-based activities and four key positive youth development outcomes. To assess increased sense of personal efficacy and satisfaction, we measured youth well-being—a commonly used, previously validated (Crespo, Kielikowski, Pryor, & Jose, 2011), and multifaceted measure incorporating subjective confidence, positive relations with others, and future aspirations. To assess improvements in interpersonal relationships, we measured perceived social support (Cutrona & Russell, 1987) and sense of community connectedness (Chipuer & Pretty, 1999). Finally, to assess a reduction in negative experiences, we measured negative affect, a key symptom of depression (Mason et al., 2009). We used a propensity score matching (PSM) approach to control for variations in initial levels of outcome variables among youth, as well as for other contextual factors that may have exerted selection effects on participation.

Method

Participants

Across a 3-year period, 1,774 young people participated in the Youth Connectedness Project survey from which we drew our data. Approximately half of the participants were female (52%). In Year 1 (Y1), all were attending school and were aged from 10 to 15 years ($M = 12.12$ years, $SD = 1.73$). Participants came from a nationally representative range of socioeconomic (decile) and geographical (school location) contexts.

Participants indicated their ethnic identity by selecting one or more options from a list. From their selections, we derived three ethno-cultural groupings, using categories developed by Ward (2006): New Zealand European (NZE)—“majority culture” participants who selected only NZE from the list in Y1 ($n = 919$); Māori—indigenous “minority” participants who selected Māori but not NZE ($n = 172$); and dual heritage—participants who selected both NZE and Māori ($n = 278$). Participants who did not fall into one of these groups were not investigated in this study due to their significant ethnic heterogeneity.

Survey Design, Materials, and Procedure

Schools in rural and urban areas of the North Island of New Zealand were selected using stratified random sampling; 102 were approached, and 78 agreed to participate. Once full consent was

obtained from participants and caregivers, students were asked to complete an interactive, 370-item survey once per year over 3 consecutive years, which was administered on laptop computers in their classrooms and took approximately 1 hr. Further information on the survey and sampling design process is available on the survey website (<http://www.victoria.ac.nz/mckenzie-centre/research/youth-connectedness/>).

Measures

“Participants” were identified by asking students if they belonged to a community group (those answering “no” were classed as “nonparticipants” for that year). We identified three participation types based on activities selected from a list of nine options. Those in a “sports group/club” or “marching group” (or both) were classed as sports participants; those in one or more of a “dance group,” “drama group,” “music band,” “kapa haka or Polynesian club,”³ “church youth group,” “scouts, guides, or similar,” or “other” were nonsports participants; and those in a combination of sports and nonsport groups were mixed participants.

Participant characteristic variables collected in Y1 comprised ethno-cultural group (NZE, Māori, or dual heritage), sex, age, school activity participation (*one or more* or *none*), socioeconomic decile (from 1 to 10), and location (urban or rural). School activity participation was determined by asking youth to indicate, from a list, which (if any) school clubs they belonged to. When testing moderation by age, we used three age cohorts: younger (10–11 years at Y1), middle (12–13 years at Y1), and older (14–15 years at Y1).

Time use variables collected in Y1 included hours per week spent looking after someone in the family/whānau,⁴ doing household chores, doing school/kura⁵ homework, alone, and gaming. Participants indicated their weekly time use on a scale ranging from 1 (*none*) to 5 (*more than 10 hours*).

Four outcome variables were collected in each year of the survey. Scores for well-being were calculated as the average of 11 items ($\alpha_{Y1} = .86$, $\alpha_{Y2} = .88$, $\alpha_{Y3} = .90$) derived from the Ryff Well-Being Scale (Ryff & Keyes, 1995). Four items assessed future aspirations (e.g., “I often think about my future [what I want to do with my life]”), three assessed positive relations (e.g., “I find it easy to get on well with others”), and four assessed confidence (e.g., “I am proud of who I am”). Scores for social support were calculated as the average of 12 items ($\alpha_{Y1} = .88$, $\alpha_{Y2} = .92$, $\alpha_{Y3} = .94$) from the Social Provisions Scale (Cutrona & Russell, 1987). Three items assessed reliable alliance (e.g., “there are people I can depend on to help me if I really need it”), three assessed guidance (e.g., “there is someone I can talk to about important decisions in my life”), three assessed reassurance of worth (e.g., “there is someone in my life who tells me I am special”), and three assessed attachment (e.g., “there are people in my life who I am close to”). Scores for community connectedness were calculated as the average of responses across four items ($\alpha_{Y1} = .71$, $\alpha_{Y2} = .74$, $\alpha_{Y3} = .77$) derived from the Sense of Community Index (Chipuer & Pretty, 1999). These included “my family and I know at least some of the people who live in our street.” For all of the well-being, social support, and community connectedness items, participants responded on a 5-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Finally, scores for negative affect were calculated as the average of responses across four items

($\alpha_{Y1} = .76$, $\alpha_{Y2} = .80$, $\alpha_{Y3} = .79$) derived from negative items on the Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977). These 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.” Participants selected one of four responses, ranging from 1 (*less than 1 day*) to 4 (*5–7 days*). For all time use and outcome variables, missing data were acceptably low (less than 5%), and missing values were imputed using expectation-maximization in SPSS 16.0.

Plan of Analysis

We conducted our analyses in two stages. First, we ran a PSM process (Rosenbaum & Rubin, 1983) to create control and treatment groups of highly similar youth. We defined the treatment as participation in any community activity type in Y1 and/or Y2. To calculate propensity scores for each individual, we ran a logistic regression predicting membership in the treatment group from the 15 Y1 variables detailed above. We then matched participants to nonparticipants (controls) who had very similar propensity scores, using a PSM syntax file in SPSS 16.0 (based on a macro prepared by Painter, 2004). Chi-square and multivariate analyses of variance (MANOVA) on the 15 input variables for the matched treatment and control groups indicated that the matching process eliminated significant prematching differences between the treatment and control participants.⁶ Accordingly, we used the matched samples, comprising 804 treatment cases and 804 comparable control cases, for all further analyses.

In the second stage, we conducted MANOVAs to determine the effects of activity involvement. First, we conducted tests for the main effect of participation on eight outcome variables (four each from Y2 and Y3). To test for moderation effects, we included sex, age cohort, and ethno-cultural group as fixed factors in the MANOVA and investigated interactions between these factors and participation. Second, we tested for a main effect of participation type and interaction effects of participation type and sex, age cohort, and ethno-cultural group on the eight outcome variables from Y2 and Y3. Where significant, we further investigated interactions by splitting the data file by the moderating variable (e.g., age cohort) and rerunning the initial MANOVA with post hoc analyses to identify significant differences between participants and nonparticipants.

Results

Effects of Participation

We found that participation in any activity in Y1 or Y2 of the survey yielded a significant main effect on youth outcomes in Y2 and Y3, $F(8, 1424) = 3.380$, $p = .001$, $\eta_p^2 = .0019$; specifically,

³ Kapa haka is a form of Māori group performing arts.

⁴ Whānau is a Māori concept referring to extended family and close family friends (i.e., a wide group of blood and nonblood relations).

⁵ Kura are state-funded schools in New Zealand where students are taught in the Māori language and in line with Te Aho Matua philosophy.

⁶ Before-matching and after-matching levels of each of the input variables are provided in Appendix A in the online supplemental materials.

participants reported that they experienced higher social support in Y2 than did nonparticipants, $F(1, 1431) = 7.675, p = .006, \eta_p^2 = .005$.⁷

Contrary to Hypothesis 1, the effects of participation were not significantly moderated by sex, $F(8, 1424) = 2.387, p > .01$. However, congruent with Hypotheses 2 and 3a, the effects of participation did appear to be moderated by age, $F(16, 2850) = 3.756, p < .001, \eta_p^2 = .0021$, and ethno-cultural group, $F(16, 2850) = 4.213, p < .001, \eta_p^2 = .0023$.

A breakdown of significant moderated effects is shown in Table 1. Although Hypothesis 2 predicted significant moderation only for older youth, results indicated moderating effects across all age cohorts. For the youngest cohort, participation was related to higher perceived social support and well-being in Y2. For the middle cohort, participation was related to lower negative affect in Y2. For the oldest cohort, participation was related to higher well-being in Y3 (but not to higher community connectedness, as we had predicted).

Contrary to our prediction in Hypothesis 3a that participants from minority ethno-cultural groups would exhibit less positive outcomes overall, we found that both Māori and NZE youth appeared to experience participation benefits. However, the nature of these benefits differed. For Māori, participation was predictive of higher social support in Y2 and higher community connectedness in Y3. For NZE, participation was predictive of higher well-being in Y3.

Effects of Different Participation Types

Consistent with Hypothesis 3b, in our second MANOVA we found significant interaction effects for participation type and ethno-cultural group for social support in Y2, $F(6, 1451) = 3.272, p = .003, \eta_p^2 = .014$, and for well-being, $F(6, 1451) = 3.173, p = .004, \eta_p^2 = .014$, negative affect, $F(6, 1451) = 4.847, p < .001, \eta_p^2 = .021$, and community connectedness, $F(6, 1451) = 3.556, p = .002, \eta_p^2 = .015$, in Y3.

A breakdown of these significant interactions, showing the moderating effects of ethno-cultural group on the benefits of participating in different types of activities, is provided in Table 2. Consistent with Hypothesis 3b, results indicated that Māori youth who participated in nonsports activities (i.e., activities involving arts or culture) reported better outcomes (higher Y3 community connectedness) than Māori youth who participated in no activities. Māori nonsports participants also appeared to obtain better outcomes than NZE nonsports participants, who reported lower well-being in Y3 than did NZE participants in mixed or sports activities. For participants in mixed activities (both sports and nonsports), we found similar outcomes for NZE and Māori in both Y3 (higher well-being than nonparticipants) and Y2 (higher community connectedness for Māori participants than for nonparticipants and higher social support for NZE). In addition, Māori participating in mixed activities reported higher well-being in Y2 and Y3 compared with those participating in only sports activities.

We observed that engagement in sports activities was significantly more beneficial for NZE youth in terms of higher social support in Y2 and higher well-being in Y2 and Y3. In addition, we noted that dual-heritage youth who engaged in mixed activities exhibited higher negative affect (i.e., worse outcomes) in Y3 than

those engaged in solely sports or solely nonsports activities, or even no activities.

Finally, contrary to Hypothesis 4, there was neither a main effect of participation activity type, $F(24, 4152) = 1.719, p > .01$, nor any significant moderating effects of sex, $F(24, 4152) = 1.566, p > .01$, or age cohort, $F(48, 8322) = 2.113, p > .01$, on activity type.

Discussion

Consistent with past findings (e.g., Blomfield & Barber, 2009; Eccles et al., 2003; Feldman & Matjasko, 2005), results from this study indicated that youth who participated in community-based activities experienced more positive outcomes in subsequent years. However, results also suggested that demographic factors moderated outcomes; most notably, participants of different ages and from different ethno-cultural groups exhibited different patterns of outcomes.

Moderation by Sex and Age of Participation Benefits

In contrast with previous research (e.g., Lleras, 2008; Urban et al., 2009), and contrary to our expectations, we did not find any significant gender moderation of participation outcomes. The contrast with previous research may be attributable to the different types of outcomes explored (this study had a greater focus on social connections, rather than behavioral or situational outcomes) or to the distinctive influences of community-based activities compared with school-based activities.

Drawing from developmental theories on the experiences of youth at different ages (e.g., Bohnert et al., 2010; Fauth et al., 2007), we had also predicted that outcomes would differ across youth in different age cohorts. Although we did find moderation by age, this was not limited to older youth, as we had expected. Differences in outcomes across cohorts may reflect differences in how youth of different ages engage in activities (as suggested by Bohnert et al., 2010) and the aspects of their psychological development that are most salient at the time of participation. Older participants may gain more personal satisfaction (and hence well-being) from their involvement in activities as a result of their higher skill levels. For younger participants, the socially supportive aspects of activity participation may be more salient and significant.

Ethno-Cultural Group Differences in Participation Benefits

In contrast with the findings of studies from North America (Chambers & Schreiber, 2004; Feldman & Matjasko, 2005), and contrary to our predictions, we did not find that minority (Māori) ethno-cultural youth exhibited less positive outcomes after participation than majority (NZE) youth. However, these groups of youth did experience different positive outcomes: higher well-being for NZE participants and higher social support and higher community connectedness for Māori. In addition, nonsports activities were relatively more beneficial for Māori, and sports activities

⁷ Due to the high number of analyses, we have applied an adjusted significance criterion of $p < .01$.

Table 1
Significant Pairwise Comparisons for Interaction Effects of Participation Treatment

Outcome	Subgroup of participants > nonparticipants	Mean difference	SE	p	95% simultaneous confidence interval	
					Lower	Upper
Y2 social support	Younger cohort (10–11 in Y1)	0.233	0.043	.001	0.148	0.318
Y2 well-being	Younger cohort (10–11 in Y1)	0.193	0.043	.001	0.108	0.278
Y2 negative affect	Middle cohort (12–13 in Y1)	–0.175	0.066	.008	–0.304	–0.046
Y3 well-being	Older cohort (14–15 in Y1)	0.274	0.055	.001	0.167	0.381
Y3 well-being	NZE	0.110	0.035	.002	0.042	0.178
Y3 community connectedness	Māori	0.370	0.123	.003	0.127	0.612
Y2 social support	Māori	0.448	0.123	.001	0.205	0.690

Note. Y1 = Year 1; Y2 = Year 2; Y3 = Year 3; NZE = New Zealand European.

were relatively more beneficial for NZE youth. Participation in nonsports activities involving arts may affirm and enrich a sense of ethnic identity for Māori youth, leading to more positive self-concepts and a greater sense of well-being (Fox, 2010). Arts activities linked to traditional cultural practices, such as kapa haka (Edwards et al., 2003), seem particularly relevant and helpful. Similarly, nonsports activities involving youth groups and volunteering may foster a connection between young Māori to a wider community (McLaren, 2002), leading to a greater sense of community connectedness for these youth.

In contrast, NZE youth did not seem to benefit from nonsports activities. This may be because sporting participation (particularly rugby and netball) seems to be more strongly connected to status and self-esteem within the New Zealand context than arts and drama (Laidlaw, 1999). For NZE youth, participating in nonsports activities may be less culturally warranted than it is for Māori youth. In contrast, those who participated in sports and nonsports activities may have found that this provided a “balancing” effect, enabling them to gain social acceptance from peers and thus

contributing to a greater sense of social support and well-being. The apparent benefits of sports participation may also be attributable to positive physical health effects (Hohepa, Schofield, & Kolt, 2006); psychological impacts, such as increased opportunities for experiencing flow (Csikszentmihalyi, 1990); and social factors, such as enhanced social integration (Eccles et al., 2003; Edwards et al., 2003).

Interestingly, and in contrast to Ward’s (2006) findings, dual-heritage youth exhibited distinctly different outcomes from either NZE or Māori youth, despite identifying with both ethno-cultural groups. These youth did not appear to benefit at all from participation. Furthermore, outcomes were worse for these participants in nonsports activities than for nonparticipants. A possible explanation for this is that these youth were more likely than others to be grappling with complex ethnic identity issues. Such issues may have been heightened through participation in nonsports groups that made ethnic identity more salient or that challenged youth to reflect on their general sense of identity.

Table 2
Significant Pairwise Comparisons of Interaction Effects of Participation Type and Ethno-Cultural Group

Outcome	Ethno-cultural group	Comparison	Mean difference	SE	p	95% simultaneous confidence interval	
						Lower	Upper
Y2 well-being	Māori	Mixed vs. sports	0.479	0.178	.008	0.126	0.832
Y2 community connectedness	Māori	Mixed vs. none	0.494	0.181	.007	0.135	0.853
Y3 well-being	Māori	Mixed vs. none	0.355	0.108	.001	0.141	0.569
Y3 well-being	Māori	Mixed vs. sports	0.440	0.147	.003	0.151	0.730
Y3 community connectedness	Māori	Nonsports vs. none	0.618	0.195	.002	0.232	1.003
Y2 social support	NZE	Sports vs. none	0.132	0.047	.006	0.039	0.225
Y2 social support	NZE	Mixed vs. none	0.138	0.053	.009	0.034	0.243
Y2 well-being	NZE	Sports vs. none	0.186	0.044	.000	0.101	0.271
Y3 well-being	NZE	Sports vs. nonsports	0.187	0.066	.005	0.056	0.317
Y3 well-being	NZE	Sports vs. none	0.154	0.048	.001	0.059	0.248
Y3 well-being	NZE	Mixed vs. nonsports	0.255	0.071	.001	0.116	0.394
Y3 well-being	NZE	Mixed vs. none	0.222	0.054	.001	0.116	0.328
Y3 negative affect	Dual heritage	Nonsports vs. mixed	–0.721	0.188	.001	–1.091	–0.351
Y3 negative affect	Dual heritage	Sports vs. mixed	–0.547	0.157	.001	–0.857	–0.238
Y3 negative affect	Dual heritage	None vs. mixed	–0.666	0.123	.001	–0.907	–0.425

Note. Y2 = Year 2; Y3 = Year 3; NZE = New Zealand European.

Limitations of the Present Study

It is important to bear in mind some of this study's limitations. First, the effect sizes identified in this study were relatively small. However, they are consistent with effect sizes found in similar studies on positive youth development (e.g., Marsh & Kleitman, 2002; McLaren, 2002). Furthermore, compared with the time that youth spend at school or in unstructured out-of-school activities, the time spent in community-based activities is relatively less—across youth in this study, about 4 hr per week. Thus, a small effect size is to be expected.

Another area of limitation lies in the use of PSM—although a robust process, it is not a perfect alternative to a randomized control trial (although, arguably, a randomized control trial approach would have been ethically difficult with a study of this nature). The estimates PSM produces can be biased and are limited by the breadth of the variables used in calculating the propensity scores. This study attempted to control for such selection effects by matching youth with similar time use profiles (including chores and family care, which may capture key proxies of familial influence), similar ages and other demographic factors, and similar initial “outcome” values. However, it is possible that other important aspects of family and school context were not controlled for in the PSM process and may have influenced the results.

PSM also requires individuals to be dichotomized into groups of participants and nonparticipants. Recognizing the limitations of such an approach, researchers are increasingly looking at degrees of participation, measuring aspects such as breadth, duration, engagement, and intensity (Bohnert et al., 2010). The present study did not include adequate measures of activity engagement or intensity. However, the results for mixed activities from this study suggest that greater breadth of participation did not predict more positive outcomes. We were also able to conduct additional MANOVAs to examine duration of participation across the three survey years (see Appendix B in the online supplemental materials) and found that individuals participating continuously for 3 years reported higher social support in Y3 than both youth participating for only 1 year and nonparticipants.

Future Directions and Conclusions

There are a number of directions that future studies could take to overcome some of the above limitations. For instance, activities could be considered in relation to different developmental processes, such as whether they emphasize teamwork over individual practice or whether they feature a strong adult presence. Ideally, further research would involve a mixed-methods design, incorporating both quantitative and qualitative analyses. This could help to illuminate the decision process that youth go through when electing which activities to participate in and their perceived support from family and friends.

Nevertheless, this study has identified some important foundations on which future work can be based. Our results suggest that New Zealand youth who participate in community-based activities experience greater social support than nonparticipants. The impacts of participation are also moderated by age and ethnic identity. In particular, for Māori youth, participation in arts and cultural groups appears to be more beneficial, while for NZE youth, sports activities appear more beneficial. Compared with findings from

past correlational studies, we feel that these results are particularly trustworthy. Our PSM approach enabled us to control for important participation selection factors and thus to more reliably isolate the impacts of participation in community-based activities. Thus, this study provides significant insights into community-based activity participation among both majority and minority group youth in a setting outside of North America.

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