SHORT REPORT

Social influences on physical activity in Anglo-Australian and Vietnamese-Australian adolescent females in a single sex school

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Summary Social support is a consistent correlate of youth physical activity (PA) but few studies have examined this in cultural sub-groups. Female adolescents ($n = 113$; 13.9 ± 0.6 years) from a metropolitan single sex private school participated in this study. PA was estimated using the 3 Day Physical Activity Recall (3dPAR), and aspects of social support using a specifically designed questionnaire. Anglo-Australians ($n = 74$), whose parents were both born in Australia, were compared with Vietnamese-Australians ($n = 39$), whose parents were both born in Vietnam. There were non-significant trends towards higher engagement in all measures of PA among Anglo-Australians. Anglo-Australians perceived higher levels of social support to be physically active. In the whole sample and in cultural sub-groups, support by mothers was a consistent predictor of PA. Among Vietnamese-Australians, activities shared with the mother predicted moderate to vigorous PA. Interventions targeting PA among adolescent females should consider interactions of social support and cultural background.

Introduction

Social cognitive theory[1] is a widely accepted framework for understanding influences on youth physical activity (PA), and embedded in this there is emerging evidence of the various ways in which parents can influence PA.[2] Findings from a recent study[2] investigating the influence of ethnicity on male adolescents' PA pointed to a lower engagement in PA by Vietnamese-Australians,

and a greater dependence on parental support for PA in Vietnamese-Australians compared with Anglo-Australians. Booth et al. also noted lower PA levels among youth of Asian background compared with other cultural backgrounds in New South Wales, Australia, with these differences most marked among females.[3] These observations underscore the need to extend the study of adolescent males[2] by examining the interacting influences of social support and cultural background on the PA levels of adolescent females. In doing so, the development of interventions to target one of the least active sub-groups of Australian

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adolescents would be informed by stronger evidence.

Method

Participants were in years 8 and 9 (13.9 ± 0.6 year) from an Adelaide private girls' school with a relatively high Vietnamese enrolment. Drawing from the same non-government school provided some control for socioeconomic status (SES), which in this study is represented by the socio-economic index for areas, or SEIFA, a figure derived by the Australian Bureau of Statistics based on residential postcode. The SEIFA score for families of participants (910 ± 84) indicated that the sample would be characterised as low to middle SES. Vietnamese-Australians ($n = 39$) were defined as having both parents born in Vietnam, while the parents of Anglo-Australians ($n = 74$) were both born in Australia. Participants were of the same cultural background as their parents or caregivers. The Vietnamese-Australian sub-sample was of lower SES (SEIFA; 855 ± 81) than the Anglo-Australians (SEIFA; 940 ± 70). The final number of participants used in the study was 48.9% of those invited, once incomplete surveys (7%) were removed.

Physical activity (PA) was derived from the 3 Day Physical Activity Recall (3dPAR); the protocol of the 3dPAR has been described elsewhere.[2,4] In brief, the 3dPAR details the participants' recall of activities undertaken over the previous 3 days, including one non-school day. Each of the 3 days is divided into 30 min time segments, beginning at 7:00 a.m. and concluding at 12:00 midnight.

Completion of the survey requires participants to indicate only the activity that occupies the majority of each 30 min time segment. Activities are matched to a list of 61 possible common activities provided, beginning with the previous day (Tuesday). The intensity level of each reported activity is estimated by participants, as 'light', 'moderate', 'hard' or 'very hard' using pictorial cues.

A questionnaire quantified perceived social influences (father, mother, best friend and teacher) affecting participants' engagement in PA. The Likert responses were allocated a numerical value, ranging from 1 ('strongly agree') to 6 ('strongly disagree'). The items focused on 4 separate modes of support: role modelling for PA; shared PA with the child; encouragement to be physically active; and direct assistance.

Using published compendia,[5] metabolic equivalent (MET) values were assigned to the activities reported through the 3dPAR, and blocks of moderate to vigorous physical activity (MVPA) and vigorous physical activity (VPA) were derived as previously described.[2,4] Due to skewness, some of the PA variables were log transformed, but for ease of interpretation untransformed values are reported in Table 1.

Controlling for age and SEIFA, differences in PA between cultural groups were tested using ANCOVA, while social support variables were compared with Mann–Whitney U. Stepwise regression models were used to identify significant predictors of PA (METs, MVPA and VPA) from the measures of social support (STATA Version 8.0).

Results

Table 1 provides statistical comparisons of PA and measures of social support between Anglo-Australian and Vietnamese-Australian females. There were non-significant trends towards higher engagement in all measures of PA among Anglo-Australians compared with Vietnamese-Australians.

Table 1 Comparisons between cultural sub-samples on measures of social support

Predictor variables	Median (IQR)	
	Anglo-Australian[a]	Vietnamese-Australian[b]
n	74	39
Total METs[c]	63.0 (12.2)	60.8 (10.5)
MVPA[d] (blocks day^{-1})	3.5 (3.0)	2.3 (2.6)
VPA[e] (blocks day^{-1})	1.0 (2.0)	0.7 (1.9)
Father play*	3.0 (3.0)	2.0 (1.8)
Father help**	3.0 (3.0)	3.0 (1.0)
Father encourage*	3.0 (2.0)	3.0 (2.0)
Father plays with**	3.0 (1.0)	2.0 (1.0)
Mother play	4.0 (2.0)	3.0 (3.0)
Mother help***	4.0 (2.0)	3.0 (1.0)
Mother encourage*	5.0 (2.0)	3.0 (2.5)
Mother plays with*	3.0 (2.0)	3.0 (1.0)
Best friend play*	5.0 (2.0)	5.0 (2.0)
Best friend encourage	3.0 (1.0)	3.0 (2.0)
Best friend plays with	4.0 (2.0)	4.0 (1.8)
Teacher help	4.0 (1.0)	4.0 (2.0)
Teacher encourage	4.0 (2.0)	4.0 (1.0)

*0.05, **<0.01, ***<0.001, ****<0.0001.
 [a] Anglo-Australians described as participants with both parents born in Australia.
 [b] Vietnamese-Australians described as participants with both parents born in Vietnam.
 [c] 3 day mean (calculated from the sum total of assigned MET values for each of the consecutive recording days).
 [d] 3 day mean (calculated from the number of 30 min blocks of activity >3 METs per day).
 [e] 3 day mean (calculated from the number of 30 min blocks of activity >6 METs per day).