



## Brief Original Report

## Which social support and psychological factors are associated to active commuting to school?



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## ABSTRACT

**Objective.** The aim of this study was to investigate the association between self-efficacy, enjoyment, and volitional control with active commuting, as well as to analyze the impact of social support from parents, friends, and teachers with active commuting to school.

**Methods.** Participants in this cross-sectional study were 625 students (male: 46.3%) aged 10 to 15 years from Porto, Portugal (2010/2011). A questionnaire was used to assess active commuting to/from school (walk/cycle), self-efficacy, enjoyment, volitional control and social support. Binary logistic regression was performed to identify significant associations between targeted variables and active commuting.

**Results.** The results show positive associations in crude analyses for all variables, except for enjoyment for walk/cycle to school. In the adjusted model, higher likelihood of active commuting was found among students who reported having higher self-efficacy (OR = 2.10; CI95%: 1.07; 4.11) to walk/cycle to school as well as among adolescents who reported being encouraged by their parents (OR = 3.66; CI95%: 1.55; 8.69), and having the partnership of friends in active journeys (OR = 4.31; CI95%: 1.79; 10.37).

**Conclusion.** Self-efficacy, encouragement from parents and companionship from friends were important indicators of active commuting to school among Portuguese adolescents. These findings provide support for further research to identify and understand factors that predict and explain the active commuting.

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## Introduction

Some psychological and social support factors have been consistently associated with adolescents' physical activity-related behaviors (Beets et al., 2010; Cheng et al., 2014; Craggs et al., 2011; Ricardo et al., 2013). There are evidence that higher self-efficacy and perceived behavioral control in adolescents are positively associated with changes in physical activity, whereas enjoyment is not consistently associated with physical activity (Craggs et al., 2011). Other studies found positive effects of social support from parents (Beets et al., 2010) as well as from friends (Cheng et al., 2014; Ricardo et al., 2013) on adolescents' physical activity, although more studies are required.

Little is yet known about psychological, self-efficacy and social support factors related to active commuting to school (ACS), which represents an important strategy for increasing physical activity in this age group (Smith et al., 2012). Despite its contribution to the overall level of physical activity, a decline in active commuting among adolescents has been observed in the last decades (Buliung et al., 2009; Cui et al., 2011). Therefore, our study aimed to investigate the association of self-efficacy, enjoyment, volitional control, and social support (conditional and motivational) from parents, friends, and teachers with ACS in adolescents.

## Methods

This study is a secondary analysis of SALTA Project (Environmental Support for Leisure and Active Transport), designed to examine environmental and social influences on adolescent's physical activity. All public middle-schools in Porto (Portugal) were invited to take part in SALTA Project. From a total of 65 schools, 15 schools agreed to take part. The reasons for declining participation were mainly related to renovation works in older school buildings and reorganizing process within Portuguese National School System. Due to lack of resources, data were only collected in 9 middle-schools with a total population of 1555 students in

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the 6th grade. Detailed information can be found elsewhere (Marques et al., 2013; Pizarro et al., 2013).

In this study, psychological and social support factors for active commuting were accessed by a questionnaire (Page et al., 2010). Participants were asked how they commute to and from school (walking, cycling, by car or public transport). Based on their answers the respondents were grouped into active travelers (walking and cycling) or non-active travelers (car or public transport) to/from school. If subjects reported at least one of the trips as active they were included in the active traveler group. Then they answered questions about psychological aspects: *enjoyment* I wish I could walk or cycle to school more than I do, *self-efficacy* I am sure I can ride or walk to school on most days, *volitional control* I can choose whether I walk or cycle to school. Finally, the participants also reported information on social support from *Parents*: encouragement and/or companionship of parents/whoever takes care of you; from *Friends*: encouragement and/or companionship; from *Teachers*: encouragement for active commuting. The questions had a four-point and three-point Likert response scale including strongly disagree, disagree, agree, and strongly agree and hardly ever; sometimes; often/always, respectively. Demographical and anthropometric information were collected according to procedures described elsewhere (Pizarro et al., 2013), and analyzed like confounders variables.

### Statistical analyses

Absolute and relative frequencies were used for descriptive statistics. Crude and adjusted binary logistic regressions were performed, for two separate blocks of variables and for the full set. The first block included psychological factors (enjoyment, self-efficacy, and volitional control), and the second block included social support factors (encouragement and companionship of parents, peers and teachers). Gender, age (10–12 years; 13–15 years), parents' schooling ( $\leq 6$  years; 7–12 years;  $> 12$  years), and nutritional status (normal weight; overweight; obese) were the control variables. The results were presented in odds ratio (OR) and confidence interval of 95% (CI95%). Analyses were carried out by using SPSS® 15.0.

### Results

The sample comprised 625 6th grade students (male:  $n = 294$ ; 46.3%), aged between 10 to 15 years (mean age:  $11.6 \pm 0.9$  years) that provided completed questionnaire data. ACS was reported by 35.1% of the students (male: 36.4%, female: 34.0%,  $p = 0.532$ ). A third (36.7%) of the adolescents reported having spent less than 5 min from home to school, 48.5% between 10 and 15 min, and 14.8% reported over 15 min. Still, 22.4% of them reported easy access from home to school, and 77.6% reported difficult access (data not shown).

Less than half of the students reported enjoyment (47.4%) and volitional control (45.2%) to walk/cycle to school, whereas 70.9% reported having self-efficacy to ACS. Approximately two in each ten students reported often/always having encouragement of parents (20.5%), friends (15.9%), and teachers (25.2%). Only 12.6% reported often/always having the companionship of their parents, and 19.4% pointed out having the companionship of their friends to go to school (Table 1).

In crude analysis, all the investigated variables were positively associated to ACS, except for enjoyment. In the adjusted models for each block, we found higher odds of ACS among students who reported having higher self-efficacy (OR = 2.41; CI95% = 1.31; 4.46) and volitional control (OR = 2.80; CI95% = 1.70; 4.60) to walk/cycle, in block 1. In block 2, there were associations with encouragement of parents sometimes (OR = 2.50; CI95%: 1.23; 5.08) and often/always (OR = 5.08; CI95%: 2.22; 11.65), and companionship of friends often/always (OR = 5.00; CI95%: 2.11; 11.81). In simultaneous adjustment of variables, ACS remained associated with higher self-efficacy (OR = 2.10; CI95%: 1.07; 4.11), encouragement of parents (OR = 3.66, CI95%: 1.55; 8.69), and companionship of friends (OR = 4.31; CI95%: 1.79; 10.37) (Table 2).

**Table 1**

Prevalence of active commuting from and to school, enjoyment, self-efficacy, volitional control, and social support in Portuguese students ( $n = 635$ ). Porto, Portugal, 2010/2011.

Variables	n	%
<i>Mode of travel from and to school</i>		
Walk or cycle (active travel)	223	35.1
Car/bus/train	412	64.9
<i>Enjoyment to walk/cycle to school</i>		
Disagree	334	52.6
Agree	301	47.4
<i>Self-efficacy to walk/cycle to school</i>		
Disagree	185	29.1
Agree	450	70.9
<i>Volitional control to walk/cycle to school</i>		
Disagree	348	54.8
Agree	287	45.2
<i>Encouragement of parents/whoever takes care of you</i>		
Hardly ever	393	61.9
Sometimes	112	17.6
Often/always	130	20.5
<i>Encouragement of friends</i>		
Hardly ever	418	65.8
Sometimes	116	18.3
Often/always	101	15.9
<i>Encouragement of teachers</i>		
Hardly ever	361	56.9
Sometimes	114	18.0
Often/always	160	25.2
<i>Companionship of parents/whoever takes care of you</i>		
Hardly ever	460	72.4
Sometimes	95	15.0
Often/always	80	12.6
<i>Companionship of friends</i>		
Hardly ever	397	62.5
Sometimes	115	18.1
Often/always	123	19.4

### Discussion

The findings of this study pointed out that one third of the students actively commute to/from school and this active behavior was associated with higher self-efficacy, volitional control, encouragement from parents, and companionship from friends.

Self-efficacy has been consistently associated with physical activity (Amireault et al., 2013; Cheng et al., 2014; Craggs et al., 2011; Lubans et al., 2008), but the magnitude of its influence on adoption of active travel is less known, especially in young people. Our findings pointed out a strong association (OR = 2.10, CI95%: 1.07; 4.11) between self-efficacy and ACS. According to Bandura (2004), those with higher perceived self-efficacy view obstacles and impediments as less challenging and more perseveringly maintain their behavior.

In contrast, evidences about the influence of volitional control on physical activity are scarce. A recent systematic review found inconsistent associations between perceived behavioral control and physical activity in adolescents (Uijtewilligen et al., 2011). Indeed, adolescents with high volitional control can choose to go to school by a non-active mode for several reasons, such as travel length, unsafety to walk or cycle, lack of supportive environment, etc. (Simons et al., 2013). Future studies should investigate if some of these factors moderate or mediate the relationship between volitional control and ACS.

Among the social support factors, an interesting scenario can be seen. Parents' encouragement was strongly associated with ACS, but not of friends or teachers. On the other hand, companionship of friends, but not of parents, was an important factor. This indicates that parents and friends have different roles in social support to ACS.

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