



# Investigating sustainable mobility practices within physically active students

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## Introduction

Car dominance lead to environmental degradation and not healthy living in urban areas. There appears to be consistent scientific evidence showing that higher levels of driving as a source of physical inactivity are adversely associated with obesity (McCormack & Virk, 2014). Active Transport (AT) offers an important range of health benefits: lower odds of being overweight or obese, less cardiovascular risk, more time of moderate physical activity (Sisson & Tudor-Locke, 2008). Students are an important target group as they have various transport options and a particular lifestyle, without however established adult habits (Simons et al., 2014), Research on transport habits of students is scarce and mainly focused on commuting to college or university, while students are often underrepresented in travel surveys for methodological reasons (Behrens et al, 2008). Thus, it is necessary to increase our knowledge of the factors influencing the choice of AT in students physically active or not (Baranowski et al., 1998).

## Purpose of the study

The study purpose was to investigate the mobility practices of students of Physical Education School-PHED of Serres, Greece and enrich research in student sustainable mobility. Advancing in this field may be beneficial to the overall mobility management of universities host areas and promise lifelong benefits (Bopp et al, 2011).

## Methodology

### Sample

**N=280 PHED students (59% men & 41% women) Age: 18-23**, Physical activity profile: 96% took sports beyond the official PHED curriculum, 63%: frequency 3-6 times/week, 29%: duration 120 min/session. Sport type: group, individual & dual sports. Godin's scale: intense physical activity of 3-5 times/week: 54.2%, moderate uptake 2-3 times/week: 37.5% and mild activity of 0-2 times /week: 40.8%. Car possession: 32.5%, bicycle: 41.1%, motorcycle:10.4%, high intention to buy a car (33%). Income data: 22% with <10,000 as family income, 16%: 10-14,999€, 12%: 15,000-19,999€, 15%: 20,000-30,000€, 11%: >30,000€.

### Data analysis

Frequencies and other descriptive statistics. Mann-Whitney test and t-test for gender differences. Pearson correlations for relationships between variables. SPSS 20.0 was used.

### Questionnaires

Based on Theory of Planned Behaviour (Ajzen, 2002) with travel experience, daily physical uptake and environmental activation questions (7-point Likert-type scale). Recording TPB components (attitudes, subjective norm, perceived behavioral control intention) & demographic information (Cronbach's a from .707 - .881). Using the Godin-Shephard Leisure-Time Physical Activity Questionnaire (Godin & Shephard, 1985) measuring intense, moderate and mild PA update.

## Results

Results revealed high use of bus and walking, for most travel purposes, while mode choice was mostly determined by distance and travel time. Attitudes, Subjective Norms, Perceived Behavioral Control, Intention were measured as regards car, different modes (Table 1), environmental protection and physical activity -PA.

**Table 2: Gender comparisons of TPB constructs sub-scales**

Variable	Sex	Mean	Std. Deviation	t	df	p
Attitude to car impact	M	4.69	1.48	-3.38	248	.001*
	F	5.32	1.41			
Attitude to environmental activation	M	5.08	1.31	-3.92	249	.000*
	F	5.72	1.21			
Attitude to physical activity	M	6.05	1.43	-2.125	244	.035*
	F	6.41	1.11			
Attitude to cycling	M	4.80	1.49	-4.759	243	.000*
	F	5.63	1.12			
Attitude to walking	M	4.79	1.22	-4.096	243	.000*
	F	5.45	1.22			
Feeling of guilt	M	4.24	1.26	-3.967	244	.000*
	F	4.92	1.41			
PBC for environmental activation	M	4.69	1.27	-3.747	238	.000*
	F	5.31	1.23			
PBC for physical activity	M	5.88	1.37	-1.96	238	.051*
	F	6.22	1.19			
PBC for more walking	M	4.49	1.66	-3.453	240	.001*
	F	5.21	1.53			
PBC for more cycling	M	4.11	1.64	-2.677	240	.001*
	F	4.67	1.57			
PBC for more bus use	M	4.00	1.57	-2.344	244	.001*
	F	4.49	1.61			

**Table 1: Attitudes versus alternative to car modes.**

allows human contact	56.5%	67.4%	50%
value for money	74.2%	76.4%	46%
suits my type of person	54.6%	48.6%	60.8%
problem for car traffic	44.3%	-	40.4%
less travel choice	-	36.1%	25.6%
dangerous	45%	27.5%	37.9%

Correlation analysis revealed relationships between Godin's PA recorded and the different TPB constructs. Pearson bivariate correlation analysis showed significant correlation between Godin's PA and TPB variables (e.g. low PA vs attitude to walking:  $r=-.196^{**}$ ,  $p<.0001$ ; low PA and perceived behavioral control of walking:  $r=.151^*$ ,  $p<.05$ ). The more highly physically active students were, the less dangerous they consider cycling ( $r=-.145^*$ ,  $p<.05$ ). Highly physically active students were less socially influenced about their environmental activation ( $r=-.165^*$ ,  $p<.05$ ) and they seem to feel less guilty for the driving impact ( $r=-.147^*$ ,  $p<.05$ ). Comparisons revealed statistical significant gender differences in high intensity PA frequency ( $t_{224}=2.813$ ,  $p=.005$ ). Independent sample t-test analyses regarding gender differences in the TPB-based items, showed statistical differences in all variables related to attitudes. (Table 3).

## Discussion

Results revealed environmental awareness and activation of students, confirming a physically active group, more likely to actively commute (Bopp et al, 2011). Literature was largely confirmed: cycling is considered a good (Arnett, 2000), cheap (Shannon et al., 2006) and convenient transport option in Serres conditions, enabling also social benefits like human contact. Travel time seemed to be crucial for students, as it is not feasible to follow on time consecutive courses, held in different faculty locations, as stated. Such limitations as traveling longer distances might be partially solvable through multimodality (Kuhnimhof et al., 2012), a promising way to encourage sustainable transport modes. Bicycle sharing schemes are welcome by students, as well as more cycle and pedestrian routes, increased bus frequency, cheap student pass and clear timetabling information (Shannon et al., 2006). This study adds important evidence to the limited literature investigating determinants of sustainable mobility in university students. Findings offer ample opportunities for developing interventions that can increase active transport within faculty community and beyond. Implementing interventions based on ideas from students themselves may be more feasible and sustainable on a university campus (Deliens et al., 2015). Future quantitative studies should keep in mind the importance of cycling and its characteristics, and explore further multimodality.

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