Role of Sociodemographic Variables and the Mother’s Active Behavior on Active Commuting to School in Children and Adolescents

Fernando Rodriguez-Rodriguez 1*, Patricio Solis-Urra 2,3,4, Jorge Mota 5, Maria Jesus Aranda-Balboa 2, Yaira Barranco-Ruiz 2 and Palma Chillon 2

1 IRyS Group, School of Physical Education, Pontificia Universidad Católica de Valparaíso, Valparaíso, Chile, 2 PROFITH “PROmoting FITness and Health Through Physical Activity” Research Group, Department of Physical Education and Sport, Faculty of Sport Sciences, University of Granada, Granada, Spain, 3 Nuclear Medicine Services, “Virgen de las Nieves” University Hospital, Granada, Spain, 4 Faculty of Education and Social Sciences, Universidad Andrés Bello, Viña del Mar, Chile, 5 Faculty of Sport Sciences, Health and Leisure, Research Centre of Physical Activity, University of Porto, Porto, Portugal

The main objective of the current study was to analyze how parents’ sociodemographic characteristics, mode of commuting and physical activity (PA) act as indicators of active commuting to school (ACS) in their children and adolescents. A total of 684 paired parents (52.8% mothers) and their respective offspring (33.7% girls) were included. The participants self-reported their sociodemographic characteristics, mode of commuting, and PA. Logistic regression analyses were performed using a stepwise approach, including, as indicators, parental characteristics, mode of commuting and PA. The main outcome was child and adolescent ACS. The odds ratio (OR) and $R^2$ of Nagelkerke were obtained for each step. Parental sociodemographic characteristics were greater indicators of child ACS than the parental mode of commuting and PA. In children, the greatest predictive variables of ACS explained 38% of the variance and were as follows: car availability (OR = 0.24), father’s educational level (OR = 0.47), mother’s educational level (OR = 1.95), mother’s active commuting to work (OR = 4.52) and mother’s salary/month (OR = 0.67). In adolescents, the greatest predictive variables of ACS explained 40% of the variance and were as follows: socioeconomic level (OR = 0.43) and father’s active commuting (OR = 10.6). In conclusion, sociodemographic factors are better indicators of ACS than parents’ physical activity and active commuting to work.

Keywords: active transport, physical activity, youth, parents, school

INTRODUCTION

Physical activity (PA) in young people has been associated with numerous physical and psychosocial health benefits (1, 2). To obtain these benefits in children and adolescents, the World Health Organization – WHO (3) recommended performing at least 60 daily minutes of moderate-to-vigorous physical activity (MVPA). However, only a small proportion of children and adolescents meet these daily MVPA recommendations (4–6).

On the other hand, the socioecological model has been broadly used to explain the determinants of physical activity (7). This model includes family and people close to the family as highly influential factors for developing these behaviors (8).
Accordingly, it has been shown that children’s PA habits are associated with their parents’ physical activity, especially in younger children (9). Children with active parents are more active than children with inactive parents (10). For instance, a positive association has been found between mother’s sport participation and children’s out-of-school PA (11). Mothers play a greater role in planning and organizing children’s PA, while fathers are more likely to model children’s PA (12). According to the previous evidence, the family, and especially, the mothers play an important role in maintaining levels of PA in children, which are worth studying. The educational style of parents and its influence on PA has also been studied. Evidence has found that permissive mothers are associated with higher PA practice by their children than authoritarian mothers (13, 14). In addition, higher levels of care and personalized education for the mother favored athletes and PA practitioners who perceived better support from her parents (15).

Moreover, previous research has demonstrated that active commuting to/from school (ACS), such as walking or cycling, is an opportunity to reach daily PA levels (16–18). Additionally, ACS has been proposed as a strategy where boys and girls are 42% and 66% more likely to attain PA recommendations, respectively (19). However, many children and adults commute to school and work, respectively, using passive modes (20, 21). Furthermore, a general decline in ACS has been observed in recent decades in different countries (22–24) and even in Spain (25). The decline in ACS is partially explained by rising commuting distances and car ownership (26), but other factors may be influences, such as safe routes to school and policies that encourage schools to be placed within neighborhoods to ensure an acceptable walking distance (27). In this regard, different family factors, such as the parent’s educational level (15), socioeconomic status (28) and professional levels (29), may influence ACS. However, it is not clearly defined which family factors “are more powerful” to influence this type of active behavior.

In recent years, several studies focused on the established parent-child relationship on ACS have emphasized parental barriers to ACS (30–32). The findings have indicated that parents perceived more barriers in children than adolescents (30, 31, 33). However, few studies have analyzed the influence of parental sociodemographic factors on ACS in offspring (29, 34, 35), which has already been mentioned as relevant. Unfortunately, the studies including in these associations the effect of gender (mothers vs. fathers; boys vs. girls) and including both children and adolescents are lacking. Nevertheless, in the current study the gender variable is included to answer the question about a greater influence of the father or mother. Additionally, fewer studies have investigated the interaction between the active commuting to work (ACW) of parents and the active commuting to/from school (ACS) of their offspring. Recently, Brand et al. (36) found associations between mothers and their children, and Rodriguez-Rodriguez et al. (37) showed a stronger association with children than with adolescents. However, more studies in this regard are needed to elucidate the parental variables and interactions that affect ACS in both children and adolescents.

According to the last, the hypothesis of this study suggests that active behaviors such as PA and ACW have a greater influence on ACS in children and adolescents. At the same time, the influence of fathers and mothers would be different. In this way, understanding how parental factors interact with the ACS of their offspring could offer us key information about how to guide school interventions to achieve successful results, increasing the PA in children and adolescents. Consequently, according to the previous information, the main objective of the current study was to analyze how parental sociodemographic characteristics, mode of commuting, and PA predict ACS in their children and adolescents, highlighting the differences by gender of parents.

**MATERIALS AND METHODS**

**Study Design and Participants**

This is a cross-sectional study of schoolchildren and parental participation that was carried out in Granada (Spain) and Valparaiso (Chile). Data were obtained as part of the “Cycling and Walk to School” (PACO, for its Spanish acronym) study, focused on promoting PA and, particularly, active commuting to and from school. The sampling has been obtained for convenience, where initially a total of 2,526 children and adolescents and 1,959 of their parents were invited to participate in the study. Participants came from 20 schools as a nonrandomized sample. From the total sample of children, 1,807 participants could not be paired with parental data, and 34 did not report their gender and were excluded (72.8% of the sample). A total of 572 parents could not be paired with their children’s data, and 703 parents without gender data were excluded (65% of the sample). Finally, a total of 684 paired parents (52.8% mothers) and their respective offspring (33.7% girls) were included. These child-parent pairs belonged to 15 schools in Granada, Spain (n = 492) and five schools in Valparaiso, Chile (n = 192). The age (mean ± standard deviation) of each group was as follows: parents 43.4 ± 6.5 years old, children 9.7 ± 1.7 years old, and adolescents 14.0 ± 1.7 years old.

**Procedures**

The student questionnaire was administered to children and adolescents between 2015 and 2018 by the research staff during physical education lessons and lasted ~30 min. The research staff and schoolteachers were present to answer the students’ questions (offspring). The parent’s questionnaire was delivered to students and completed at home by their parents (mother/father or guardian). Additionally, the parents signed an informed consent form that explained the aims and characteristics of the study and allowed their offspring to participate. The ethical principles for medical research involving human subjects were followed based on The World Medical Association Declaration of Helsinki 2002 revised in 2013. Additionally, the study was reviewed and accepted by the Ethical Committee of the University of Granada, Spain (No. 162/CEIH/2016), and the Ethical Committee of the Pontificia Universidad Católica de Valparaíso, Chile (CCF02052017) to be applied in both countries.
Parental Sociodemographic Characteristics

The participants self-reported their sociodemographic characteristics, including age, school grade, gender, and full postal address. Additionally, the parent's questionnaire included questions about the highest educational level attained (no study, primary school, secondary school, bachelor's degree, professional degree, and university degree) and income per month (None; <499€; 500–999€; 1,000–1,499€; 1,500–1,999€; 2,000–2,499€; 2,500–2,999€; 3,000–4,999€; >5,000€) dichotomized in <1,000 € and ≥1,000 € according to the minimum salary in Spain which is around 1,000 euros and it has been homogenized for the Chilean sample, where the sample was dichotomized according to the minimum salary in Chile (≥$350,000). The socioeconomic level was asked using the Family Affluence Scale (FAS) defined with the following questions: “Does your family own a car?” (No [0 point]; Yes, one [1 point]; Yes, two or more [2 points]), “How many computers does your family own?” (None [0 point]; One [1 point]; Two [2 points]; More than two [3 points]), “Do you have your own bedroom for yourself?” (No [0 point]; Yes [1 point]) and “Do you have internet access?” (No [0 point]; Yes [1 point]). A score was assigned for each answer and then summed to obtain the total points. Participants were classified into three categories regarding the FAS: low (0–3 points), medium (4–5 points) and high (6–7 points) (38). In addition, car availability in the family from the FAS was reported as an independent variable.

Parent’s Active Commuting to Work and Physical Activity

To determine the parental mode of commuting to work, two reliable questions (39) were used: (1) “How do you usually get to work?” and (2) “How do you usually get home from work?” The response options for all the questions were walk, bike, car, motorcycle, public bus, metro/train, and other. The usual mode of commuting was categorized as “active” when the parents went to or from to work in “active” mode (walk or bike) and “passive” when the parents went to work in motorized modes (car, motorcycle, public bus, and metro/train). The answer, “Other mode,” was excluded since it was not able to be categorized. In addition, the distance from home to work was asked with the following question: “How far do you live from work?” The answer options were <0.5 km, 0.5 to <1 km, 1 to <2 km, 2 to <3 km, 3 to <5 km and >5 km.

The International Physical Activity Questionnaire (IPAQ, short version) was used to determine parental PA levels. The IPAQ shows acceptable psychometric properties to measure MVPA levels in 1 week (40, 41). Additionally, this instrument determines the time in different intensity categories as sedentary, light PA, moderate PA, and vigorous PA in minutes in the last seven days. Regarding MVPA recommendations for adults (≥150 min/week), parents were classified as meeting MVPA recommendations (i.e., physically active) and not meeting MVPA recommendations (i.e., physically inactive) (3).

Active Commuting to School

The children’s questionnaire, which included the mode and frequency of commuting to and from school information, was self-reported by the children and adolescents, and has been previously validated (42) and is considered reliable (43) for use in Spanish-speaking children and adolescents. This questionnaire is a 4-item self-report instrument designed to evaluate the mode and weekly frequency of ACS in children and adolescents. Four questions were included in the questionnaire: (1) “How do you usually get to school?”; (2) “How do you usually get home from school?”; (3) “How did you get to school each day?”; and (4) “How did you get home from school each day?”; and the choice of answers to the questions was as follows: walk, bike, car, motorcycle, school bus, public bus, metro/train and other (44). The whole questionnaire is available at http://profith. ugr.es/pages/investigacion/recursos. The mode of commuting was categorized as “active” (walk and bike) or “passive” (car, motorcycle, school bus, public bus, or metro/train). The answer “Other mode” was excluded since it was not able to be categorized. The final dependent variable to predict was the usual active modes of commuting to and from school.

Statistical Analysis

The mean and standard deviation (SD) for continuous variables and absolute and relative frequency (%) for categorical variables were calculated. The differences in sociodemographic characteristics, mode of commuting to work and PA between mothers and fathers, and the differences in ACS between boys and girls in children and adolescents were calculated using the chi-square test. The results were analyzed separately by country, but not all were calculated due to lack of data. Nor did it show any differences when joining both countries. Therefore, the indicators were calculated from a single group (Chile–Spain together).

Logistic regression analyses were performed stepwise along with three models, including the ACS (passive vs. active) of the children and adolescents as the main outcome variable (passive commuting was used as a reference). The three models were performed separately for children and for adolescents. In the first model, all sociodemographic variables were included as explanatory variables. In the second model, parents’ active commuting to work and PA were included as explanatory variables. In the third model, the significant variables from the first two individual models were included as new explanatory variables (all variables) to determine the variables explaining ACS. The odds ratio (OR) and 95% confidence interval of each variable as well as the correlation (Nagelkerke R²) were obtained for each step. The confidence interval (CI) values were used to establish the association with ACS. All analyses were performed using SPSS® v21 (IBM, New York, NY, USA). Additionally, a p < 0.05 value was considered significant.

RESULTS

Parental sociodemographic characteristics, mode of commuting to work and PA variables are presented in Table 1. Gender differences were found for educational level, monthly salary, car
TABLE 1 | Parental sociodemographic characteristics, mode of commuting and physical activity variables, overall, and for mothers and fathers.

|                                | Overall       | Mothers       | Fathers       | p-value |
|--------------------------------|---------------|---------------|---------------|---------|
|                                | N (%)         | N (%)         | N (%)         |         |
| Participants                   | 684 (100)     | 361 (52.8)    | 323 (47.2)    |         |
| Age (Mean ± SD)                | 43.4 ± 6.5    | 42.7 ± 6.5    | 45.7 ± 6.0    | 0.094   |
| Educational level (N = 631)    |               |               |               |         |
| No studies                     | 9 (1.4)       | 5 (1.6)       | 4 (1.3)       | b <0.001 |
| Primary school                 | 46 (7.3)      | 32 (10.2)     | 14 (4.4)      |         |
| Secondary school               | 156 (24.7)    | 70 (22.3)     | 86 (27.1)     |         |
| Bachelor's                     | 131 (20.8)    | 47 (22.6)     | 84 (26.5)     |         |
| Professional                   | 122 (19.3)    | 71 (19.9)     | 51 (16.1)     |         |
| University degree              | 167 (26.5)    | 89 (28.3)     | 78 (24.6)     |         |
| Salary/month (N = 419)         |               |               |               |         |
| Unemployed                     | 33 (7.9)      | 14 (6.4)      | 19 (9.5)      |         |
| <1,000 €                       | 160 (38.2)    | 60 (27.3)     | 100 (50.2)    |         |
| 1,000 to <2,000 €              | 182 (43.4)    | 123 (56.0)    | 59 (29.6)     | a 0.001 |
| 2,000 to <3,000 €              | 39 (9.3)      | 18 (8.2)      | 21 (10.6)     |         |
| ≥3,000 €                       | 5 (1.2)       | 5 (2.3)       | 0 (0.0)       |         |
| Car availability (N = 575)     |               |               |               |         |
| None                           | 123 (21.4)    | 36 (11.5)     | 87 (33.3)     |         |
| Only one                       | 290 (50.4)    | 167 (53.2)    | 123 (47.1)    | b <0.001 |
| Two or more                    | 162 (28.2)    | 111 (35.4)    | 51 (19.6)     |         |
| Socioeconomic level (N = 381)  |               |               |               |         |
| FAS Score (Mean ± DS)          | 7.26 ± 1.09   | 7.25 ± 1.11   | 7.32 ± 1.03   | 0.608   |
| Mode of commuting to work (N = 419) |          |               |               |         |
| Active commuting               | 82 (20.9)     | 51 (26.3)     | 31 (15.6)     | 0.074   |
| Passive commuting              | 310 (70.1)    | 143 (73.7)    | 167 (84.4)    |         |
| MVPA Recommendation (N = 519)  |               |               |               |         |
| <150 min in MVPA               | 195 (37.6)    | 93 (29.9)     | 102 (49.0)    | b <0.001 |
| ≥150 min in MVPA               | 324 (62.4)    | 218 (70.1)    | 106 (51.0)    | b <0.001 |

MVPA, moderate-vigorous physical activity; SD, standard deviation; a p < 0.05; b p < 0.001.

availability and reaching the MVPA recommendations (mothers: 70.1% and fathers: 51.0%; p < 0.001). No significant differences in socioeconomic level or mode of commuting were found between mothers and fathers.

The children’s and adolescents’ sociodemographic characteristics and mode of commuting to school are shown in Table 2. No significant differences between children and adolescents were found, except for age.

The parental sociodemographic characteristics (Model 1) as explanatory variables of ACS in children and adolescents are shown in Table 3.

Regarding children, four-step logistic regressions were obtained in Model 1 of parental sociodemographic characteristics (see Figure 2). In the first step, “car availability” was included and explained 18% of the variance; in the second step, “father’s educational level” was added and explained 23% of the variance (+5%); in the third step, “age” was added, increasing the explained variance to 28% (+5%); and in the last step, “socioeconomic level” was included, increasing the explained variance to 32% (+4%). In this last model, an OR = 1.894 was obtained, increasing the probability that children are active.

In adolescents, only one step was obtained, which included socioeconomic level (OR = 0.534), which explained 14% of the variance.

Model 2 of parental mode of commuting to work and PA variables as explanatory variables of ACS in children and adolescents are shown in Table 4.

In children, three steps were calculated to predict ACS (see Figure 2). The first step included a higher “father ACW,” explaining only 9% of the variance, but a greater odds value (OR = 4.430). As a second step, lesser “mother ACW” was included in the model, increasing the variance explanation by 14% (+5%). The third step included a higher “mother ≥150 minutes in MVPA,” slightly increasing the variance explanation toward 16% (+2%). In adolescents, only one step was used to predict ACS. Higher “Father ACW” explained 5% of the variance.

Every previous parental explanatory variable was included in Model 3, separately, for children and adolescents (Figure 1), and higher variance values were obtained. Regarding children, five stepwise models, which included “car availability,” less “father’s educational level” (+6%), higher “mother’s educational level” (+4%), “mother ACW” (+4%) and less mother salary/month
TABLE 2 | Sociodemographic characteristic and mode of commuting to school between children and adolescents.

| Sociodemographic factors | Overall (n = 684) | Children (n = 438) | Adolescents (n = 246) | p-value |
|--------------------------|------------------|-------------------|----------------------|---------|
| Age (Mean ± SD)          | 11.3 ± 2.7       | 9.7 ± 1.7         | 14.0 ± 1.7           | <0.001  |
| Gender                   |                  |                   |                      |         |
| Girls                    | 386 (56.4)       | 243 (55.5)        | 143 (58.1)           | 0.521   |
| Boys                     | 298 (43.6)       | 195 (44.5)        | 103 (41.9)           |         |
| Mode of commuting (n = 673) |              |                   |                      |         |
| Active                   | 263 (39.1)       | 169 (39.0)        | 94 (39.2)            | 0.518   |
| Passive                  | 410 (60.9)       | 264 (61.0)        | 146 (60.9)           |         |

SD, standard deviation; *p < 0.001.

TABLE 3 | Associations between parental sociodemographic characteristics and their child's or adolescent's ACS (Model 1).

| Group      | Steps | Predictors                  | OR     | CI 95%     | p-value | R²    |
|------------|-------|-----------------------------|--------|------------|---------|-------|
| Children   | 1     | Car availability            | 0.248  | 0.126–0.489| <0.001  | 0.18  |
|            |       | Car availability            | 0.282  | 0.141–0.566| <0.001  | 0.23  |
|            | 2     | Father’s educational level  | 0.682  | 0.507–0.918| 0.012   |       |
|            |       | Car availability            | 0.290  | 0.144–0.583| 0.001   |       |
|            | 3     | Father’s educational level  | 0.617  | 0.449–0.847| 0.003   | 0.28  |
|            |       | Age                         | 1.86   | 1.011–1.166| 0.024   |       |
|            | 4     | Car availability            | 0.113  | 0.037–0.347| <0.001  | 0.32  |
|            |       | Father’s educational level  | 0.571  | 0.407–0.802| 0.001   |       |
|            |       | Age                         | 1.088  | 1.012–1.169| 0.022   |       |
|            |       | Socioeconomic level         | 1.894  | 1.088–3.298| 0.024   |       |
| Adolescents| 1     | Socioeconomic level         | 0.534  | 0.309–0.924| 0.025   | 0.14  |

OR, odds ratio; CI, confidence interval; R², Nagelkerke correlation.
Parent variables included in the model were as follows: age, educational level (mother and father), salary/month (mother and father), car availability, and socioeconomic level.

TABLE 4 | Associations between parental mode of commuting to work and PA with their child’s or adolescent’s ACS (Model 2).

| Group      | Steps | Predictors                  | OR     | CI 95%     | p-value | R²    |
|------------|-------|-----------------------------|--------|------------|---------|-------|
| Children   | 1     | Father Active Commuting     | 4.430  | 2.258–8.691| <0.001  | 0.09  |
|            | 2     | Father Active Commuting     | 3.672  | 1.826–7.381| <0.001  | 0.14  |
|            | 3     | Mother Active Commuting     | 3.363  | 1.580–7.161| 0.002   |       |
|            |       | Father Active Commuting     | 4.269  | 2.064–8.828| <0.001  |       |
|            |       | Mother Active Commuting     | 3.247  | 1.509–6.987| 0.003   | 0.16  |
|            |       | Mother >150 min in MVPA     | 1.961  | 1.079–3.563| 0.027   |       |
| Adolescents| 1     | Father Active Commuting     | 3.142  | 1.108–8.913| 0.031   | 0.05  |

OR, odds ratio; CI, confidence interval; R², Nagelkerke correlation.
Included parent variables in the model: MVPA (mother and father) and mode of commuting (mother and father).

(+4%) as explanatory variables of ACS (see Figure 2). Overall, the model explained 38% of the variance.

Regarding adolescents, two steps were calculated to predict ACS. The first step included less “socioeconomic level” and explained 23% of the variance, while the second step included the higher “Father ACW” (+17%) and increased the variance explanation toward 40%.

Figure 2 shows the differences between the three models stratified by children and adolescents. In addition, the increases

in the percentage of variance explained can be seen when adding each variable (steps).

DISCUSSION
Physical Activity and Commuting to Work of Parents
The main objective of the current study was to analyze how parental sociodemographic characteristics, mode of commuting,
and PA predict ACS in their children and adolescents, highlighting the differences by gender of parents. Moreover, the main results of the current study were that parental sociodemographic characteristics, such as car availability, mother’s and father’s educational levels, mother’s salary, and socioeconomic level, explained significantly more the ACS than ACW and parent’s PA. In accordance with this, the hypothesis is rejected, which stated that active behaviors such as PA and ACW have a greater influence on ACS in children and adolescents.

According to the above, only the mother’s PA was incorporated into the Model 2 to explain ACS in children. But it only improved the variance from 14 to 16%. An important implication of these findings is that the weak association between parental PA and ACS can be explained because the questionnaire (IPAQ) applied in the parents tends to overestimate the amount of physical activity reported compared to an objective device (45). In this way, any association could be lost and, consequently, these results must be analyzed with caution. In addition, this could be explained by the low number of parents who met the PA recommendations (37).

Parental behavior affects children’s behavior, and the importance of the family in the development of children’s active behaviors has been previously demonstrated (46). Regarding active commuting to work, mothers’ active commuting to work in children and fathers’ active commuting to work in adolescents were important variables for explaining ACS. Recently, a study conducted in North America with 344 parents suggested that ACS among children was directly influenced by the commuting behaviors of their parents (10). In another study in Brazil, strong associations between children’s and adolescents’ ACS with the mother’s active commuting to work were found (36). Additionally, greater positive associations were found for mothers actively commuting to work and their offspring’s ACS and stronger associations between parents and children than adolescents were found (37). To our knowledge, few studies have associated the active commuting of parents with children with ACS, and future studies should continue to explore and to describe new relationships.

### Sociodemographic

Model 3, which included the sociodemographic variables, active commuting, and PA, was the more efficient explanatory model. In the case of children, four of the five variables that best predicted ACS were sociodemographic factors (car availability, father’s educational level, mother’s educational level and mother’s salary/month).

Car availability usually represents a high socioeconomic level and has regularly been associated with lower ACS (29, 44, 47, 48). In addition, families without a car increase their active commuting options (49). However, parents can conveniently drive to school because trips can often be combined with work commutes (50). Additionally, a long distance to commuting home to school or home to work typically involves car use (51), and thus negatively affects ACS. A study conducted in New Zealand showed that 32.3% of schoolchildren enrolled in the closest school were driven to school by car, compared to 57.2% not enrolled in the closest school that were driven by car (52).
In another sense, our findings demonstrated that children’s ACS can be explained by the educational levels of fathers and mothers. A previous study showed that parents with lower levels of education drove cars less to work (38.8 vs. 46.6%), and they walked more often (19.1 vs. 16.9%) than parents with high educational levels (21).

In adolescents, parental educational level was not an explanatory variable for ACS. However, socioeconomic level was an important sociodemographic variable included in the model. A Spanish study showed that adolescents from families with high socioeconomic levels had lower levels of ACS than their peers from families with low socioeconomic levels (44). It should be considered that sociodemographic variables are less modifiable and cannot be intervened. Therefore, interventions must identify the factors that may influence the increase or decrease in ACS. Therefore, our results indicate that parental and familial sociodemographic factors have the most important role in the ACS of children and adolescents.

Our study has described several parental factors that can explain ACS and help to focus future intervention strategies.

**STRENGTHS AND LIMITATIONS**

The large sample of parents and their offspring stand out as one of the strengths of the study, reaching 1,368 participants. Data from two Spanish-speaking countries were enrolled with their respective language adaptations, providing instruments that can be used by other Latin American countries. Additionally, the novelty of the study was to have included sociodemographic and PA variables in the same model, which provided new evidence on parents and their offspring.

The main limitation of the study was the cross-sectional design; therefore, no cause-and-effect relationship can be established in the associations. Indeed, a longitudinal study is required to determine the causal direction of the relationship. There was a relevant loss of sample data regarding the initial data collection because there were many incomplete questionnaires. Additionally, a nonrandomized sample was included; therefore, it is not possible to generalize to other populations. In addition, a self-reported questionnaire was used, which has a lower objectivity to determine PA than devices such as accelerometers.

**CONCLUSION**

The most explanatory variables for children’s ACS, ordered from more to less relevance, were the parents’ car availability, father’s educational level, mother’s educational level, mother’s salary/month and mother’s active commuting to work. The most explanatory variables for adolescents’ ACS, ordered from more to less relevance, were socioeconomic level and father’s...
active commuting. In conclusion and according to our objective, it can be stated that parental sociodemographic factors are more related to active commuting to school in children and adolescents than parents' physical activity and active commuting to work. In addition, more factors from the mother influence this active behavior.

**DATA AVAILABILITY STATEMENT**

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

**ETHICS STATEMENT**

The studies involving human participants were reviewed and approved by Bioethical Committee of the Pontificia Universidad Católica de Valparaíso, Chile (CCF02052017). Written informed consent to participate in this study was provided by the participants’ legal guardian/next of kin.

**AUTHOR CONTRIBUTIONS**

FR-R, PS-U, JM, MA-B, YB-R, and PC have made substantial contributions to the conception of the study and drafted the work and analysis of data. MA-B in acquisition of data. FR-R, PS-U, and PC interpretation of data. All authors contributed to the article and approved the submitted version.

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