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A Domain-Specific Approach for Assessing Physical Activity Efficacy in Adolescents: From Scale Conception to Predictive Validity

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Abstract

Objective—To develop and test the utility of a domain-specific *physical activity efficacy* scale in adolescents for predicting physical activity behaviour.

Design—Two independent studies were conducted. Study 1 examined the psychometric properties of a newly constructed Domain-Specific Physical Activity Efficacy Questionnaire (DSPEAQ) and study 2 tested the utility of the scale for predicting leisure- and school-time physical activity.

Methods—In study 1, descriptive physical activity data were used to generate scale items. The scales factor structure and internal consistency were tested in a sample of 272 adolescents. A subsequent sample of Canadian ($N = 104$) and New Zealand ($N = 29$) adolescents, was recruited in study 2 to explore the scale's predictive validity using a subjective measure of leisure- and school-time physical activity.

Results—A principle axis factor analysis in study 1 revealed a 26-item, five-factor coherent and interpretable solution; representative of leisure and recreation, household, ambulatory, transportation, and school physical activity efficacy constructs, respectively. The five-factor solution explained 81% of the response variance. In study 2 the domain-specific efficacy model explained 16% and 1% of leisure- and school-time physical activity response variance, respectively, with *leisure time physical activity efficacy* identified as a unique and significant contributor of leisure-time physical activity.

Conclusion—Study 1 provides evidence for the tenability of a five factor DSPEAQ, while study 2 shows that the DSPEAQ has utility in predicting domain-specific physical activity. This latter finding underscores the importance of scale correspondence between the behavioral elements (leisure-time physical activity) and cognitive assessment of those elements (*leisure-time physical activity efficacy*).

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Keywords

scale construction; domain-specific physical activity efficacy; physical activity; adolescents; prediction

Introduction

Evidence of decreased time spent in physical activity among today's youth (Colley et al., 2011; Dumith, Gigante, Domingues, & Kohl, 2011; Janssen et al., 2005) highlights the need to identify effective strategies for promoting physical activity in this population. In order to develop effective strategies to improve physical activity, the theoretical determinants of the behaviour should be well understood (Baranowski, Anderson, & Carmack, 1998). Self-efficacy, a central component of Bandura's Social Cognitive Theory (Bandura, 1986), has been advanced as an important personal determinant of human behaviour. Self-efficacy can be defined as an individual's beliefs regarding their ability to engage in behaviours that lead to expected outcomes (Bandura, 1995; 1997).

A review of physical activity correlates in youth (Van der Horst et al., 2007) found that self-efficacy was positively associated with physical activity in adolescents aged 13-18 years. This contrasts an earlier review by Sallis and colleagues (2000) which found mixed support for self-efficacy as a correlate in this age group. In this review, some studies found a positive relationship between self-efficacy and physical activity (Reynolds et al., 1990; Trost et al., 1996; Zakarian, Hovell, Hofstetter, Sallis, & Keating, 1994) while others did not (Bungum & Vincent, 1997; Diloranzo, Stucky-Ropp, Van der Wal, & Gotham, 1998; Garcia et al., 1995). Closer examination of the self-efficacy measures used in the included studies highlighted that a number of different types or components of self-efficacy were examined. For example, the self-efficacy measure used by Wu and colleagues (2002; 2003) among Taiwanese adolescents asked questions about engaging in regular physical activity in the face of various conflicting conditions (e.g., being tied up with family chores). DiLorenzo et al. (1998) surveyed participants' beliefs in their ability to be active relative to peers. Ryan and Dziewaltowski (2002) examined four types of self-efficacy among adolescents: efficacy for being physically active, for overcoming barriers to physical activity, for asking others to be active with them, and for finding and creating environments that support physical activity. Finally, Strauss and colleagues (2001) asked adolescents' to rate their confidence for seeking social support for physical activity, for overcoming barriers to physical activity, and for being active despite positive alternatives, such as their friends wanting to do something else.

The inconsistent support for the relationship between self-efficacy and physical activity among adolescents may be due to a lack of consistent or standard measurement of self-efficacy across studies and/or the inappropriate analyses conducted for these review papers in which results for different measures of self-efficacy were combined as a single construct. Theoretically, differences between types of self-efficacy are important for gaining a complete understanding of the relationship between self-efficacy and physical activity. McAuley and Mihalko (1998) suggest that self-efficacy measures generally represent one of two broad categories or components of the self-efficacy construct; namely, a *task* component

or a *regulatory* component. The *task* component, which is the primary focus of this work, refers to beliefs an individual has about his or her simple motor skills or ability to perform a specific behaviour. By definition, this suggests that an individual can feel more or less efficacious in different situations and/or for particular tasks (Bandura, 2006). Studies with children and adolescents have shown that *physical activity efficacy* – a general measure of self-efficacy – modestly predicts both subjectively and objectively measured physical activity (Foley et al., 2008; Roberts, Maddison, Magnusson, & Prapavessis, 2010). Generalized measures have limited predictive or explanatory power due to the ambiguity concerning the exact tasks (or types of physical activity) that are being assessed (Bandura, 2006). Furthermore, in the past *physical activity efficacy* was assessed using a single-item measure, in which adolescents were asked how confident they were that they could engage in vigorous exercise for 20 minutes or more on 3 or more days of the week. A single-item approach contradicts the recommended guidelines for assessing *task* efficacy, which suggests there should be a hierarchy of items to properly gauge both the level and strength one's efficacy beliefs (McAuley & Mihalko 1998).

As previously stated *task* efficacy is not a global trait but a situation specific trait. While different physical activities may require individuals to perform the same fundamental movement skills (e.g., run, jump, throw), one should not assume physical activity deemed important in one context will be similarly important in another context. Furthermore, it is important that *physical activity efficacy* measures correspond with the behaviour (i.e., types of physical activity) assessed (Bandura, 2006; McAuley & Mihalko 1998). Methods for measuring physical activity continue to evolve. Researchers are not only interested in better understanding physical activity level but also better understanding the types of activities youth perform. To improve the level of correspondence with physical activity outcomes, previous research has suggested using a domain-specific approach to assess self-efficacy (Schwarzer, Babler, Kwiatek, & Schroder, 1997). A similar approach has been utilized for measuring other psychosocial predictors of human behavior (e.g., life satisfaction; Fugl-Meyer, Eklund, & Fugl-Meyer, 1991). A domain-specific approach for assessing *physical activity efficacy* may be particularly advantageous when utilized in conjunction with measures of physical activity in multiple domains (e.g., at school, home, during one's leisure time and for transportation; Crocker, Bailey, Faulkner, Kowalski, & McGrath, 1997; Ridley, Olds, & Hill, 2006). This approach may capture more of the response variance in physical activity measures, strengthening the case for *physical activity efficacy*, and specifically domain specific *physical activity efficacy* as a target construct in interventions promoting physical activity in adolescents.

The overall purpose of this study was to develop a conceptually based and psychometrically sound domain-specific *physical activity efficacy* questionnaire (DSPAEQ) to assess efficacy in each of the main physical activity domains adolescents engage in (i.e., at school, at home, during leisure time, and for transportation purposes). Guided by classical measurement theory (Simms 2008), two fundamental concerns for the scale were examined (a) does the instrument measure the constructs it is intended to measure; and (b) does the instrument measure the constructs with consistency? These two questions represent the instrument's validity and reliability, respectively. To provide preliminary evidence for these two key psychometric properties, this study focused on the content of item development (i.e.,

adequacy of the items that operationally define the constructs being assessed) as well as the factor analytical structure and composition, and internal consistency of the constructs generated from the items (Simms 2008).

Methods – Study 1

Participants and procedures

Two independent samples of high school students were recruited from secondary institutions within South Western Ontario, Canada. Data from sample 1 were used in the item generation portion of scale construction and data from sample 2 were used to assess the factor structure and composition as well as the internal consistency of the DSPAEQ. Ethical approval was obtained from the University of Western Ontario Research Ethics Board (REB#17296S; REB#18182E). In addition, permission was granted to conduct research from the participating school boards. Participants were contacted via a designated teacher at each institution. For both samples, parents and students received a paper copy of a detailed letter of information clearly outlining the study information and procedures. Prior to participation, participant informed consent was obtained for individuals eighteen years of age or older. Parent consent and student assent was obtained for participants under the age of 18 years.

Scale conception and item generation

Authors were interested in creating efficacy items in four main domains of physical activity: (1) school, (2) household, (3) transportation, and (4) leisure-time (Arvidsson, Slinde, & Hulthen, 2005). A better understanding of the type(s) of activities that are performed regularly by adolescents within each domain was needed to identify the physical activities the efficacy items should collectively target. In addition, to properly gauge the level and strength of adolescents' efficacy beliefs, an understanding of the intensity and duration of each type was needed. A survey was conducted with adolescents [$N=174$; Mean Age = 15.5 ($SD=1.3$) years; 66% Female; 86% Caucasian] in which participants identified the types of physical activity they engaged in on a regular basis (i.e., three or more days per week) in each of the four physical activity domains identified. An exception was made for household activities, as household chores were anticipated to be performed fewer than three times per week. Participants also reported the average duration (minutes) and intensity level (light, moderate, or hard) they performed each activity.

The survey data were examined separately for each domain. Physical activity data were coded according to activity type and intensity level. A large number of different activities were listed in certain domains and thus independent activities were grouped together and coded according to type. For example, structured sports such as hockey, soccer, rugby were grouped together and coded as sports. Descriptive analyses were conducted to determine the frequency and distribution of reported physical activities for each intensity level (light, moderate and hard). Activities with a high frequency response were retained for inclusion in the scale (see Table 1). Keeping in line with recommendations (McAuley & Mihalko 1998), a hierarchy of items was created for each of the physical activity domains, which differentiated among activities by intensity level (light, moderate, and/or hard) and duration (in minutes) of each activity. In total, 27 items were generated (9 items for activity at school;

6 items for transportation activity; 6 items for household activity; 6 items for leisure time activity; see Appendix for example items). In line with guides for constructing efficacy scales (Bandura, 2006), a 100-point response scale, ranging in 10-unit intervals from 0 (“not at all confident”) to 100 (“completely confident”) accompanied each item.

Construct validation

Sample 2 [$N=272$; Mean Age 15.6 ($SD=1.5$) years; 55% Female; 92% Caucasian] completed the newly constructed DSPAEQ (see Appendix A). The DSPAEQ was completed during class time and took approximately 10-15 minutes to complete. These data were used to examine the factor structure and composition as well as the internal consistency of the DSPAEQ. In addition, a composite efficacy score was calculated for each physical activity domain factor and a correlation analysis was performed to examine the relationship between each of the domain efficacies identified in the factor structure. All analyses were conducted using IBM SPSS Statistics version 20.

Results

Factor analysis

The 27 item DSPAEQ data were examined for suitability for factor analysis. According to accepted recommendations (Bryant and Yarnold 1995; Tabachnick and Fidell 2007), the sample size ($N=272$) was considered appropriate for factor analysis. Inspection of the correlation matrix verified that the majority of inter-correlations among the scale items were greater than 0.3 (Tabachnick & Fidell, 2001). Bartlett’s test of sphericity (Bartlett, 1954) relating to interdependence among items reached significance ($\chi^2 = 10075.99$, $p < .000$) and the Kaiser-Meyer-Olkin sampling statistic of .90 was sufficient (Kaiser, 1970), indicating the factor analysis procedures were appropriate.

A principal axis factor analysis was conducted using an oblique rotation. No restrictions were set limiting the factor structure in the analysis and thus, scale items were free to load on any number of factors.

Kaiser’s criterion, Catell’s Scree test, and parallel analysis each revealed the same five factor structure. The pattern matrix was examined and the criterion for item inclusion was set for factor loadings greater than .50 on the primary factor and secondary loadings equal or less than .41. The structure matrix was consulted to verify it was consistent with the results of the pattern matrix. However, decisions to retain or eliminate items were based on the pattern matrix loadings as it reflects common variance and excludes the variance due to error.

Results produced a five-factor solution (Table 2), with 26 items grouped into five interpretable domain-specific efficacy scales: (i) leisure time (6-items), (ii) household (5-items), (iii) ambulatory activity (6-items), (iv) transportation (3-items), and (v) school (6-items). One household physical activity item was excluded from the final solution as it was not found to load (factor loading $< .04$) on any of the five factors, respectively. The five factor solution accounted for 81% of the response variance and resulted in the elimination of a single household physical activity item that did not load on any of the five factors.

Examination of Cronbach's alpha (Table 2) revealed desirable internal consistency for each of the five domain efficacy factors (Nunnally, 1978).

Descriptive statistics and correlation matrix for the relationship between the five domain efficacy factors are presented in Table 3. Correlations among the factors were satisfactory with the highest correlation found between leisure time efficacy and school efficacy.

Discussion

We sought to develop a domain-specific measure of *physical activity efficacy*. The 26 item model was consistent with the four domains originally proposed. The only conceptual overlap in efficacy domains was found for light intensity ambulatory activity performed at school or for transportation. The grouping of these ambulatory items together as a separate efficacy factor was not surprising as each item made reference to light intensity walking. For example, participants were asked to think about how confident they were to walk to and from class and through the hallways during lunch break for the three light intensity school activity items. With respect to the three light intensity transportation activity items, participants were asked how confident they felt in walking to and from specific places (e.g., to and/or from school, up town for lunch on break, to a friend's house). Our factor analysis findings suggest that it is necessary to assess adolescent's efficacy for these items separate from their efficacy to perform moderate-to-vigorous school and transportation activity.

Descriptive information for the five-factor *physical activity efficacy* domain model showed the highest correlation among efficacy scores occurred between the leisure time and school domains (0.78; share 61% common variance). When completing the leisure time domain efficacy items, readers are prompted to think about the sports and games (e.g., hockey, dance, horseback riding, weight lifting, etc.) they do during their free-time. With respect to the school domain efficacy items, readers are prompted to think about activities they do as part of physical education class in addition to any school sport team involvement. There is potential for activities from different domains to be governed by similar sub-skills, and therefore the potential for inter-domain relationships or high correlations exists (Bandura 2006). Thus, high efficacy in the school domain may translate to a higher efficacy belief for activities in the leisure time domain (McAuley & Mihalko, 1998). For example, an individual may be a member of the school cross-country running team but also play soccer for recreational purposes (as part of their leisure-time). Increased efficacy in one's ability to run cross-country may translate into higher efficacy for their ability to play soccer during their leisure time given that both sports involve similar intensities of locomotive activity performance. Despite the potential for overlap, these two *task* related efficacy constructs were found to be analytically distinct (see Table 2). This supports what we have mentioned previously that *physical activity efficacy* in one context should not be assumed to be equally as important in another.

Preliminary psychometrics were provided for the DSPAEQ in study 1. Study 2 was conducted to examine the predictive validity of the newly developed measure (Simms 2008). As mentioned previously, it is reasonable to expect that relations between *physical activity efficacy* cognitions and physical activity behavior will be stronger if the cognitive

assessment and behavioral elements are congruent. For instance, leisure physical activity efficacy should be a stronger predictor of leisure and recreation physical activity than transportation physical activity behaviour. Lack of scale congruence has been identified previously by researchers to explain the equivocal findings regarding *physical activity efficacy's* role in adolescent free-living physical activity (Roberts et al., 2010; Ryan & Dziewaltowski 2002). Therefore, in study two we also sought to examine whether domain-specific efficacy constructs would be predictive of physical activity behaviours of similar domains.

Methods – Study 2

Participants and procedures

With consent from school principals, students were recruited through designated teachers at one educational institution in Auckland, New Zealand, and two secondary school institutions in South Western Ontario, Canada. Parents and students received a paper copy of a participant information sheet outlining the study purpose and procedures. Participants aged 18 years provided written consent. For participants under eighteen years of age, written parental consent and written participant assent were obtained, prior to participation. One hundred thirty-three students (104 from Canada and 29 from New Zealand; 54.1% female) with a mean age of 15.97 years ($SD = 1.22$), of predominately Caucasian (71%) and New Zealand European (16%) race, were recruited for the study.

Researchers collected demographic information and anthropometric measures from participants during the first classroom visit. Participants also completed a questionnaire assessing their *physical activity efficacy*. One week later, participants completed a physical activity questionnaire, recalling their physical activity over the previous seven days. Each visit took approximately 20 minutes and was conducted during class time. Data were collected in New Zealand during July 2011 and in Canada during September through November of 2011. All study procedures were approved by the University of Auckland Human Participants Ethics Committee and University of Western Ontario Research Ethics Board, respectively (URB/11/06/017; REB#18182E). In addition, permission was granted to conduct the study from each school board.

Physical activity efficacy

Domain-specific *physical activity efficacy* was assessed using the DSPAEQ. As identified in Study 1, the DSPAEQ consists of 26 items and asks students how confident they are to engage in physical activity across five different domains [ambulatory (6 items), household (5 items), leisure-time (6 items), transportation (3 items), and school (6 items)]. Participants responded to each item using a 10-point scale ranging from 0% (not at all confident) to 100% (completely confident). An overall mean score was calculated from the item responses in each domain, which ranged from 0% - 100%. Higher scores indicate greater self-efficacy.

Physical activity

Physical activity was assessed using the Physical Activity Questionnaire for Adolescents (PAQ-A; Crocker, Bailey, Faulkner, Kowalski, & McGrath, 1997). The PAQ-A is a self-

administered 7-day recall questionnaire intended to assess general levels of moderate to vigorous leisure-time and school-based physical activity in high school aged students. The PAQ-A consists of 10-items and asks individuals to rate how much activity they have done over the previous week. The scale has previously been used in adolescent physical activity research (Crocker, Eklund, & Kowalski, 2000; Roberts et al., 2010). Traditionally, an overall mean score ranging from 1 to 5 is calculated based on each of the item responses, where a higher score indicates a higher activity level; however, in the present study two independent scores (ranging from 1 to 5) were created. A mean score was calculated from items one, four, five, six, and seven and served as a measure of leisure-time physical activity. In addition, a mean score was calculated from item two and three and served as a measure of school-time physical activity. These two summary measures allowed for domain-specific measures of physical activity to be created, corresponding to two of the domain-specific *physical activity efficacy* constructs.

Statistical analyses

Only participants with complete DSPAEQ and PAQ-A data were included in analyses. Descriptive statistics, bivariate (Pearson) correlations, and internal consistency (alpha values) were computed for each of the study variables. To test the relationship between domain-specific *physical activity efficacy* and domain specific measures of physical activity, two standardized regression analysis were conducted; one for leisure-time physical activity and the second for school-time physical activity. Data were inspected for multicollinearity (variance inflation factor and tolerance values). The outcomes for each regression were evaluated using a range of indices that included (a) variance accounted for per criterion variable (i.e., R^2 and Adjusted R^2 values), (b) standardized beta (β), and (c) the amount of unique variance allotted to each predictor variable [(part correlation co-efficient)²].

Results

The mean age of the sample was 15.98 years ($SD=1.24$) and 54% ($n=68$) female. Seven participants (5%) were excluded due to incomplete data (i.e., 4 participants did not complete a copy of the DSPAEQ; 3 did not complete a copy of the PAQA). The final sample included data from 126 participants (28 from New Zealand and 98 from Canada). Descriptive statistics and bivariate (Pearson) correlations for all study variables are presented in Table 4.

Standard multiple regression analyses

Findings from the regression analyses are presented in Table 5. Inspection of Variance Inflation Factor (Range = 1.94-2.87 and 1.95-2.88) and Tolerance (Range = .35-.52 and 0.35-0.52) values indicated that multicollinearity was not an issue in either regression (Menard, 1995). The total variance explained by domain *physical activity efficacy* regarding leisure-time physical activity was 16% (Adjusted $R^2 = 13\%$), with leisure-time efficacy found to be the most significant and unique contributor to leisure-time physical activity ($\beta = .28, p < 0.05$). In the second regression, the domain-specific *physical activity efficacy* model explained only 1% (Adjusted $R^2 = 0\%$) of the variance in school-time physical activity. No single domain efficacy construct was found to provide a significant contribution.

Discussion

The purpose of this study was to examine the relationship between domain-specific *physical activity efficacy* and self-reported physical activity in a sample of New Zealand and Canadian adolescents. To the best of our knowledge, this is the first time a domain approach for assessing *physical activity efficacy* has been taken for predicting physical activity in a youth population. Overall, the domain-specific physical activity model explained 16% and 1% of leisure- and school-time physical activity variance, respectively. The amount of leisure-time activity variance explained by the current model is in line with previous research, where a generalized measure of *physical activity efficacy* has been assessed in conjunction with *regulatory efficacy* for explaining youth physical activity (Foley et al., 2008; Roberts et al., 2010).

Although *school physical activity efficacy* was not found to be a significant contributor in explaining school-time physical activity, *leisure-time physical activity efficacy* was found to be a significant and unique contributor to leisure-time physical activity. The latter finding is in line with suggestions by previous researchers who have noted that to better understand the complexities concerning self-efficacy as a correlate of youth physical activity more attention needs to be given to ensure that the activity tasks made reference to by the efficacy scale are representative of the tasks captured by the physical activity measure (Roberts et al., 2010; Ryan & Dziewaltowski, 2002). A good level of correspondence is found between the natures of physical activities assessed by the leisure-time efficacy items with those assessed by the leisure-time PAQ-A items. Unfortunately, the correspondence between the natures of physical activities assessed by the efficacy and PAQ-A school-time items is not as fitting. For example, item two of the PAQ-A assesses how often an individual has been very active (engaged in vigorous intensity physical activity) during physical education classes over the previous seven day period. The *school physical activity efficacy* items target ones confidence for performing both moderate and vigorous intensity physical activity during physical education and during extracurricular school activity (playing a school sport, band practice, etc.).

While we were able to assess domain-specific measures of physical activity using the PAQ-A, a variety of other self-report physical activity tools allow for contextual or domain physical activity assessment (e.g., the MARCA, YPAQ, SWAPAQ; Corder et al., 2009; Ridley et al., 2006). Additional tools may exhibit increased levels of correspondence with the DSPAEQ, particularly concerning performance changes (intensity and duration) of physical activity behaviour. Keeping in line with the conception of the DSPAEQ, *leisure physical activity efficacy* should be found to be a predictor of leisure physical activity, *transportation physical activity efficacy* a predictor of transportation behaviour, *school physical activity efficacy* a predictor of school behaviour, etc. While we were able to provide some support for these predictions, future research is warranted to provide more empirical support for the other domains. Support of this kind offers a new approach for assessing physical activity efficacious beliefs in adolescents. Not only may this help to standardize how efficacy is assessed across studies but it will allow youth physical activity interventions to be tailored and to target physical activity efficacy for domains of particular interest (e.g., leisure-time versus transportation physical activity).

Gender differences regarding domain efficacies roles in predicting physical activity could not be examined given the small sample size. Differences in physical activity levels have been reported between male and female adolescents (Colley et al., 2011). In general, there is a negative association between physical activity and age, however physical activity declines are found to be steepest for female adolescents (Dumith et al., 2011). Limited research has looked at gender differences with respect to self-efficacy and physical activity (Spence et al., 2010 Wu, Pender, & Noureddine, 2003), moreover, the contextual differences of physical activity between genders (i.e., do males participate in more leisure-time activity than females; do females participate in more transportation based physical activity compared to males).

Conclusions

Overall our findings offer preliminary support for assessing *physical activity efficacy* at a domain-specific level in adolescents. Study 1 provides evidence for the tenability of a five factor DSPAEQ, while Study 2 provides evidence that the DSPAEQ has utility in predicting domain-specific physical activity behavior. These latter findings provide partial support for the importance of scale correspondence between the behavioral elements (leisure-time physical activity) and cognitive assessment of those elements (leisure-time physical activity efficacy). As a new and promising instrument the DSPAEQ underscores the need of further construct validation work. This includes confirmatory factor analytical studies that takes into account class/school level clustering to confirm the factor structure and composition of the questionnaire in other adolescent populations; and prospective predictive studies that capture domain physical activity behaviour that correspond with all the DSPAEQ constructs.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Highlights

- To better understand self-efficacy as a correlate of physical activity in youth, a strong emphasis should be placed on the correspondence of efficacy measures with behavioural outcomes.
- A domain-specific approach to assessing physical activity efficacy offers support in improving the level of correspondence with physical activity outcomes.
- The domain specific physical activity efficacy scale (DSPAEQ) is a new tool that assesses efficacy in five physical activity domains (leisure-time, school, ambulatory, household, and transportation).
- The DSPAEQ has some utility in predicting domain-specific physical activity behaviour and highlights the importance of scale correspondence between physical activity behavioral elements and the cognitive assessment of those elements.

Table 1Descriptive physical activity information collected from the survey data ($N = 174$).

	Response Frequency (%)
School Activity	
<u>Light intensity</u>	
Walking (<i>in general</i>)	(39%)
Walking at school (<i>to/from class, in the halls or outside during lunch break</i>)	(32%)
Other (<i>e.g., ascending/descending stairs, Phys. Ed. class. etc.</i>) [‡]	(29%)
<u>Moderate intensity</u>	
Phys. Ed. Class	(60%)
Sports	(20%)
<u>Vigorous intensity</u>	
Phys. Ed. Class	(48%)
Sports	(48%)
Household Activity	
<u>Light intensity</u>	
Household cleaning/chores	(69%)
Other (<i>e.g., cleaning stables, cutting grass, shovelling snow, babysitting, etc.</i>) [‡]	(31%)
<u>Moderate intensity</u>	
Household cleaning/chores	(24%)
Other (<i>e.g., cleaning stables, cutting grass, shovelling snow, babysitting, etc.</i>) [‡]	(76%)
Transportation Activity	
<u>Light intensity</u>	
Walking	(86%)
<u>Moderate intensity</u>	
Biking	(56%)
Jogging	(14%)
Leisure Activity	
<u>Moderate intensity</u>	
Sports	(47%)
Fitness and resistant training	(20%)
Other (<i>e.g., horseback riding, walking the dog, active video games, sailing, drumming, etc.</i>) [‡]	(33%)
<u>Vigorous intensity</u>	
Sports	(54%)
Fitness and resistant training	(32%)
Other (<i>e.g., horseback riding, walking the dog, active video games, sailing, drumming, etc.</i>) [‡]	(14%)

[‡]The number of independent physical activities provided was ten.

Table 2

Factor Loadings and Eigenvalues from the Pattern Matrix for the 26-item Exploratory Factor Analysis with Oblique Rotation.

Domain-specific physical activity efficacy and Items	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
Leisure-time efficacy					
DSPA EQ11	.85	.07	-.28	.14	-.05
DSPA EQ21	.86	.01	-.10	-.01	.71
DSPA EQ31	.83	-.01	-.01	-.13	.03
DSPA EQ41	.86	-.01	-.10	.05	.03
DSPA EQ51	.76	.04	.13	-.14	.21
DSPA EQ61	.68	.08	.20	-.22	.19
Household efficacy					
DSPA EQ1h	.01	.89	-.13	.23	.01
DSPA EQ2h	-.01	.99	-.06	.13	-.04
DSPA EQ3h	-.01	.95	-.02	-.10	-.04
DSPA EQ5h	-.02	.92	.02	-.08	.07
DSPA EQ6h	.04	.82	.13	-.27	.04
Ambulatory efficacy					
DSPA EQ1s	.02	.06	-.82	.14	.24
DSPA EQ2s	.01	.04	-.72	-.13	.28
DSPA EQ3s	-.07	.08	-.50	-.35	.29
DSPA EQ1t	.14	.16	-.75	.08	.03
DSPA EQ2t	.21	.15	-.71	-.17	-.09
DSPA EQ3t	.20	.09	-.65	-.41	-.18
Transportation efficacy					
DSPA EQ4t	.08	.02	-.21	-.65	.11
DSPA EQ5t	.08	.06	-.05	-.84	.09
DSPA EQ6t	.10	.08	-.02	-.80	.10
School efficacy					
DSPA EQ4s	-.07	.00	-.20	.04	.90
DSPA EQ5s	.03	.07	-.09	-.06	.83
DSPA EQ6s	.12	.08	-.02	-.25	.60
DSPA EQ7s	.24	-.01	-.06	.04	.73
DSPA EQ8s	.32	.05	.13	-.09	.66
DSPA EQ9s	.34	.13	.21	-.17	.51
Eigenvalue	13.80	3.39	1.94	1.45	1.22
Cronbach's alpha	.95	.95	.91	.90	.93

Table 3

Correlations Among and Descriptive Statistics of the Domain-Specific Physical Activity Efficacy Constructs ($N=272$).

Domain-specific physical activity efficacy	1	2	3	4	5
1 Leisure-time	-				
2 Household	4.30	-			
3 Ambulatory	5.80	5.60	-		
4 Transportation	6.40	4.30	5.90	-	
5 School	7.80	4.30	5.90	6.70	-
Mean	8.44	8.92	9.43	8.55	8.41
<i>SD</i>	<i>1.65</i>	<i>1.62</i>	<i>1.02</i>	<i>1.62</i>	<i>1.60</i>

Table 4

Descriptive Statistics, Bivariate Correlations, and Internal Consistency of Physical Activity Efficacy Constructs and Physical Activity Behaviour (N=126).

<i>Physical activity efficacy and physical activity variables</i>	1	2	3	4	5	6	7
1 Leisure time efficacy	-						
2 Household efficacy	0.47**	-					
3 Transportation efficacy	0.61**	0.69**	-				
4 School efficacy	0.66**	0.54**	0.67**	-			
5 Ambulatory efficacy	0.42**	0.58**	0.63**	0.59**	-		
6 Leisure-time physical activity	0.37**	0.11	0.26**	0.31**	0.12	-	
7 School-time physical activity	0	-0.05	-0.01	-0.03	-0.04	0.33**	-
Mean	8.63	8.82	8.50	8.30	9.44	2.58	2.80
(SD)	(1.49)	(1.72)	(1.77)	(1.71)	(0.95)	(0.76)	(0.72)

Table 5

Standard Multiple Regression Analyses Testing the Relationship Between Domain-Specific Physical Activity Efficacy Constructs and Measures of Leisure-time and School-time Physical Activity Assessed by the PAQ-A.

	β	<i>t-values</i>	R^2	<i>Adjusted R²</i>	<i>F</i>
Leisure-time physical activity			0.16	0.13	4.62**
Leisure-time efficacy	0.28	2.40*			
Household efficacy	-0.16	-1.30			
Transportation efficacy	0.14	1.00			
School efficacy	0.17	1.30			
Ambulatory efficacy	-0.10	-0.86			
School-time physical activity			.01	0	0.14
Leisure-time efficacy	-0.02	-0.15			
Household efficacy	-0.08	-0.60			
Transportation efficacy	0.09	0.55			
School efficacy	0	-0.02			
Ambulatory efficacy	-0.04	-0.33			