The Physical Educator Vol. 73 • pp. 352–372 • 2016
http://dx.doi.org/10.18666/TPE-2016-V73-I2-6281

PEDAGOGY

Self-Regulated Learning and Perceived Health Among University Students Participating in Physical Activity Classes

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Abstract

The purpose of this study was to explore motivational indicators of self-regulated learning (SRL) and the relationship between self-regulation (SR) and perceived health among university students enrolled in physical activity (PA) classes. One hundred thirty-one Turkish students participating in physical education activity classes at two universities completed questionnaires assessing motivational regulations and perceived health. Qualitative comments about why students enrolled in their physical education activity classes were also included. Results indicated the students endorsed an overall intrinsic-oriented SR profile. Above average Identified and Intrinsic motivational regulation subscale scores, reinforced by qualitative comments expressing personal importance of activity, provided strong indicators of students valuing their activity class experiences. Of the four motivational SR subscales, Identified regulation

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predicted student perceived health. The lack of significant gender effects was a noteworthy finding among this population of university students, reinforcing the importance both genders place on internal regulation and physical activity.

The importance of physical activity (PA) in children and adolescents as a leading health indicator is well documented globally. The Centers for Disease Control and Prevention (CDC) attributes the lack of physical activity to dramatic rises in obesity levels and other health-related problems among school-aged children (Gao, Lodewyck, & Zhang, 2009). Inactivity at young ages may predispose youth to the early onset of chronic heart disease, type 2 diabetes, and related hypokinetic diseases (Boreham & Riddoch, 2001; Fox & Riddoch, 2000). An equally important concern is having such characteristics follow these individuals into early and late adulthood.

The lack of PA has been noted in numerous countries, including Australia (Smibert, Abbott, Macdonald, Hogan, & Leong, 2010), Sweden (Engström, 2008), Romania (Soos, Biddle, Balint, Sandor, & Szabo, 2012), Hong Kong (Cheung, 2012), and the United States (Vidoni, Azevedo, & Eberline, 2012). So serious are the effects of inactivity, worldwide initiatives have been undertaken. Vidoni et al. (2012) cited proposals such as the Global Recommendations of Physical Activity for Health (World Health Organization, 2010), the EU Physical Activity Guidelines (EU Working Group 'Sport & Health,' 2008), and Healthy People (U.S. Department of Health and Human Services, 2009) that recommend 60 min or more of daily moderate to vigorous physical activity (MVPA) for children and adolescents.

Although, physical education contributes to activity levels, Pate, O'Neill, and McIver (2011) addressed the lack of documentation of physical education on health outcomes. Additionally, few researchers have addressed PA among post–high-school-aged participants and fewer have addressed different countries. Little is known, for example, about why young adults attending college or university engage in physical activity, nor about what their perceptions of health may be. Because an important venue for promoting MVPA in college settings occurs through participation in physical education activity classes, we examined perceptions of health among students attending two Turkish public universities.

Perceptions of Health

Perceived health has long been a useful proxy measure for clinically measured health status and a determinant of post-illness recovery and adjustment (Garrity, Somes, & Marx, 1978; Mikolajczyk et al., 2008). A single Likert-type scale item asking about one's overall health remains one of the best predictors of health care utilization, incidence of various chronic diseases, and psychological well-being (Piko, 2000; Svardsudd & Tibblin, 1990; Wade, Prevalin, & Vingilis, 2000). Such perceptions are as important as medically defined health when affecting lifestyles. For example, researchers have reported that adolescent self-perception of obesity was more important than medically defined obesity in predicting poor mental health, self-esteem, and psychological distress (Atlantis & Ball, 2008; Jansen, van de Looij-Jansen, de Wilde, & Brug, 2008). In a comparative study, Kaleta, Makowiec-Dąbrowska, Dziankowska-Zaborszczyk, and Jegier (2006) found that engaging in sufficient levels of leisure-time physical activity had a significant and positive effect on perceived health by men and women.

Theoretical Framework

A theoretical approach attending to the why and what of understanding knowledge acquisition is self-regulated learning (SRL). Generally, SRL is seen as a process "whereby learners personally activate and sustain cognitions, affects and behaviors that are systematically oriented toward the attainment of personal goals" (Zimmerman & Schunk, 2011, p. 1). Self-regulation (SR) provides an inclusive approach to student learning that embraces cognitive, motivational, affective, and social contextual factors (Pintrich, 2000). It is viewed as being driven by environmental settings/circumstances that encourage learners to "adopt, develop, and refine strategies, monitor, evaluate, set goals, and change belief processes" (Hadwin, Jarvela, & Miller, 2011, p. 68). In sum, SR is seen to mediate connections between a learner's characteristics, context, and task performance (Pintrich, 2000, 2009).

This study was focused on the motivational regulations that influence SRL. Ryan and Deci (2000) identified four motivational regulatory categories: external, introjected, identified, and intrinsic. Externally regulated learners are influenced by outside demands or

rewards for performance. Learners who expect consequences based on expected behaviors are seen as externally regulated. The individual who engages in physical activity to outperform others or receive awards is externally regulated. Introjected learners acknowledge a regulation but do not fully embrace or internalize it. Though often self-initiated, the learner's behavior occurs under external pressure and tension and may be accompanied by stress or anxiety (Sun & Chen, 2010). Identified regulation is a more autonomous form of regulation wherein the learner consciously values a learning goal. The identified learner demonstrates more autonomy and SR because he or she personally accepts and identifies with that regulation. Those who engage in physical activity for health or wellness benefits are identified regulators. They value and recognize the importance of an active, healthy lifestyle. Intrinsic regulation finds learners involved in activities for their inherent enjoyment and satisfaction of learning (Ryan & Deci, 2000). Engaging in physical activity for the sheer joy and pleasure derived from mastering new skills or concepts characterizes an intrinsic self-regulator.

Self-Regulated Learning Research in Physical Activity Settings

In early research on SRL in physical education, researchers examined the role of goal setting. Kitsantas and colleagues found students who set process goals were more effective in the improvement of a dart-throwing skill than those who recorded performance outcome goals (Kitsantas & Zimmerman, 1998; Zimmerman & Kitsantas, 1997). Using Zimmerman's (2000) SRL model, Kolovelonis, Goudas, and Dermitzaki (2010) reported that sixth grade Greek students who moved from the emulation level to the self-control level recorded greater improvement in a motor skill compared to those who missed one or both of the levels in the model.

When self-recording and self-reflection were added to setting goals, Cleary, Zimmerman, and Keating (2006) noted improvement in university students' performance of the basketball free throw. Kolovelonis, Goudas, and Dermitzaki (2011) also recorded positive effects of self-recording among fifth and sixth graders' performance. Application of SRL strategies has also affected athletes' basic beliefs and tactics to enhance success in sports (Kitsantas & Kavussanu, 2011).

Though contributing to understanding of SRL in PA settings, the aforementioned studies have limitations. Most populations selected, for example, consisted of youth or early adolescents (ages 13–17). There is a paucity of information about SRL among post-K–12 participants. Although athletes are highly skilled individuals, their goals may not reflect those of less skilled, recreation-seeking individuals. Although examined in classroom-based SRL research, gender difference was not investigated for university students. In some studies, only one gender was examined, and in those with mixed-gender populations, observed similarities and differences were examined across intact samples.

The purpose of this study, then, was to explore indicators of self-regulated learning and the relationship between motivational SRL and perceived health among Turkish university students enrolled in PA classes. Though SRL encompasses cognitive, motivational, affective, and social contextual factors, we focused on the motivational element. Specifically, we asked, (a) what motivational SR indicators emerge from students participating in university physical education activity classes, (b) what is the relationship between motivational SR and perceived health, and (c) are there gender differences on the mean SR scores and perceived health?

Method

Participants

Voluntary participants included 131 students (M_{age} = 22.12, SD = 2.34) from two large urban universities in Turkey. The numbers of male and female students were approximately equal ($n_{female\ students}$ = 64, 48.9%; $n_{male\ students}$ = 67, 51.1%). Among the participants, 7.1% were freshmen, 19.7% sophomores, 39.4% juniors, 30.7% seniors, 2.4% master's students, and 0.8% PhD students. All students were enrolled in university physical education activity classes and had selected their classes under the elective requirements at both institutions. Classes included dance, football, health-related fitness, basketball, and volleyball. The health-related fitness and football classes met two times per week for 1 hr 50 min, and the dance, volleyball, and basketball classes met one time per week for 1 hr 50 min.

Instrumentation

Students completed two questionnaires. The first instrument included demographic information and one item to assess perceived health. Demographic information included name, age, gender, university, major, and if they were taking the class for a graduation requirement. Those not taking the class to fulfill a graduation requirement were asked to explain why they enrolled. For perceived health, we asked students to rate their present health status on a scale from 1 (*very poor*) to 5 (*excellent*).

The second instrument, the Self-Regulated Questionnaire-Exercise (SRQ-E), was validated in an extensive research project by Ryan and Connell (1989). The four regulation subscales—external, introjected, identified, and intrinsic—were shown to conform to a simplex-like ordered correlation that assessed domain-specific individual differences in regulation styles among urban, suburban, and rural population samples. We modified the original stem from "I try to exercise on a regular basis" to "I try to work hard in this activity class." Examples of the 16-item questionnaire included "Because others would be angry at me if I did not," "Because I enjoy exercising," and "Because I feel it is the best way to help myself." Participants were asked to respond to each item on a 7-point Likert scale ranging from 1 (*not at all true of me*) to 7 (*very true of me*).

Adaptation of the Self-Regulated Questionnaire—Exercise

Because the SRQ-E had not been used with a Turkish population, we first asked a bilingual team of cultural authorities (professionals in physical education and sport) to examine the cultural relevance of the instrument. When the panel was unanimous in their assessment that the instrument was appropriate and applicable to a Turkish audience, we began the translation process following Brislin's (1970) translating and back translating model. Brislin recommends one bilingual expert first translate the instrument from the source language (SL) into the target language (TL). A second bilingual expert blindly back translates to the SL. If an error in meaning occurs (in the back-translated version) when compared to the original, the terms are retranslated and again blindly back translated by another bilingual expert and repeated until no errors in meaning occur.

Following the recommendation of Jones, Lee, Phillips, Zhang, and Jaceldo (2001) and Sireci (2011) that test adaptations involve separate teams of bilingual translators with independent translations and reviewers, we recruited two teams of three bilingual experts not affiliated with the study. The first team of three translated the SRQ-E into Turkish and then the second team (from the English department at one of the institutions) translated back to English. At each translation phase, we asked, (a) are the questions meaningful, (b) are the questions clear and understandable, (c) do you think the questions are appropriate for the Turkish culture, and (d) do you have suggestions on any of the questions? Written comments were recorded at the bottom of the translated document. Additionally, three graduate and four undergraduate bilingual students were shown the instrument and asked the identical questions at both translation phases. After translation back to the source language, the research team met and made final adjustments to the instrument based on the combined feedback received. We examined each item individually and discussed them until unanimous agreement occurred.

Procedures

Requisite institutional approval was obtained prior to the study. We contacted course instructors about the project and requested permission to visit their classes prior to data collection. All instructors agreed to our request. We informed students of the purpose of the study, explained that participation was voluntary, and explained that course grades would not be affected. They were also apprised that all information would be kept confidential and were encouraged to ask questions prior to signing informed consent forms. Questionnaires were then distributed during the students' regular physical activity class and took approximately 20 min to complete.

Results

Because the 131 participants were from two institutions, a MANOVA analysis was first conducted on the SRL items using university as the between-group variable. Results revealed no significant differences, Wilks' $\lambda = .932$, $F(4, 125) = 2.28$, $p = .064$, between the populations, so the data were collapsed and merged for analysis.

SRQ-E Reliability and Validity

Cronbach's alpha analyses of the four subscales were initially low: Introjected = .675, Identified = .673, External = .601, and Intrinsic = .587. After removing items SR6, SR16, SR2, and SR10, the Cronbach's alphas were acceptable: Introjected = .731, Identified = .686, External = .633, and Intrinsic = . 569.

To assess the model for its fit to the data, we performed a confirmatory factor analysis (CFA). Multiple indexes to evaluate the goodness of fit included (a) the chi-square to degree of freedom ratio (χ^2/df), for which values less than 2.0 suggest a good fit (McIver & Carmines, 1981); (b) the comparative fit index (CFI), for which values larger than .90 represent a good fit; (c) the Tucker-Lewis index (TLI), for which values over .90 are considered acceptable (Hu & Bentler, 1995); and (d) the root mean square error of approximation (RMSEA), for which .06–.08 is considered an acceptable fit (Browne & Gudeck, 1993; Hu & Bentler, 1995). When the 16 items in the CFA model were first loaded, the model did not fit the data, $\chi^2/df = 2.312$, CFI = .870, TLI = .821, RMSEA = .100. After again deleting items SR6, SR16, SR2, and SR10, the CFA model showed acceptable fit, $\chi^2/df = 1.526$, CFI = .953, TLI = .928, RMSEA = .064.

The results of the descriptive data on the study variables are shown in Table 1. Overall, the participants recorded above-average perceptions of health. They also demonstrated a positive, self-regulated learning profile. Identified and Intrinsic subscale scores in particular were above the midpoint (i.e., 3.5), with the Intrinsic subscale recording the highest mean score. The External subscale recorded the lowest mean score.

Table 1
Descriptive Statistics of Study's Variables

Variable	*M*	*SD*	Cronbach's alpha
External	2.07	1.02	.63
Introjected	4.43	1.48	.73
Identified	5.26	1.22	.69
Intrinsic	5.33	1.07	.57
Perceived Health	4.08	.74	n/a

Hierarchical multiple regression analyses were used to examine the relative contributions of self-regulated learning to students' perceived health. Identified SR was the only positive predictor ($\beta = .16$) of perceived health, $F(2, 128) = 3.32$, $p < .05$, explaining 3.2% of the variance. Intrinsic, Introjected, and External SR were not predictors of perceived health. Analysis of gender differences on perceived health revealed no significant differences, $t(129) = -1.636$, $p = .104$. Finally, MANOVA analysis among the other variables on the biographical data questionnaire (i.e., age, major, and classification) yielded no significant gender differences on the four SRL subscales.

Written Comments

Of the 131 participants, 90 (68.7%) indicated they did not take the class to fulfill a graduation requirement. Of these, 103 comments were recorded (three had no comments). Thirteen students cited two reasons for taking the class, and two students cited three reasons. Two members of the research team analyzed the 103 comments using constant comparison techniques (Lincoln & Guba, 1985). All statements were first sorted into categories. These categories were merged into larger categories that were then captured by four emergent themes. The four themes reflected each of the four motivational SRs. All disagreements during categorization were discussed until 100% agreement occurred. A summary of the students' motivational SR by theme and subcategories is provided in Table 2.

Table 2
Emergent Indicators of Motivational Self-Regulation by Theme and Subcategory

Self-regulation theme/ subcategory	Number of responses ($n = 130$)	Responses %
External		
GPA		
Requirement	10	9.71
Instructor		
Introjected	–	–

Table 2 (cont.)

Self-regulation theme/ subcategory	Number of responses (n = 130)	Responses %
Identified		
Health Benefits	35	33.98
Doing Exercise		
Intrinsic		
Enjoyment/ + sport specific	56	54.37
Gain Knowledge		
Dead End[a]	2	1.94

Note. GPA = grade point average.
[a]Not assigned

External Regulation

As seen in Table 2, this group generated no Introjected comments and just 10 (9.71%) External Regulation comments. Externally regulated comments primarily reflected a desire to increase grade point average or to fulfill the elective requirement in their university degree program. One student straightforwardly stated he wanted to "increase [his] GPA," and another student acknowledged that she enrolled "for the elective class." One student wrote, "At the beginning I had to take it [class], but now I really enjoy it," reflecting a shift from external regulation to intrinsic regulation. Yet another student acknowledged, "I am taking the class because of the instructor."

Identified Regulation

Identified responses were primarily focused on the desire to engage in activity and the health benefits derived from participation. Students valued the role of exercise in their lives and wished to continue. One student noted the general health benefits, writing, "I lost my physical health and conditioning during my education life so I want them back." Another shared a similar feeling about the value of exercise in a busy academic setting, acknowledging, "I am so busy during the semester and I do not have any chance to do sport, by this class I can do exercise in a regular way." Others acknowledged

the importance of having to and wanting to "do exercise," "sweat," and "have a healthy life." Two specific health benefits emerged, and one student wrote, "I am a basketball player, [so] for out of stress," and another recorded that engaging in activity helped "to fight my depression."

Intrinsic Regulation

The final theme generated the highest number and percentage (56, 54.7%) of comments, lending support to the descriptive and regression results of an overall intrinsic SR profile. Students noted participation in the activity classes emerged from a desire to learn as well as for the fun and enjoyment gained. The enjoyment element was noted in the number of "I like" comments generated. One student captured the feeling of "having fun": "The class is fun and enjoyable." Another simply wrote, "I love dancing." In addition to having fun, the challenge of learning something new was evident in some of the comments. One student, for example, said he took the class because "it is fun and I like to force my borders." Still, other students combined having fun with learning opportunities. One participant stated she wanted "to learn to live in a healthy way," and another indicated, "While I learning [*sic*] something, I would like to have fun."

Discussion

The purposes of this explorative study were to identify indicators of motivational SR, assess perceived health, and determine gender differences among students participating in university physical education activity classes. Though examined in physical education settings, SRL has not previously been linked to perceptions of health among Turkish students. All motivational regulation styles were present, but the results suggested an internal and autonomous approach to learning. Evidence of external regulation emerged but was limited. The qualitative data provided additional support that internally regulated participants valued the health benefits of physical activity. Both genders recorded positive perceptions of health.

Intrinsic SR requires a shift in learning from externally controlled perspectives to internal or self-centered perspectives (Sun & Chen, 2010). Research reveals an individual's value of learning or learning outcomes often relates to choice. These choices entail what activities to do, and in turn, performance on those activities can affect

regulation (Durik, Vida, & Eccles, 2006). One student's comment, "It is my choice [to take the activity class]," supports the importance of choice offered in the environment. If students do not value what they are doing, they will be less likely to identify important learning outcomes or plan requisite strategies to accomplish those outcomes (Wigfield, Kaudia, & Cambria, 2011). The above average Intrinsic and Identified regulation subscale scores, reinforced by qualitative comments about the importance of activity, provide strong indicators of students valuing their class experiences.

Reeve, Ryan, Deci, and Jang (2008) asserted that regulation of behavior is autonomous when a learner's interests and values serve as underlying causes for learning. Autonomous students are self-initiated and persistent because they see learning as appealing or personally relevant. High mean scores on the Identified regulation scales suggest many participants selected their classes because engaging in activity represented an important personal goal or attribute. Similarly, high mean scores on the Intrinsic scale provide evidence of student enjoyment of the activities as well as of an expressed interest for learning. Internal regulators, such as enjoyment and learning, also underscore an intrinsic-oriented and autonomous approach to learning (Ryan & Deci, 2000). Repeatedly students indicated they registered for their activity class because of a desire to learn in an enjoyable environment. This sentiment was perhaps best captured by one student, who wrote, "I love dancing, watching dancing, and I would like to learn it."

The second question assessed whether SR could predict perceived health. Of the four self-regulatory scales, Identified regulation was the sole predictor of perceived health. As noted in the introduction, an identified learner exhibits greater autonomy and SR because he or she personally accepts and associates with that regulation. Combined with the written comments, students in this study provided compelling evidence of personal acceptance of health benefits derived from physical activity.

Wilkinson and Bretzing (2011) reported similar results among high school females participating in fitness units. From the authors' analysis, Health Benefits emerged as the primary theme among their sample of participants, who also cited and valued the importance of health gains derived from activity. In another study, following simi-

lar stepwise multiple regression analyses, Piko (2000) identified four predictors of self-perceived health. Following psychological well-being and the frequency of psychosomatic symptoms, self-perceived health was significantly related to physical activity.

Ryan and Deci (2000) reported another important source of autonomous SR is intrinsic motivation, which they described as a form of regulation based on student interest in a learning activity. Interest is of import because it is viewed as a psychological predisposition to reengage with classes of objects, activities, and ideas (Hidi & Ainley, 2008). Related research results provide corroboration, linking the import of interest to enhanced SR and learning. Soric and Palekcic (2009), for example, confirmed the presumption that learning strategies may be a mediator in the relationship between students' interests and their academic achievement. Pintrich and DeGroot (1990) found that among their group of 173 seventh grade science and English classroom students, those who believed their schoolwork was interesting and important were more cognitively engaged and persistent when trying to learn and comprehend the material. Similarly, Lawanto, Santoso, and Liu (2012) reported a significant relationship between students' interest in engineering design tasks and their expectancy for success. Heikkilä, Lonka, Nieminen, and Niemivirta (2012) found that among 213 Finnish first-year teachers, nonregulatory participants expressed the highest levels of stress, exhaustion, and lack of interest. Finally, Soric and Palekcic (2009) found a link, albeit a weak link, between interest, learning strategies, and achievement with a population of Croatian university undergraduate students.

The final research question examined gender differences on the SRQ-E and perceived health. There were no significant differences by gender on the four subscales of the SRQ-E. Self-regulated learning requires forethought, setting goals, anticipating outcomes for attaining those goals, as well as knowledge of self-regulatory strategies and how to evaluate and reflect on the outcomes (Zimmerman, 2000). Few differences occur between genders' academic abilities, but many differences have been noted in academic achievement, course selection, and career choices (Bussey, 2011). Self-efficacy beliefs represent known predictors of academic success, particularly affecting the ability to use self-regulatory skills when facing limited

success (Zimmerman & Cleary, 2006). These beliefs carry through to college, so strong efficacy beliefs are important for future achievement (Bussey, 2011).

Usher and Pajares (2006) found that social persuasion, such as relying on the opinions of others, is an important source that contributes to informing academic and self-regulatory efficacy beliefs. Other sources of social persuasion come from parents, peers, and teachers, who can exert powerful social pressure on gender differentiation and self-regulated learning (Bussey & Bandura, 1999). Though we cannot ascribe social pressures or other attributes affecting SR, there were no significant differences on the subscales of the SRQ-E, and this indicates that both genders endorsed the key attributes of SR.

Other researchers have found significant differences on perceived health status and have suggested that higher scores among male students may be a result of Western societal masculine norms of invincibility, independence, and overconfidence (Baffi, Redican, Sefchick, & Impara, 1991; Davies et al., 2000). Ruthig, Marrone, Hladkyj, & Robinson-Epp (2011) concurred and suggested that although men may experience health symptoms, stress, or poor nutrition, they may be unwilling to report them because of societal expectations. Though Turkish society is generally male dominated, this population of university students generated no significant gender differences on perceived health. This may be due to males being more honest and/or sensitive about their health status than were their male counterparts in North America and Europe, or conversely, the females may be overreporting their perceived health status. Regardless, the result warrants further inquiry to pursue credible explanations and to determine whether the result holds across a wider population of university students.

We acknowledge this study has limitations. First, measurements occurred at one time only during the semester. Longitudinal data may help further replicate the theoretical constructs of SRL and perceived health across an expanded number of Turkish university sites. Second, self-report questionnaires are sometimes valid and reliable in assessing aptitudes or predispositions to use SR strategies, but they are not as efficient at documenting actual events or ongoing processes involved in SR (Pintrich, 2009). In light of the tendency

for males to overrate perceived health values, and though qualitative comments were included, additional measures should also be included in follow-up research.

Despite these limitations, the results are encouraging. In an era of shrinking budgets and cuts to activity programs, policy makers and administrators require evidence-based research about factors affecting instruction, to foster interventions that may affect learning (Leaper & Friedman, 2007). Results of our exploratory study provide early evidence of the importance and support Turkish students from two higher education institutions place on physical activity. Furthermore, lack of significant differences between genders represents an important finding reinforcing the importance that both genders place on motivational SR and physical activity. This study represents but a first step to explore and identify the relationship between SRL and perceived health among Turkish university students.

References

Atlantis, E., & Ball, K. (2008). Association between weight perception and psychological distress. *International Journal of Obesity, 32,* 715–721. http://dx.doi.org/10.1038/sj.ijo.0803762

Baffi, C. R., Redican, K. J., Sefchick, M. K., & Impara, J. C. (1991). Gender role identity, gender role stress, and health behaviors: An exploratory study of selected college males. *Health Values: Health Behavior, Education, & Promotion, 15,* 9–18.

Boreham, C., & Riddoch, C. (2001). The physical activity, fitness, and health of children. *Journal of Sports Sciences, 19,* 915–929. http://dx.doi.org/10.1080/026404101317108426

Brislin, R. (1970). Back-translation for cross-cultural research. *Journal of Cross-Cultural Psychology, 1,* 185–216. http://dx.doi.org/10.1177/135910457000100301

Browne, M., & Gudeck, R. (1993). Alternative ways of assessing model fit. In K. Bollen & J. Long (Eds.), *Testing structure equation models* (pp. 136–162). Newbury Park, CA: Sage.

Bussey, K. (2011). The influence of gender on students' self-regulated learning and performance. In B. Zimmerman & D. Schunk (Eds.), *Handbook of self-regulation of learning and performance* (pp. 426–441). New York, NY: Routledge.

Bussey, K., & Bandura, A. (1999). Social cognitive theory of gender development and differentiation. *Psychological Review, 106,* 676–713. http://dx.doi.org/10.1037/0033-295X.106.4.676

Cheung, P. (2012). Association of after-school physical activity levels and organized physical activity participation in Hong Kong children. *European Physical Education Review, 18,* 182–190. http://dx.doi.org/10.1177/1356336X12440021

Cleary, T., Zimmernan, B. J., & Keating, T. (2006). Training physical education students to self-regulate during basketball free throw practice. *Research Quarterly for Exercise and Sport, 77,* 251–262. http://dx.doi.org/10.1080/02701367.2006.10599358

Davies, J., McCrae, B. P., Frank, J., Dochnahl, A., Pickering, T., Harrison, B., . . . Wilson, K. (2000). Identifying male college students' perceived health needs, barriers to seeking help, and recommendations to help men adopt healthier lifestyles. *Journal of American College Health, 48,* 259–267. http://dx.doi.org/10.1080/07448480009596267

Durik, A., Vida, M., & Eccles, J. (2006) Task values and ability beliefs as predictors of high school literacy choices: A developmental analysis. *Journal of Educational Psychology, 98,* 382–393. http://dx.doi.org/10.1037/0022-0663.98.2.382

Engström, L. (2008). Who is physically active? Cultural capital and sports participation from adolescence to middle age: A 38-year follow-up study. *Physical Education and Sport Pedagogy, 13,* 319–343. http://dx.doi.org/10.1080/17408980802400510

EU Working Group 'Sport & Health.' (2008). *EU Physical activity guidelines recommended policy actions in support of health-enhancing physical activity.* Brussels, Belgium: Author.

Fox, K., & Riddoch, C. (2000). Charting the physical activity patterns of contemporary children and adolescents. *Proceedings of the Nutrition Society, 59,* 497–504. http://dx.doi.org/10.1017/S0029665100000720

Gao, Z., Lodewyck, K., & Zhang, T. (2009). The role of ability beliefs and incentives in middle school students' intentions, cardiovascular fitness, and effort. *Journal of Teaching in Physical Education, 28,* 3–20.

Garrity, T., Somes, G., & Marx, M. (1978). Factors influencing self-assessment of health. *Social Science and Medicine, 12,* 77–81.

Hadwin, A., Jarvela, S., & Miller, M. (2011). Self-regulated, co-regulated, and socially shared regulation. In B. Zimmerman & D. Schunk (Eds.), *Handbook of self-regulation of learning and performance* (pp. 65–84). New York, NY: Routledge.

Heikkilä, A., Lonka, K., Nieminen, J., & Niemivirta, M. (2012). Relations between teacher students' approaches to learning, cognitive and attributional strategies, well-being, and study success. *Journal of Higher Education and Educational Planning, 64,* 455–471. http://dx.doi.org/10.1007/s10734-012-9504-9

Hidi, S., & Ainley, M. (2008). Interest and self-regulation: Relationships between two variables that influence learning. In B. Zimmerman & D. Schunk (Eds.), *Handbook of self-regulation of learning and performance* (pp. 77–109). New York, NY: Routledge.

Hu, L., & Bentler, P. (1995). Evaluation model fit. In H. Hoyle (Ed.), *Structural equation modeling: Concepts, issues, and applications* (pp. 76–79). London, England: Sage.

Jansen, W., van de Looij-Jansen, P. M., de Wilde, E. J., & Brug, J. (2008). Feeling fat rather than being fat may be associated with psychological well-being in young Dutch adolescent. *Journal of Adolescent Health, 42,* 128–136. http://dx.doi.org/10.1016/j.jadohealth.2007.07.015

Jones, P., Lee, J., Phillips, L., Zhang, X., & Jaceldo, K. (2001). An adaptation of Brislin's translation model for cross-cultural research. *Nursing Research, 50,* 300–304. http://dx.doi.org/10.1097/00006199-200109000-00008

Kaleta, D., Makowiec-Dabrowska, T., Dziankowska-Zaborszczyk, E., & Jegier, A. (2006). Physical activity and self-perceived health status. *International Journal of Occupational Medicine and Environmental Health, 19,* 61–69. http://dx.doi.org/10.2478/v10001-006-0005-x

Kitsantas, A., & Kavussanu, M. (2011). Acquisition of sport knowledge and skill: The role of self-regulatory processes. In B. J. Zimmerman & D. Schunk (Eds.), *Handbook of self-regulation of learning and performance* (pp. 217–233). New York, NY: Routledge.

Kitsantas, A., & Zimmerman, B. (1998). Self-regulation of motor learning: A strategic cycle view. *Journal of Applied Sport Psychology, 10,* 220–239. http://dx.doi.org/10.1080/10413209808406390

Kolovelonis, A., Goudas, M., & Dermitzaki, I. (2010). Self-regulated learning of a motor skill through emulation and self-control levels in a physical education setting. *Journal of Applied Sport Psychology, 22,* 198–212. http://dx.doi.org/10.1080/10413201003664681

Kolovelonis, A., Goudas, M., & Dermitzaki, I. (2011). The effect of different goals and self-recording on self-regulation of learning a motor skill in a physical education setting. *Learning and Instruction, 21,* 355–364. http://dx.doi.org/10.1016/j.learninstruc.2010.04.001

Lawanto, O., Santoso, H., & Liu, Y. (2012). Understanding of the relationship between interest and expectancy for success in engineering design activıty in grades 9–12. *Educational Technology & Society, 15,* 152–161.

Leaper, C., & Friedman, C. (2007). The socialization of gender. In J. Grusec & P. Hastings (Eds.), *Handbook of socialization: Theory and research* (pp. 561–587). New York, NY: Guilford Press.

Lincoln, Y., & Guba, E. (1985). *Naturalistic inquiry.* Newbury Park, CA: Sage.

McIver, J., & Carmines, E. (1981). Unidimensional scaling. *Quantitative Applications in Social Science, 24,* 96–107.

Mikolajczyk, R. T., Brzoska, P., Maier, C., Ottova, V., Meier, S., Dudziak, U., . . . El Ansari, W. (2008). Factors associated with self-rated health status in university students: A cross-sectional study in three European countries. *BMC Public Health, 8,* 215–225. http://dx.doi.org/10.1186/1471-2458-8-215

Pate, R., O'Neill, J., & McIver, K. (2011). Physical activity and health: Does physical education matter? *Quest, 63,* 19–35. http://dx.doi.org/10.1080/00336297.2011.10483660

Piko, B. (2000). Health-related predictors of self-perceived health in a student population: The importance of physical activity. *Journal of Community Health, 25,* 125–137. http://dx.doi.org/10.1023/A:1005129707550

Pintrich, P. (2000). The role of goal orientation in self-regulated learning. In M. Boekaerts, P. Pintrich, & M. Zeidner (Eds.), *Handbook of self-regulation* (pp. 451–502). San Diego, CA: Academic Press. http://dx.doi.org/10.1016/B978-012109890-2/50043-3

Pintrich, P. (2009). A conceptual framework for assessing motivation and self-regulated learning in college students. *Educational Psychology Review, 16,* 385–407. http://dx.doi.org/10.1007/s10648-004-0006-x

Pintrich, P., & DeGroot, E. (1990). Motivational and self-regulated learning components of classroom and academic performance. *Journal of Educational Psychology, 82,* 33–40. http://dx.doi.org/10.1037/0022-0663.82.1.33

Reeve, J., Ryan, E., Deci, E. L., & Jang, H. (2008). Understanding and promoting autonomous self-regulation: A self-determination theory perspective. In D. Schunk & B. Zimmerman (Eds.), *Motivation and self-regulated learning: Theory, research, and application* (pp. 267–296). New York, NY: Routledge.

Ruthig, J. C., Marrone, S., Hladkyj, S., & Robinson-Epp, N. (2011). Changes in college student health: Implications for academic performance. *Journal of College Student Development, 52,* 307–320. http://dx.doi.org/10.1353/csd.2011.0038

Ryan, R., & Connell, J. (1989). Perceived locus of causality and internalization: Examining reasons for acting in two domains. Journal of Personality and Social Psychology, 57, 749–761. http://dx.doi.org/10.1037/0022-3514.57.5.749

Ryan, R., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist, 55,* 68–78. http://dx.doi.org/10.1037/0003-066X.55.1.68

Sireci, S. (2011). Evaluating test and survey items for bias across languages and cultures. In D. Mausumoto & F. Van de Vijver (Eds.), *Cross-cultural research methods in psychology* (pp. 216–240). Cambridge, MA: Cambridge University Press.

Smibert, A., Abbott, R., Macdonald, D., Hogan, A., & Leong, G. (2010). School, community, and family working together to address childhood obesity: Perceptions from the KOALA lifestyle intervention study. *European Physical Education Review, 16,* 155–170. http://dx.doi.org/10.1177/1356336X10381307

Soos, I., Biddle, S., Balint, I., Sandor, I., & Szabo, P. (2012). Prevalence of sedentary behaviour in young people in Romania and Slovakia. *European Physical Education Review, 18,* 19–46. http://dx.doi.org/10.1177/1356336X11430659

Soric, I., & Palekcic, M. (2009). The role of students' interests in self-regulated learning: The relationship between students' interests, learning strategies, and causal attributions. *European Journal of Psychology of Education, 24,* 545–565. http://dx.doi.org/10.1007/BF03178767

Sun, H., & Chen, A. (2010). A pedagogical understanding of the self-determination theory in physical education. *Quest, 62,* 364–384. http://dx.doi.org/10.1080/00336297.2010.10483655

Svardsudd, K., & Tibblin, G. (1990). Is quality of life affecting survival? *Scandinavian Journal of Primary Health Care,* Suppl. 1, 55–60.

U.S. Department of Health and Human Services. (2009). *Healthy People 2020: The road ahead.* Washington, DC: U.S. Government Printing Services.

Usher, E., & Pajares, F. (2006). Sources of academic and self-regulatory efficacy beliefs of entering middle school students. *Contemporary Educational Psychology, 31,* 125–141. http://dx.doi.org/10.1016/j.cedpsych.2005.03.002

Vidoni, C., Azevedo, L., & Eberline, A. (2012). Effects of a group contingency strategy on middle school physical educations students' heart rates. *European Physical Education Review, 18,* 78–96. http://dx.doi.org/10.1177/1356336X11430652

Wade, T., Prevalin, J., & Vingilis, E. (2000). Revisiting student self-rated physical health. *Journal of Adolescence, 23,* 785–791. http://dx.doi.org/10.1006/jado.2000.0359

Wigfield, A., Kaudia, S., & Cambria, J. (2011). Influences on the development of academic self-regulatory processes. In B. Zimmerman & D. Schunk (Eds.), *Handbook of self-regulation of learning and performance* (pp. 33–48). New York, NY: Routledge.

Wilkinson, C., & Bretzing, R. (2011). High school girls' perceptions of selected fitness activities. *The Physical Educator, 68,* 58–65.

World Health Organization. (2010). *Global recommendations of physical activity for health.* Geneva, Switzerland: WHO Press.

Zimmerman, B. (2000). Attaining self-regulation: A social-cognitive perspective. In M. Boekaerts, P. Pintrich, & M. Zeidner (Eds.), *Handbook of self-regulation* (pp. 13–39). San Diego, CA: Academic Press. http://dx.doi.org/10.1016/B978-012109890-2/50031-7

Zimmerman, B., & Cleary, T. (2006). Adolescents' development of personal efficacy: The role of self-efficacy beliefs and self-regulatory skill. In F. Pajaras & T. Urdan (Eds.), *Self-efficacy beliefs of adolescents* (pp. 45–69). Greenwich, CT: Information Age.

Zimmerman, B., & Kitsantas, A. (1997). Developmental phases in self-regulation: Shifting from process goals to outcome goals. *Journal of Educational Psychology, 89,* 29–36. http://dx.doi.org/10.1037/0022-0663.89.1.29

Zimmerman, B., & Schunk, D. (2011). Self-regulated learning and performance: An introduction and an overview. In B. Zimmerman & D. Schunk (Eds.), *Handbook of self-regulation of learning and performance* (pp. 1–12). New York, NY: Routledge.