

University of Groningen

Intrapersonal factors, social context and health-related behavior in adolescence

Veselska, Zuzana

IMPORTANT NOTE: You are advised to consult the publisher's version (publisher's PDF) if you wish to cite from it. Please check the document version below.

Document Version

Publisher's PDF, also known as Version of record

Publication date:

2010

[Link to publication in University of Groningen/UMCG research database](#)

Citation for published version (APA):

Veselska, Z. (2010). *Intrapersonal factors, social context and health-related behavior in adolescence*. s.n.

Copyright

Other than for strictly personal use, it is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), unless the work is under an open content license (like Creative Commons).

The publication may also be distributed here under the terms of Article 25fa of the Dutch Copyright Act, indicated by the "Taverne" license. More information can be found on the University of Groningen website: <https://www.rug.nl/library/open-access/self-archiving-pure/taverne-amendment>.

Take-down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

Downloaded from the University of Groningen/UMCG research database (Pure): <http://www.rug.nl/research/portal>. For technical reasons the number of authors shown on this cover page is limited to 10 maximum.

Aspects of self differ among physically active and passive youths

Zuzana Veselska, Andrea Madarasova Geckova, Sijmen A. Reijneveld,
Jitse P. van Dijk

Accepted: International Journal of Public Health
doi: 10.1007/s00038-010-0203-y

Abstract

The aim of this paper was to explore connection between aspects of self and different levels of physical activity among adolescent boys and girls. An international sample of 501 elementary-school students (mean age 14.7 ± 0.9 years, 48.5% males) from the Slovak and Czech Republics completed the Self-competence/Self-liking scale, the Rosenberg's Self-esteem scale, the Self-efficacy Scale and a question on their physical activity during the week. Respondents were divided into three categories: (1) no physical activity; (2) infrequent physical activity; (3) everyday physical activity. Data were explored with one-way analysis of variance (ANOVA) separately for each gender. Boys with no physical activity had lower self-liking and social self-efficacy in comparison with boys with everyday physical activity. Girls with no physical activity had lower positive self-esteem, self-liking, self-competence, general and social self-efficacy and higher negative self-esteem in comparison with girls with infrequent and everyday physical activity. To conclude, regular physical activity is connected with psychological aspects of self among adolescents, especially among girls. Incorporating physical activity into the life of young people on a regular basis might lead to the enhancement of their feelings of self-worth and self-efficacy.

Introduction

Previous studies have shown that regular physical activity among adolescents can contribute to both their physical health and their psychological and social well-being (Schmalz, Deane, Birch, Krahnstoever Davison, 2007; Tessier et al., 2007; Parfitt and Eston, 2005). In addition, physical activity during early adolescence has been shown to persist from adolescence into adulthood (Hallal, Victora, Azevedo, Wells, 2006). However, recent international studies (Currie et al., 2008; 2004; 2000) show a lack of sufficient physical activity during adolescence, particularly among girls. These findings indicate that the lack of regular physical activity among adolescents is a long-term public health problem (Hallal et al., 2006). In the present study we focus on the connection between the frequency of physical activity and aspects of self in early adolescence and on potential gender-related differences.

In a review of key correlates of physical activity, Sallis, Prochaska, Taylor (2000) proposed the following categorization of the relevant factors: demographic, psychological, social factors and physical environment. The present study will focus on psychological factors, with special attention paid to aspects of self.

These factors (specifically self-efficacy, self-esteem, and self-competence) have already been explored in relation to physical activity. Self-esteem representing person's overall feeling of self-worth (Rosenberg, 1965) was associated with physical activity in several studies (White, Kendrick, Yardley, 2009; Krahnstoever Davisona et al., 2007; Schmalz et al., 2007; Levy and Ebbeck, 2005; Parfitt and Eston, 2005). Mentioned studies confirmed connection between physical activity and higher self-esteem. Self-liking (sense of social worth) and self-competence (sense of personal efficacy) used in this study was defined by Tafarodi and Swann (1995) as constructs similar to self-esteem. These two dimensions could be extracted also from the Rosenberg Self-esteem Scale as it was confirmed in other studies (Schmitt and Allik, 2005; Tafarodi and Milne, 2002). Therefore, it could be expected that self-liking and self-competence will be associated with the physical activity similarly like self-esteem. Self-efficacy as a part of Theory of Planned Behavior (TPB) (Ajzen, 1988) was repeatedly associated with physical activity (White, Kendrick, Yardley, 2009; Annesi, 2006). Typically, research finds strong association between perception of self-efficacy and engagement in physical activity. Though, it should be mentioned that those studies mostly focused on behavior specific self-efficacy. Our study focus on the self-efficacy as general construct and also cover specific efficacy in the area of social interactions. Most of the studies have examined physical activity as a continuous or dichotomous variable, whereas our study included three categories based on the

frequency to distinguish between no physical activity, infrequent though present physical activity and everyday physical activity. Also, most of the studies explore only one of the self-perception aspects. For this reason we explored the relation between the frequency of physical activity and the aspects of self perception (e.g. higher self-esteem, self-competence or self-efficacy). Last to be mentioned, studies exploring self-perception and physical activity usually do not look into gender differences.

Regarding gender differences, adolescent girls were found to be less engaged in physical activities than boys (Currie et al., 2008; 2004; 2000). Still, whether their engagement in physical activity can be explained and possibly be enhanced by their different perceptions of self in comparison with boys is a question that needs to be explored.

The aim of this paper was to explore whether aspects of self (self-esteem, self-liking, self-competence, and self-efficacy) are associated with different levels of physical activity among adolescent boys and girls. We will explore whether at least some physical activity, even though infrequent, is similarly associated with aspects of the self as frequent, i.e. everyday physical activity. We will also explore gender-related differences regarding this as well.

Methods

Sample and procedure

The study sample consisted of 501 pupils from the last two grades of elementary schools in the eastern part of Slovakia (cities of Kosice and Presov) and the eastern part of Czech Republic (Brno). These three cities are comparable in that they are the second and third biggest towns in economically less-developed districts of the eastern parts of their respective countries. Of the study sample ($n = 501$, response 91.5%), 48.5% were boys and ranged from 11.5 to 16.3 years (mean age 14.7 years SD 0.90). Trained researchers and research assistants collected data in June and September 2007. The set of questionnaires was administrated during two regular 45-minute lessons in a complete 90-minute period of time on a voluntary and anonymous basis in the absence of teachers. Response was 91.5%, with non-response due mostly to school absence because of illness or other reasons. All questionnaires used in this study underwent the process of back-translation to ensure that language versions used in this study measure same constructs as the original language versions.

Measures

Self-esteem was assessed using the Rosenberg Self-esteem scale RSES (Rosenberg, 1965). The RSES can be divided into an equal number of positively and negatively worded items measuring positive and negative

self-esteem (Halama, 2008; Sarkova et al., 2006). Responses range on a 4-point scale from 1 (strongly disagree) to 4 (strongly agree). Higher scores indicate higher positive and negative self-esteem, respectively. Cronbach's alpha was 0.78 for the positive self-esteem subscale and 0.66 for the negative self-esteem subscale.

Self-liking/Self-competence scale was used for measuring self-liking (10 items) and self-competence (10 items). Responses range on a 5-point Likert scale from 1 (strongly disagree) to 5 (strongly agree). Higher scores indicate higher self-liking and self-competence (Tafarodi and Swann, 1995). Cronbach's alpha was 0.81 for self-liking and 0.82 for self-competence.

Self-efficacy scale was used for measuring general (17 items) and social (6 items) self-efficacy. Responses range on a 5-point Likert scale from 1 (strongly disagree) to 5 (strongly agree), with higher scores indicating higher self-efficacy (Sherer et al., 1982). Cronbach's alpha was 0.82 for general self-efficacy and 0.61 for social self-efficacy.

Physical activity was assessed using a single question transformed from a single question repeatedly used and validated in HBSC surveys (Currie et al., 2008; 2004; 2000): "How often per week do you have physical activity for more than 20 minutes?", with answers of (1) never; (2) once a week; (3) 2 to 3 times a week; (4) every day. For the purpose of the present study, respondents were divided into three categories based on their answers: (1) no physical activity (never); (2) infrequent physical activity (1-3 times a week); and (3) everyday physical activity (every day). Similar categorization of single self-reported item on the frequency of physical activity was used in the study of Mäkinen et al. (2009).

Statistical analysis

Before the analysis was made, the subsamples from Slovakia and Czech Republic were compared in the frequency of physical activity and also in self variables. Very similar results were obtained for both subsamples, with the p-values for differences in outcomes all being 0.05 or higher and effect sizes for differences all being trivial. Therefore, we decided to merge these two subsamples and work with this main research sample. Standard descriptive analyses were performed in the first step to describe the background characteristics of the three groups of adolescents based on frequency of their physical activity per week. Second, a one-way analysis of variance (ANOVA) and Scheffe post hoc tests were used to explore the differences in aspects of self between the three groups (no physical activity, infrequent physical activity and everyday physical activity). Finally, these analyses were repeated separately for boys and girls. All analyses were performed using SPSS version 16.

Results

The background descriptive characteristics of the whole study sample and of the three groups regarding the frequency of physical activity per week are presented in Table 6.1.

Table 6.1 Descriptive statistics of the sample by frequency of physical activity

	No activity	Infrequent activity	Everyday activity	Total study sample
Total number	87	295	98	480
Age				
Mean (SD)	14.68 (0.91)	14.16 (1.06)	14.74 (0.88)	14.70 (0.90)
Range	12.1-16.2	11.5-16.3	12.2-16.3	11.5-16.3
Boys (proportion)	39.1 %	47.1 %	62.2 %	48.5 %

Analysis of variance and Scheffe Post Hoc tests (Table 6.2) revealed significant differences between adolescents with no physical activity and adolescents with infrequent or everyday physical activity regarding aspects of self. Positive self-esteem, self-liking, self-competence, as well as general and social self-efficacy were higher, and negative self-esteem was lower among adolescents with a higher frequency of physical activity.

Table 6.2 Differences between research groups in aspects of self with one-way analysis of variance (ANOVA) and Scheffe post-hoc tests

	Group 1 mean (n= 87)	Group 2 mean (n= 295)	Group 3 mean (n= 98)	F value	p value	Scheffe test Differences between groups
Self-esteem						
positive	13.3	14.6	15.0	12.17	0.001	1-2, 1-3
negative	13.4	12.3	12.1	7.00	0.001	1-2, 1-3
Self-liking	30.1	33.2	34.8	11.36	0.001	1-2, 1-3
Self-competence	31.8	34.8	35.7	10.56	0.001	1-2, 1-3
Self-efficacy						
general	53.6	58.2	59.3	11.10	0.001	1-2, 1-3
social	18.9	20.3	20.9	6.87	0.01	1-2, 1-3

Group1: no physical activity

Group2: infrequent physical activity

Group3: everyday physical activity

Table 6.3 presents results from analyses of variance and Scheffe Post Hoc tests separately for boys and girls. Boys with everyday physical activity had higher self-liking and social self-efficacy than boys with no physical activity. Girls with infrequent and everyday physical activity had higher positive self-esteem, self-liking, self-competence, general and social self-efficacy and lower negative self-esteem than girls with no physical activity.

Table 6.3 Difference between research groups in self-system variables with one-way analysis of variance (ANOVA) and Scheffe post-hoc tests separately for boys and girls.

	Boys					Girls						
	Group 1 mean (n= 34)	Group 2 mean (n= 139)	Group 3 mean (n= 61)	F value	p value	Scheffe test differences between groups	Group 1 mean (n= 53)	Group 2 mean (n= 156)	Group 3 mean (n= 37)	F value	p value	Scheffe test differences between groups
Self-esteem positive	14.3	15.0	15.1	1.43	0.24	-	12.7	14.3	14.6	9.32	0.001	1-2, 1-3
Self-esteem negative	12.4	12.2	11.8	0.87	0.42	-	14.1	12.4	12.7	7.20	0.001	1-2, 1-3
Self-liking	32.1	33.8	35.6	3.38	0.05	1-3	28.6	32.6	33.6	7.18	0.001	1-2, 1-3
Self-competence	33.4	35.4	36.0	1.81	0.17	-	30.9	34.2	35.5	7.91	0.001	1-2, 1-3
Self-efficacy general	56.4	57.7	59.1	1.04	0.36	-	51.9	58.5	59.8	12.37	0.001	1-2, 1-3
Self-efficacy social	18.7	19.8	20.7	3.63	0.05	1-3	19.1	20.7	21.4	4.71	0.01	1-2, 1-3

Group 1: no physical activity

Group2: infrequent physical activity

Group3: everyday physical activity

Discussion

Our study shows that positive self-esteem, self-liking, self-competence, general self-efficacy, and social self-efficacy were higher and negative self-esteem was lower among adolescents with a higher frequency of physical activity. The differences were much more pronounced for girls than for boys. Self-liking and social self-efficacy were higher among adolescent boys with higher frequency of physical activity. At the same time, positive self-esteem, self-liking, self-competence and general and social self-efficacy were higher, and negative self-esteem was lower among adolescent girls with a higher frequency of physical activity. Results hold for young adolescents from Slovakia and Czech Republic in a similar way.

We found that physical activity during the week is connected with higher levels of positive aspects of self (positive self-esteem, self-liking, self-competence, and self-efficacy) and with lower levels of negative aspects (negative self-esteem). These findings are in line with previous studies on adolescent girls and boys (White, Kendrick, Yardley, 2009; Annesi, 2006; Parfitt and Eston, 2005). Additionally to existing research evidence, present study included three categories based on the frequency with aim to distinguish between no physical activity, infrequent though present physical activity and everyday physical activity. Our findings suggest, that at least infrequent physical activity was connected with feelings of self-worth (self-esteem, self-liking) and personal efficacy (general or social). They may imply that active engagement in regular physical activity during school or leisure time could improve the way youths perceive themselves. Causal links, however, are not so simple, and influences may go in both directions as well, i.e. a reinforcement of the self might also lead to more physical activity. Therefore it is necessary to explore this connection further in a future longitudinal study.

Research in this field was done mostly in adolescent girls and adult women (Krahnstoeber Davisona et al., 2007; Schmalz et al., 2007; Levy and Ebbeck, 2005). Additionally, our findings cover not only girls but also boys and provide gender comparison. Our separate analyses for boys and girls showed many more associations between physical activity and the self among girls than among boys. Among girls, all aspects of self were higher in case of more frequent physical activity. Among boys, only self-liking and social self-efficacy were higher in the group with everyday physical activity. In general girls tend to report lower levels of self aspects compared with boys (Birndorf, Ryan, Auinger, Aten, 2005; Robins, Trzesniewski, Tracy, Gosling, Potter, 2002). At the same time, they are less engaged in physical activity (Currie et al., 2008). In addition, girls at this age are much more concerned with their physical appearance, are less willing to participate in physical activities and experience less enjoyment from

them (Krahnstoever Davisona et al., 2007). Such negative feelings may contribute to a lower intrinsic motivation for physical activity, implying that girls have to motivate themselves actively to participate in physical activity. This self-motivation may be assumed to require a strong self. Recent studies have indeed confirmed self-consciousness and concerns about appearance as barriers to physical activity among adolescent girls (Robins, Pender, Kazanis, 2003; Leslie et al., 1999). At the same time Gillison et al. (2008) reported in their study that those adolescent girls who are engaged in physical activity perceive it as a sort of duty, and their motivation is related to physical attractiveness and health benefits.

Among boys, aspects of self did not play such an important role as in girls. An explanation could be that their motivation for this activity differs from girls. Boys are more engaged in group sporting activities with the aim of being part of peer relationships; they have some intrinsic motivation for physical activity. Gillison et al. (2008) reported that adolescent boys perceived physical activity as something which forms a large part of their social life and is the way of spending time with their friends. Thus, additional motivation is required less often for them. It is clear, then, that in future research it will be important to take a closer look at the motivation for physical activity and possible barriers to it among adolescent boys and girls.

Strengths and limitations

This study has several important strengths, the most important one being its high response rate and international sample. On the other side, it also has several limitations. First, only subjective self-reports were used for measuring aspects of self, and especially for measuring physical activity. However, previous studies support the validity of self-reports (Reijneveld, Crone, Verhulst, Verloove-Vanhorick, 2003). A main limitation is its cross-sectional design, which makes it impossible to formulate conclusive statements about causality in our findings. They therefore need to be confirmed in studies with a longitudinal design.

Implications

Physical activity is an excellent way of enhancing physical health during adolescent years, and development of healthy patterns in adolescence can be tracked into adulthood. In addition, there is increasing evidence that regular physical activity could be a means of enhancing mental health, especially among adolescent girls. The fact that a relatively minimal amount of physical activity is related to a more positive perception of self may support adolescent health promotion, both if causality goes from physical activity to the self or the other way round. In addition, our findings support using a different approach towards adolescent boys and girls in the promotion of physical activity. Finally, future research should

be longitudinal in design in order to assess the causal relationships between physical activity and the self. Our results show that much can be gained in health by further exploring this relationship.

References

- Ajzen, I. (1988), *Attitudes, personality, and behavior*. Homewood, IL: Dorsey Press.
- Annesi, J.J. (2006). Relations of physical self-concept and self-efficacy with frequency of voluntary physical activity in preadolescents: Implications for after-school care programming. *Journal of Psychosomatic Research*, 61, 515-520.
- Birndorf, S., Ryan, S., Auinger, P., Aten, M. (2005), High self-esteem among adolescents: Longitudinal trends, sex differences, and protective factors. *Journal of Adolescent Health*, 37, 194–201.
- Currie, C. et al. (eds). (2000). *Health and health behaviour among young people*. WHO Policy Series: international report Health policy for children and adolescents Issue 1. WHO Regional Office for Europe, Copenhagen.
- Currie, C. et al. (eds). (2004). *Young People's Health in Context: international report from the HBSC 2001/02 survey*. WHO Policy Series: Health policy for children and adolescents Issue 4. WHO Regional Office for Europe, Copenhagen.
- Currie, C. et al. (eds). (2008). *Inequalities in young people's health: international report from the HBSC 2006/06 survey*. WHO Policy Series: Health policy for children and adolescents Issue 5. WHO Regional Office for Europe, Copenhagen.
- Gillison, F., Osborn, M., Standage, M., Skevington, S. (2008), Exploring the experience of introjected regulation for exercise across gender in adolescence. *Psychology of Sport & Exercise*, 10, 309-319.
- Hallal, P.C., Victora, C.G., Azevedo, M.R., Wells, J.C.K. (2006), Adolescent physical activity and health: a systematic review. *Sports Medicine*, 36,1019–1030.
- Halama, P. (2008). Confirmatory factor analysis of Rosenberg self-esteem scale in a sample of high school and university students. *Studia Psychologica*, 50, 255-266.
- Krahnstoever Davisona, K., Werdera, J.L., Trostb, S.G., Bakerc, B.L., Birch, L.L. (2007). Why are early maturing girls less active? Links between pubertal development, psychological well being, and physical activity among girls at ages 11 and 13. *Social Science & Medicine*, 64, 2391-2404.

- Leslie, J., Yancey, A., McCarthy, W., Albert, S., Wert, C., Miles, O. (1999). Development and implementation of a school-based nutrition and fitness promotion program for ethnically diverse middle-school girls. *Journal of the American Dietetic Association*, 99, 967–970.
- Levy, S.S., Ebbeck, V. (2005). The exercise and self-esteem model in adult women: the inclusion of physical acceptance. *Psychology of sport and exercise*, 6, 571-584.
- Mäkinen, T., Kestilä, L., Borodulin, K., Martelin, T., Rahkonen, O., Prättälä, R. (2009). Effects of childhood socio-economic conditions on educational differences in leisure-time physical activity. *European Journal of Public Health*, doi:10.1093/eurpub/ckp187
- Parfitt, G., Eston, R.G. (2005). The relationship between children's habitual activity level and psychological well-being. *Acta Paediatrica*, 94, 1791–1797.
- Reijneveld, S.A., Crone, M.R., Verhulst, F.C., Verloove-Vanhorick, S.P. (2003). The effect of a severe disaster on the mental health of adolescents: a controlled study. *Lancet*, 362, 691-696.
- Robbins, L.B., Pender, N.J., Kazanis, A.S. (2003). Barriers to physical activity perceived by adolescent girls. *Journal of Midwifery and Women's Health*, 48, 206–212.
- Robins, R.W., Trzesniewski, K., Tracy, J.L., Gosling, S.D., Potter, J. (2002). Global self-esteem across the life span. *Psychology and Aging*, 17, 423-434.
- Rosenberg, M. (1965). *Society and adolescent self-image*. Princeton NJ: Princeton University Press.
- Sallis, J.F., Prochaska, J.J., Taylor, W.C. (2000). A review of correlates of physical activity of children and adolescents. *Medicine and Science in Sports and Exercise*, 32, 963-975.
- Sarkova, M., Nagyova, I., Katreniakova, Z., Madarasova Geckova, A., Orosova, O., Middel, B., van Dijk, J.P., van den Heuvel, W. (2006). Psychometric Evaluation of the General Health Questionnaire-12 and Rosenberg Self-esteem Scale in Hungarian and Slovak Early Adolescents. *Studia Psychologica*, 48, 69-79.
- Schmalz, D.L., Deane, G.D., Birch, L.L., Krahnstoever Davison, K. (2007). A longitudinal assessment of the links between physical activity and self-esteem in early adolescent non hispanic females. *Journal of Adolescent Health*, 41, 559-565.
- Schmitt, D.P., Allik, J. (2005). Simultaneous administration of the Rosenberg Self-esteem Scale in 53 nations: Exploring the universal and

culture-specific features of global self esteem. *Journal of Personality and Social Psychology*, 89, 623-642.

Sherer, M., Maddux, J.E., Mercandante, B., Prentice-Dunn, S., Jacobs, B., Rogers, R.W. (1982). The self-efficacy scale: Construction and validation. *Psychological Reports*, 51, 663-671.

Tafarodi, R.W., Milne, A.B. (2002). Decomposing global self-esteem. *Journal of Personality*, 70, 443-484.

Tafarodi, R.W., Swann, W.B. Jr. (1995). Self-linking and self-competence as dimensions of global self-esteem: initial validation of a measure. *Journal of Personality Assessment*, 65, 322-342.

Tessier, S., Vuillemin, A., Bertrais, S., Boini, S., Le Bihan, E., Oppert, J., Herberg, S., Guillemin, F., Briançon, S. (2007). Association between leisure-time physical activity and health-related quality of life changes over time. *Preventive Medicine*, 44, 202-208.

White, K., Kendrick, T., Yardley, L. (2009). Change in self-esteem, self-efficacy and the mood dimensions of depression as potential mediators of the physical activity and depression relationship: Exploring the temporal relation of change. *Mental Health and Physical Activity*, 2, 44-52.