Structure and Features of Competitiveness Index

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Abstract: Competitiveness is an important factor among social variables influencing youth's health related behaviors, however the relationship between competitiveness and health behaviors is a less investigated field of research. In addition, cultural background may lead to differences in dimensions and structure of competitiveness, but only few researchers have examined this relationship thus far. Our data contained three subsamples. The first wave of data were collected in 2005, in the Southern Plain Region of Hungary, Békés and Csongrád counties. 548 questionnaires were analyzed (age range: 14-21 years; M= 16.3 years; S.D. 1.3 years; response rate: 91.3%; 42% girls). The second one was collected in 2009, in the same region, from Szeged. 501 questionnaires were analyzed (age range: 19-27 years; M=21.3 years; S.D. 1.6 years; response rate: 98,2%; 57.5% girls). Finally, the third subsample was collected in 2010 from Novi Sad, Subotica and B. Topola. 200 questionnaires were analyzed (age range: 19-34 years; M=22.67 years; S.D. 2.0 years, response rate: 95,2%; 43.5% girls). Self-administered questionnaires were used to collect data. Questionnaires included items on sociodemographics, competitiveness and health behaviors. Factor analysis provided three factor solution with good reliability values, but different factor loadings on the subsamples. „Enjoyment of competition" factor was nearly the same in all subsamples, but the other factors were varied. Among Hungarian youth „Avoidance of social conflict" and „Fear of competition" were separate factors, while among students from Serbia making difference between arguements and competition was a more important issue. Avoidance of arguements was correlated with negative emotion (dread, unpleasant) while avoidance of competition was not. We also found differences in the relationships between competitiveness factors and health behaviors. Our study pointed out that health promotion programs should take cultural background into account.

Keywords: competitiveness, health behaviors, cultural background

Introduction: Patterns of youth' health behaviors are influenced by many social variables. Among them social influences (Keresztes, Pikó, Pluhár & Page, 2008); social images (Keresztes, Pikó, Gibbons & Spielberger, 2009); social comparison (Pikó, Skultéti,

Luszczynska & Gibbons, 2010), social coping mechanisms (Pikó & Keresztes, 2007) and indeed competitiveness (Pikó, et al. 2010) have an important role.

There were many studies on competitive attitude in variety samples from the United States, but empirical experiences from samples outside the United States were less (Houston, Harris, Moore, Brummet & Kametani, 2005). However, different dimensions of competitiveness may have a different role in different cultures, just very few studies examined the relationship between competitiveness and cultural background (e.g. Furnham, Kirkcaldy & Lynn, 1994; Ryckman, Van Der Borne & Syroit, 1992).

Health behaviors are also influenced by the cultural environment. Previous studies found significant differences in them among different nationalities (Unger, Cruy, Shakib, Mock, Schield & et al. 2003) and minorities (Wang Matthew, Bellamy & James, 2005). The relationship between competitiveness and health behaviors is a less investigated field of research (Houston, Harris & Norman, 2003). A previous study pointed out that regular smoking was more frequent among competitive students (Johnson & Hoffman, 2000). Another empirical study also found that students who scored higher on competitiveness were engaged in regular substance use (Pikó et al. 2010). Previous research established that adult athletes scored higher in terms of their sport orientation in all three areas (competitiveness, win and goal orientation) comparing with non-athletes (Finkenberg, Moode & Dinucci, 1998; Gill & Deeter, 1988).

Based on earlier studies we expected to exist differences in the structure of competitiveness and in the way how they related to health behaviors. Thus, the main goal of our present study was to detect the structure and features of competitiveness among Hungarian and Serbian subsamples.

Sample and Method: Our data contained three subsamples. The first wave of data were collected in 2005, in the Southern Plain Region of Hungary, Békés and Csongrád counties among secondary school students. 548 questionnaires were analyzed (age range: 14-21 years; M= 16.3 years; S.D. 1.3 years; response rate: 91.3%; 42% girls). The second one was collected in 2009 from University students, in the same region, in Szeged. 501 questionnaires were analyzed (age range: 19-27 years; M=21.3 years; S.D. 1.6 years; response rate: 98,2%; 57.5% girls). Finally, the third University subsample was collected in 2010 from Novi Sad, Subotica and B. Topola. 200 questionnaires were analyzed (age range: 19-34 years; M=22.67 years; S.D. 2.0 years, response rate: 95,2%; 43.5% girls).

Self-administered questionnaires included items on sociodemographics, competitiveness (Houston et al. 2002) and health behaviors (Luszczynka, Gibbons, Pikó & Teközel, 2004; Keresztes et al. 2008). For the purpose of the study, we dichotomized the health behaviors variables (1=no, 2=yes, except for leisure time physical activity where 1=no or occasionally, 2=regularly) (Keresztes et al. 2009).

Results: Factor analysis on the Hungarian secondary school subsample provided a three-factor solution with good reliability values. Table 1 presents the final factor structure. Factor 1 was labelled „Enjoyment of competition" including the following items: I get satisfaction from competing with others; I am a competitive individual, I enjoy competing against an opponent; I often try to out perform others; I like competition. This factor negatively correlated with the following two items: I try to avoid arguments, I don't like competing against other people. Factor 2 was labelled „Avoidance of social conflict" which includes items on avoiding comptetitions, namely: I will do almost anything to avoid an argument; I try to avoid arguments; I often remain quite rather than risk hurting another person; I try to avoid competing with others; In general I will go along with the group rather than create conflict. Factor 3 was labelled „Fear of competition" including items that are closely connected to unpleasant feelings of competitions: I find competitive situations unpleasant; In general I will go along with the group rather than create conflict; I don't like competing against other people; I dread competing against other people; I don't enjoy challenging others even when I think they are wrong.

As Table 2 shows, analyzing the structure of competitiveness among Hungarian University students we found nearly the same dimensions as in the younger secondary schools subsample, in contrast with the Serbian University students (Table 3) where making difference between arguements and competition was a more important issue than separating „Avoidance of social conflict" and „Fear of competition". Avoidance of arguements was correlated with negative emotion (dread, unpleasant) while avoidance of competition was not.

Based on the factor loadings, three competitiveness scales were developed with satisfactory reliability. In further analyses, the mean scores of the scales were applied and analyzed according to various health behaviors and competitiveness characteristics.

Table 4 shows the relationship between health risk behaviors and Competitiveness scales. „Avoidance of social conflict" factor and „Fear of competition" factor were in significant relationship with smoking and alcohol use. Means scores among smoker and alcohol drinker students were higher.

According to preventive health behaviors, we found that all competitiveness scale was in significant relationship with physical activity, while diet controll was correlated significantly just to „Avoidance of competition" factor and „Fear of competition"factor (Table 5).

Table 6 presents the relationship between health risk behaviors and competitiveness scales among Hugarian University students. Smoking didn't show significant relationship neither of the scales, while, alcohol was in significant relationship with all factors. Mean scores were higher among drinkers while nondrinkers had lower values on „Avoidance of social conflict" and „Fear of competition" factors.

Analyzing the relationship between preventive health behaviors and Competitiveness scales among Hungarian University students we found that that none of the factors were correlated significatly to preventive health behaviors, but in case of diet controll we experienced a tendencial relationship whereas students with healthy diet scored less on „Fear of competition" factor (Table 7).

As Table 8 shows that according to „Avoidance of competition and arguements" factor, means scores were significantly higher among nonsmokers. While in case of „Enjoyment of competition" alcohol drinkers' mean scores were higher than non drinkers.

We also found that „Enjoyment of competition" factor was in significant relationship with physical activity and diet controll. Means scores were higher among regularly active students and students who don't follow diet in a healthy way. In contrast, according to „Negative emotions with competitive situation and avoidance of arguements" factor means scores were higher among students with healthy diet (Table 9).

Conclusion: Previous studies suggested that competitiveness was a multidimensional concept (Houston et al. 2002). Actually, we identified three independent dimensions of competitiveness using factor analysis on each subsamples. We found similarities and differences in the structure of competitiveness among Hungarian secondary school students, Hungarian and Serbian University students. As previously supposed these factors indeed had a different role in varying health behaviors. Our study with its limitation identified the importance of the cultural aspect of social behavior. We hope that these findings provide some useful information on the relationship between competitiveness, health behaviors and cultural background.

References:

FINKENBERG, M.E., MOODE, F.M. & DINUCCI, J.M. (1998) Analysis of sport orientation of female collegiate athletes. Perceptual and Motor Skills 86, 647–650.

FURNHAM, A., KIRKCALDY, B.D., & LYNN, R. (1994) National attitudes to competitiveness, money, and work among young people: First, second, and third world differences. Human Relations 47, 119-132.

GILL, D.L., & DEETER, T. (1988) Development of the Sport Orientation Questionnaire. Research Quarterly for Exercise and Sport 59, 191-202.

HOUSTON, J.M., HARRIS, P.B., MCINTIRES, S., & FRANCIS, D. (2002) Revising the Competitiveness Index. Psychological Reports 90, 31-34.

HOUSTON, J.M., HARRIS, P.B., & NORMAN, M. (2003) The Agressive Driving Behavior Scale: Developing a self report measure of unsafe practices. North American Journal of Psychology 5, 269–278

HOUSTON, J.M., HARRIS, P.B., MOORE, R., BRUMMET, R., & KAMETANI, H. (2005) Competitiveness among Japanese, Chinese, and American undergraduate students. Psychological Reports 97, 205–212

JOHNSON, R.A., & HOFFMAN, J.P. (2000) Adolescent cigarette smoking in US racial/ethnic subgroups: Findings from the National Educational Longitudinal Study. Journal of Health and Social Behavior 41, 329–407

KERESZTES, N., PIKÓ, B., PLUHÁR, Zs., & PAGE, R.M. (2008) Brief report: Social influences in leisure time sport activity among early adolescents. The Journal of Royal Society for Promotion of Health 1, 21-25

KERESZTES, N., PIKÓ, B., GIBBONS, F.X., & SPIELBERGER, C.D. (2009) Do high and low active adolescents have different prototypes of physically active peers? The Psychological Record 59, 39-52.

LUSZCZYNSKA, A., GIBBONS, F.X, PIKÓ, B.F., & TEKÖZEL, M. (2004) Self-regulatory cognitions, social comparison, and perceived peers' behaviors as predictors of nutrition and physical activity: A comparison among adolescents in Hungary, Poland, Turkey, and USA. Psychology and Health 19, 577-593.

PIKÓ, B., & KERESZTES, N. (2007) The role of social coping mechanisms in adolescent health behavior. In: RHODES, T.C ed., Focus on adolescent behavior research. (NOVA Science Publishers, New York), 157-170

PIKÓ, B.F, SKULTÉTI, D., LUSZCZYNSKA, A, & GIBBONS, F.X (2010) Social orientations and adolescent health behaviors in Hungary. International Journal of Psychology 1, 12-20.

RYCKMAN, R.M., VAN DEN BORNE, H.W., & SYROIT, J.E.M. (1992) Differences in hypercompetitive attitude between American and Dutch university students. The Journal of Social Psychology 132, 331-334.

TRIANDIS, H.C., MCCUSKER, C., & HUI, C.H. (1990) Multimethod probes of individualism and collectivism. Journal of Personality and Social Psychology 59, 1006-1020.

UNGER, J. B., CRUZ, T., SHAKIB, S., MOCK, J., SHIELDS, A., BAEZCONDE-GARBANATI, L., PALMER, P., CRUZ, J. D., EDSALL, E., GRITZ, E. R., GLYNN, T., JOHNSON, C. A. (2003) Exploring the cultural context of tobacco use: a transdisciplinary framework. Nicotine & Tobacco Research, 5. Suppl., 1. *S101–117.*

WANG, M. Q., MATTHEW, R. F., BELLAMY, N., JAMES, S. (2005) A structural model of the substance use pathway among minority youth. American Journal of Health Behavior, 26. 531–541.

Table 1. Final factor structure for the Competitivness Index among Hungarian secondary school students

Variables	Factors with eigenvalues Factor 1 (3.64)	Factor 2 (2.48)	Factor 3 (1.88)
	Factor loadings		
1. I get satisfaction from competing with others	0.741		
2. I am a competitive individual	0.821		
3. I will do almost anything to avoid an argument		0.796	
4. I try to avoid arguments	- 0.584	0.320	
5. I often remain quite rather than risk hurting another person		0.692	
6. I find competitive situations unpleasant			0.728
7. I try to avoid competing with others		0.848	
8. In general I will go along with the group rather than create conflict		0.581	0.324
9. I don't like competing against other people	- 0.477		0.415
10. I dread competing against other people			0.801
11. I enjoy competing against an opponent	0.697		
12. I often try to out perform others	0.776		
13. I like competition	0.802		
14. I don't enjoy challenging others even when I think they are wrong			0.411
	„Enjoyment of competition" factor	„Avoidance of social conflict" factor	„Fear of competition" factor
Cronbach alpha	0.86	0.75	0.61
% variance	26.17	17.71	13.46

Table 1. Note. Only factor loadings > 0.3 are included (Kaiser's criterion). Cronbach alpha coefficients display the reliability of the scales.

Table 2. Final factor structure for the Competitivness Index among Hungarian University students

Variables	Factors with eigenvalues Factor 1 (4.14)	Factor 2 (2.88)	Factor 3 (1.79)
	Factor loadings		
1. I get satisfaction from competing with others	0.812		
2. I am a competitive individual	0.820		
3. I will do almost anything to avoid an argument		0.842	
4. I try to avoid arguments	-0.577	0.407	
5. I often remain quite rather than risk hurting another person		0.738	
6. I find competitive situations unpleasant	-0.415		0.697
7. I try to avoid competing with others		0.863	
8. In general I will go along with the group rather than create conflict		0.663	
9. I don't like competing against other people	-0.555		0.503
10. I dread competing against other people			0.866
11. I enjoy competing against an opponent	0.771		
12. I often try to out perform others	0.773		
13. I like competition	0.858		
14. I don't enjoy challenging others even when I think they are wrong		0.328	
	„Enjoyment of competition" factor	„Avoidance of social conflict" factor	„Fear of competition" factor
Cronbach alpha	0.89	0.77	0.74
% variance	29.5	20.5	12.8

Table 2. Note. Only factor loadings > 0.3 are included (Kaiser's criterion). Cronbach alpha coefficients display the reliability of the scales.

Table 3. Final factor structure for the Competitivness Index among Serbian University students

Variables	Factors with eigenvalues Factor 1 (4.68)	Factor 2 (2.45)	Factor 3 (2.27)
		Factor loadings	
1. I get satisfaction from competing with others	0.888		
2. I am a competitive individual	0.846		
3. I will do almost anything to avoid an argument			0.887
4. I try to avoid arguments	-0.635	0.402	0.357
5. I often remain quite rather than risk hurting another person		0.468	0.573
6. I find competitive situations unpleasant	-0.301	0.738	
7. I try to avoid competing with others			0.858
8. In general I will go along with the group rather than create conflict		0.517	0.385
9. I don't like competing against other people	-0.599	0.513	
10. I dread competing against other people		0.973	
11. I enjoy competing against an opponent	0.863		
12. I often try to out perform others	0.789		
13. I like competition	0.886		
14. I don't enjoy challenging others even when I think they are wrong		0.545	
	„Enjoyment of competition" factor	„Negative emotions with competitive situation and avoidance of arguements"	„Avoidance of competition and arguements"
Cronbach alpha	0.90	0.79	0.76
% variance	33.43	17.55	16.23

Table 3. Note. Only factor loadings > 0.3 are included (Kaiser's criterion). Cronbach alpha coefficients display the reliability of the scales.

Table 4. Relationship between health risk behaviors and Competitivness Index factors among Hungarian secondary school students

Health risk behaviors	**„Enjoyment of competition" factor**	**„Avoidance of social conflict" factor**	**„Fear of competition" factor**
	Mean (S.D.)	Mean (S.D.)	Mean (S.D.)
Smoking			
No	21.40 (6.73)	13.55 (4.48)**	17.28 (3.88)*
Yes	21.43 (6.81)	14.88 (4.49)	17.92 (3.88)
Alcohol use			
No	21.07 (6.73)	13.61 (4.33)**	17.26 (3.87)*
Yes	21.60 (6.80)	14.79 (4.57)	17.91 (3.88)

*Table 4. Note: student t- test, *p<0.05; ** p<0.01; ***p<0.001*

Table 5. Relationship between preventive health behaviors and Competitivness Index factors among Hungarian secondary school students

Preventive health behaviors	**„Enjoyment of competition" factor**	**„Avoidance of social conflict" factor**	**„Fear of competition" factor**
	Mean (S.D.)	Mean (S.D.)	Mean (S.D.)
Physical activity			
No/occassionally	19.54 (6.67)***	13.95 (4.56)*	17.20 (3.82)*
Reguralry	22.58 (6.59)	14.70 (4.41)	18.02 (3.89)
Diet control			
No	22.28 (6.40)	16.37 (4.37)***	18.64 (3.81)**
Yes	21.20 (6.86)	13.91 (4.43)	17.46 (3.88)

Table 5. Note: student t-test, *p<0.05; ** p<0.01; ***p<0.001

Table 6. Relationship between health risk behaviors and Competitivness Index factors among Hungarian University students

Health risk behaviors	**„Enjoyment of competition" factor**	**„Avoidance of social conflict" factor**	**„Fear of competition" factor**
	Mean (S.D.)	Mean (S.D.)	Mean (S.D.)
Smoking			
No	28.63 (7.09)	17.92 (4.73)	6.15 (2.65)
Yes	28.06 (7.53)	17.38 (4.73)	6.36 (2.66)
Alcohol use			
No	25.27 (7.73)***	19.14 (4.76)**	7.21 (3.02)**
Yes	28.92 (7.04)	17.48 (4.68)	6.07 (2.55)

*Table 6. Note: student t- test, *p<0.05; ** p<0.01; ***p<0.001*

Table 7. Relationship between preventive health behaviors and Competitivness Index factors among Hungarian University students

Preventive health behaviors	**„Enjoyment of competition" factor**	**„Avoidance of social conflict" factor**	**„Fear of competition" factor**
	Mean (S.D.)	Mean (S.D.)	Mean (S.D.)
Physical activity			
No/occassionally	25.92 (7.31)	17.00 (3.65)	7.53 (2.47)
Reguralry	28.51 (7.23)	17.71 (4.75)	6.19 (2.64)
Diet control			
No	29.37 (6.34)	16.56 (5.07)	6.40 (2.84)
Yes	28.36 (7.32)	17.71 (4.72)	(p=0.07) 6.23 (2.65)

Table 7. Note: student t-test, *p<0.05; ** p<0.01; ***p<0.001

Table 8. Relationship between health risk behaviors and Competitivness Index factors among Serbian University students

Health risk behaviors	**„Enjoyment of competition" factor**	**„Negative emotions with competitive situation and avoidance of arguements" factor**	**„Avoidance of competition and arguements" factor**
	Mean (S.D.)	Mean (S.D.)	Mean (S.D.)
Smoking			
No	29.91 (7.81)	17.49 (5.75)	15.61 (4.54)*
Yes	28.31 (8.47)	16.26 (5.64)	13.85 (4.74)
Alcohol use			
No	25.96 (8.14)*	17.07 (5.64)	15.03 (4.49)
Yes	29.80 (7.97)	17.00 (5.74)	14.92 (4.72)

*Table 8. Note: student t- test, *p<0.05; ** p<0.01; ***p<0.001*

Table 9. Relationship between preventive health behaviors and Competitivness Index factors among Hungarian University students

Preventive health behaviors	**„Enjoyment of competition" factor**	**„Negative emotions with competitive situation and avoidance of arguements „ faktor**	**„Avoidance of competition and arguements" factor**
	Mean (S.D.)	Mean (S.D.)	Mean (S.D.)
Physical activity			
No/occassionally	25.73 (7.91)*	18.60 (6.10)	14.78 (4.26)
Reguralry	29.62 (8.03)	16.83 (5.65)	14.96 (4.73)
Diet control			
No	32.03 (7.59)*	14.75 (5.03)*	13.68 (4.55)
Yes	28.75 (8.09)	17.41 (5.70)	15.16 (4.68)

Table 9. Note: student t-test, *p<0.05; ** p<0.01; ***p<0.001