European Journal of Mental Health 10 (2015) 44–61
DOI: 10.5708/EJMH.10.2015.1.3

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DOES COMPETITIVENESS COUNT?

The Role of Competitive Attitudes in Health Risk and Preventive Health Behaviours

(Received: 28 February 2014; accepted: 8 October 2014)

Adolescents' health behaviours are influenced by many social variables. Among these factors, competitiveness may also have an important role. However, the relationship between competitiveness and health behaviours is a less investigated field of research.

Our data were collected in 2005, in the Southern Plain region of Hungary. 548 questionnaires were analysed (age range: 14 to 21 years; M = 16.3 years; SD = 1.3 years; response rate: 91.3%; 42% female). Self-administered questionnaires were used for data collection. Our findings pointed out that competitiveness was in significant relationship with both health risk and preventive health behaviours as previous studies had suggested. We identified three independent dimensions of competitiveness using factor analysis, namely: 'Enjoyment of competition'; 'Avoidance of social conflict', and 'Fear of competition'. These factors were found to have different roles in varying health behaviours. In contrast with previous studies, we pointed out that health risk behaviours were more frequent among respondents characterised by 'Avoidance of social conflict' and 'Fear of competition'. In terms of preventive health behaviours, we pointed out that physical activity was in significant relationship with every competitiveness dimension. On the other hand, diet control and oral hygiene were associated only with the 'Avoidance of social conflict' and 'Fear of competition' factors.

Based on these results we may conclude that students with a tendency towards social conflict avoidance and fear of competition would be an important target group for health promotion programs.

Keywords: social variables, competitiveness, preventive health behaviours, risk behaviours, youth

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** While writing this paper Márta Fülöp was supported by the National Science Research Fund(OTKA K 104332).

ISSN 1788-4934

Lohnt es sich zu konkurrieren? Die Rolle der Wettbewerbsfähigkeit im Hinblick auf Gesundheitsrisiko und präventives Gesundheitsverhalten: Das Gesundheitsverhalten der Jugendlichen wird von mehreren sozialen Variablen beeinflusst, unter anderen von der Wettbewerbsfähigkeit, die wahrscheinlich von größter Bedeutung ist. Das Verhältnis zwischen Gesundheitsverhalten und Wettbewerbsfähigkeit wurde jedoch empirisch nur partiell untersucht.

Die Daten wurden 2005 in der ungarischen Region der Südlichen Großen Tiefebene gesammelt. 548 Fragenbögen wurden analysiert (Jugendliche zwischen 14 und 21, das Durchschnittsalter lag bei 16,3 Jahren, SD = 1,3, Rücklaufquote: 91,3%, 42% weiblich). Die Befragten haben die Fragebögen selbst ausgefüllt. Unsere Ergebnisse haben bestätigt, dass die Wettbewerbsfähigkeit mit dem Gesundheitsrisiko und dem präventiven Gesundheitsverhalten signifikant zusammenhängt, wie es auch in früheren Studien gezeigt wurde. Drei selbstständige Faktoren der Wettbewerbsfähigkeit konnten mithilfe der Faktorenanalyse identifiziert werden: „Genuss des Wettbewerbs", „Vermeidung sozialer Konflikte", „Angst vor Wettbewerb". Diese Faktoren spielen bei den verschiedenen Formen des Gesundheitsverhaltens unterschiedliche Rollen. Im Gegenteil zu den früheren Untersuchungen stellte sich heraus, dass gesundheitsriskierendes Verhalten bei denjenigen Befragten häufiger vorkommt, für die die Faktoren „Vermeidung sozialer Konflikte" und „Angst vor Wettbewerb" charakteristisch sind. Im Bezug auf das präventive Gesundheitsverhalten wurde aufgezeigt, dass die physische Aktivität mit allen drei Faktoren signifikant zusammenhängt. Im Vergleich dazu gingen gesundheitsbewusste Ernährung und orale Hygiene mit den Faktoren „Vermeidung sozialer Konflikte" und „Angst vor Wettbewerb" einher.

Auf den Ergebnissen basierend kann festgestellt werden, dass die mit „Vermeidung sozialer Konflikte" und „Angst vor Wettbewerb" charakterisierten Jugendlichen eine wichtige Zielgruppe für gesundheitsfördernde Programme darstellen können.

Schlüsselbegriffe: soziale Variablen, Wettbewerbsfähigkeit, gesundheitsfördernde Verhaltensformen, Gesundheitsriskierende Verhaltensformen, Jugendliche

1. Introduction

Peer relations constitute an important social context for development in adolescence, and it is a time when individuals begin assigning greater value to their status within peer social networks (Fournier 2009; Murphy et al. 2013). Therefore competition is a prominent social phenomenon of adolescent peer groups that results in a rank in the social hierarchy (Arnocky & Vaillancourt 2012; Fülöp & Berkics 2007; Merten 1997). According to the social hierarchy theory of depression, being defeated in competitions is associated with depression among adolescents as well as among adults (Fournier 2009).

Adolescents' health behaviours are influenced by many social variables. Apart from social influences of peers (Keresztes et al. 2008; Page et al. 2005), social images or prototypes related to different health behaviours (Gibbons & Gerrard 1997; Keresztes et al. 2009), social comparison (Gibbons & Buunk 1999; Pikó et al. 2010), social coping mechanisms (Pikó & Keresztes 2007), and social orientations (Pikó et al. 2010) may also have an important role.

Competition among adolescents takes place in different areas that are meaningful in terms of hierarchy formation and popularity in the peer group. If smok-

ing, drinking, and taking drugs are among those activities that are socially valued, expected and reinforced in the peer group, then those who are competitive may be more vulnerable to pursuing such activities. The relatively few studies that focus on the role of competition and competitiveness in adolescent health behaviour have contradictory results, and it seems that the role of competitiveness can be different depending on the nature of health behaviours. PIKÓ and her colleagues (2010) found that health-impairing behaviours (e.g. smoking, binge drinking, drug use) among adolescents were positively associated with competitiveness in both sexes. The authors explained the results by a higher level of sensation seeking among competitive individuals (JONAH et al. 2001), or their higher level of achievement orientation that may be connected with anxiety (PIKÓ 2005).

In terms of participation in sport activities it was assumed that individuals who were driven to compete and meet challenging sport-related goals were more likely to participate in sports (SWAIN & JONAS 1992). However, DWYER and colleagues (2006) found that while some adolescent girls are discouraged from participating in physical activity due to competition, others are motivated to participate exactly because of competition. In case of adult athletes, they scored higher in terms of their sport orientation in competitiveness and in win and goal orientation compared with non-athletes (FINKENBERG et al. 1998; GILL & DEETER 1988). It was also found that greater competitiveness was negatively associated with sportsmanship. However, adolescents with a more intrinsic motivation for participating tended to report greater sportsmanship, while adolescents with a more extrinsic motivation displayed fewer prosocial attitudes (RYSKA 2003).

In terms of dieting and eating habits, FERGUSON and his colleagues (2014) found that negative social comparison with peers and feeling inferior in competition is related to body dissatisfaction among adolescent girls, and increased dieting was found to be positively associated with competitiveness among them (HUON et al. 2002).

Studies investigating the role of the competitive climate of the school in health risk behaviour found that regular smoking was positively associated with competitive school climate (JOHNSON & HOFFMAN 2000), but STRIEGEL-MOORE and her colleagues (1991) found no relationship between the competitive climate of the educational institution and, for instance, disordered eating.

Results are similarly contradictory in relation to psychological health and coping. For several decades it was assumed that competitiveness had detrimental effects on mental health and adjustment (KOHN 1986), in spite of some research results that showed the opposite. For example, JOHNSON and NOREM-HEBEISEN (1977) found that in fact competitiveness correlated negatively with 7 of the 10 clinical MMPI scales. There are also recent studies finding that competitiveness is not positively associated with maladjustment, but in contrast the relationship is negative and competition in fact buffers the influence of avoidant coping on maladjustment (GOMEZ 1998). Other studies carried out with young men suggested however that competitiveness has an unclear relationship with adaptive coping (KELTIKANGAS-JÄRVINEN

& RÄIKKÖNEN 1993). Thus the link can be the role of coping since competitiveness may influence coping that may be linked to health behaviours.

The explanation of the incongruous results may be found in the concept and measurement of competition. Empirical investigations on competitiveness dated back to experimental social psychology, namely, to the phenomenon of 'social facilitation' by TRIPLETT (1897). In the second half of the 20th century up until the 1990s the major ruling paradigm in competition research had been a concept that conceptualised competition as a polar opposite of cooperation (DEUTSCH 1949), and while celebrating cooperation, attributed several detrimental effects to competition, including aggression and hostility among the competing parties (KOHN 1986), and ill health (ROSENMAN et al. 1964). Competition in this research tradition was a unidimensional concept (FÜLÖP 2008) mainly defined as a 'desire to win in interpersonal situations' (HELMREICH & SPENCE 1978, 4). The first studies that connected competitiveness with somatic health, primarily with cardio-vascular disease, also applied a unidimensional concept of competition, e.g., competitiveness as one component of Type A behaviour was considered to have ill-health effects (ROSENMAN et al. 1964). In the last three decades however there has been a paradigm change in competition research, and researchers have begun to deconstruct competitiveness and identify different types of competitive attitudes with different health outcomes (FÜLÖP 2008).

Competitiveness is now viewed as a multidimensional construct. For example, GRIFFIN-PIERSON (1990) differentiated two components of competitiveness: 'Interpersonal Competitiveness' and 'Goal Competitiveness'. Interpersonal Competitiveness is defined, borrowing from HELMREICH and SPENCE (1978), as the desire to do better than others, the desire to win in interpersonal situations, the enjoyment of interpersonal competition. Goal Competitiveness is defined as the desire to excel, the desire to obtain a goal, the desire to be the best one can be. The two competitiveness perspectives are not mutually exclusive. They are ways of construing achievement situations, and thus are viewed as general dispositional tendencies to perceive achievement situations in a certain manner. FRANKEN and BROWN (1995) also differentiated different motivations behind competitiveness, the 'Desire to Win' and the 'Desire to Perform Well', while FRANKEN and PRPICH (1996) studied why people dislike competition and differentiated between 'Self-Image Concerns' and 'Performance Concerns'. FRANKEN and BROWN (1996) also found that the desire to win is associated with poor coping skills, while the desire to perform well is not. KAYHAN (2003) also differentiated two distinct facets of competition referred to as 'Superiority Competitiveness' and 'Mastery Competitiveness', and revealed their different effects on psychological adjustment. Superiority competitiveness (to win over, to be dominant) was associated with higher levels of depression among females, but with less loneliness among male university students. Mastery competitiveness, however, significantly associated with decreased anxiety among young females. HIBBARD and BUHRMESTER (2010) differentiated two types of competitiveness as well, namely, 'Competing to Win' (to dominate others) and 'Competing to Excel' (to surpass per-

sonal goals). In their study, adolescent males performed higher in the dimension of 'Competing to Win' than females, but there were no gender differences in the dimension of 'Competing to Excel'. For females, 'Competing to Win' was associated with greater depression, while 'Competing to Excel' was associated with higher self-esteem and less depression for both genders.

HOUSTON and colleagues (2003) and HARRIS and HOUSTON (2010) also identified two independent dimensions of competitiveness, 'Enjoyment of Competition' and 'Contentiousness', and investigated their different effects on behaviour across social domains such as work, sport and interpersonal situations.

The major work in this field has been done by RYCKMAN and his colleagues who – over more than two decades (1990; 1994; 1996; 2009; 2011) – deconstructed the notion of competitiveness and differentiated three competitive orientations: 'Hypercompetitiveness', 'Personal Development Competitiveness', and 'Competition Avoidance', and also studied their correlates with psychological health. They found that different types of competitiveness had different psychological health correlates, and that competition avoidance was in fact as 'unhealthy' as over-competitiveness. Hypercompetitiveness is considered a negative and 'neurotic' competitiveness, depicted by hostile, aggressive, manipulative, and exploitative behaviour toward others. On the other hand, personal development competitiveness reflects a healthy and positive competitive orientation, in which individuals compete with others in order to achieve their personal goals and standards of excellence through learning and self-exploring. The main emphasis is on one's own personal development, on the discovery of one's potentials, and on the enjoyment inherent in the well-done task itself. Personal development competitiveness was shown to be associated with fewer health problems, whereas hypercompetitiveness was shown to be associated with greater self-reported health problems (THORNTON et al. 2011). Moreover, research has indicated that hypercompetitive individuals are indeed highly neurotic and, in particular, their neurotic tendencies are grounded in anger and hostility towards others (ROSS et al. 2003). RYCKMAN et al. (2009) also found that those who were higher in competition avoidance were characterised – among others – by higher levels of neuroticism (i.e. emotional instability). In terms of health-related behaviour BURCKLE and colleagues (1999) found that competition per se was unrelated to disordered eating, but hypercompetitiveness was positively related to it.

Research with Type A behaviour also proved that the concept of 'Type A behaviour' has to be deconstructed and must be divided into different dimensions that may behave differently in relation to psychological and somatic health (GOMEZ 1998; KELTIKANGAS-JÄRVINEN & RÄIKKÖNEN 1993) and it is not the competitiveness component of Type A behaviour that is responsible for its relationship with cardiovascular diseases but the impatience/hostility factor (ROSENMAN 1991).

While a fair amount of knowledge has been accumulated about competition as a multidimensional construct and the different psychological and somatic outcomes of the different dimensions, the relationship between different types of competitiveness and adolescent health behaviours is a less investigated field of research (HOU-

STON et al. 2003). Moreover, this relationship was mainly studied in a variety of samples from the United States, but there has been little empirical evidence from samples outside the United States (HOUSTON et al. 2005) despite the fact that different dimensions of competitiveness may have a different role in different cultures (FÜLÖP 2004; 2009).

Based on previous empirical results and theories, we expected to find differences in the structure of competitiveness, and a significant relationship between different dimensions of competitiveness and health behaviours. Thus, the main goal of our study was to detect the structure of competitiveness and find the relationship with preventive and health risk behaviours. As a previous study of PIKÓ and her colleagues (2010) found increased health risk behaviour associated with competitiveness applying the Revised Competitiveness Index (HOUSTON et al. 2002) but used the index as a unidimensional scale, the goal of this study was to study how different dimensions of competitiveness may be related to adolescent health risk behaviour.

Since Hungary and Hungarian adolescents have been described as highly individualistic (HOUSE et al. 2004; OWE et al. 2013) and competition is considered to be harsh and cut-throat by Hungarian adolescents (FÜLÖP 1999), our goal was also to compare the structure of competitiveness in its relationships with health risk behaviour of adolescents in this particular cultural context.

2. Method

Our data were collected from students enrolled in secondary schools in the Southern Plain Region of Hungary. This sample was based on randomly selected classes from different schools of Békés and Csongrád counties (3 schools from each county). The total number of the questionnaires was 600. 548 were returned and analysed (age range: 14–21 years; M = 16.3 years; SD 1.3 years; response rate: 91.3%; 42% girls). Self-administered questionnaires were used for data collecting. Parents were informed of the research and their consent was obtained prior to data collection. Trained graduate students distributed the questionnaires to students in each class after briefly explaining the study. Questionnaires were anonymous and participation was voluntary. Response times ranged from 30 to 40 minutes.

Questionnaires included items on sociodemographics, health risk and preventive health behaviours, namely: leisure time physical activity, diet control, oral hygiene, smoking, alcohol and drug use (KERESZTES et al. 2008; LUSZCZYNSKA et al. 2004; PIKÓ et al. 1996), and competitiveness (HOUSTON et al. 2002).

Regarding substance use, the following questions were asked: ‘How many times did you smoke cigarettes/drink alcohol/use drugs last month?’ Response categories regarding smoking were: never (1); sometimes (2); 1 to 5 cigarettes a day (3); 6 to 10 cigarettes a day (4); 11 to 20 cigarettes a day (5); more than 20 cigarettes a day (6). Regarding alcohol and drug use, the following categories were used: never (1); once or twice (2); 3 to 9 times (3); 10 to 19 times (4); 20 to 39 times (5); more

than 40 times (6). In addition, binge drinking was measured by the following question: 'How many times in the last month did you drink a lot (more glasses) within a short period of time? 'Response categories were: never (1); once (2); twice (3); 3 to 5 times (4); 6 to 9 times (5); 10 or more times (6).

The following question was asked about leisure time physical activity: 'How many times in the last month did you engage in exercise (physical activity) besides school Physical Education (for at least 30 minutes)?' Response categories were never (1), occasionally (2), two or three times a month (3), once or twice a week (4), and three or more times per week (5) (KERESZTES et al. 2008).

We measured diet control with the following question: 'How often did you make an effort to eat healthy last month?' Response categories were: not at all (1); a little (2); rarely (3), quite often (4), always (5).

Oral hygiene was measured by the following question: 'How frequently did you brush your teeth in the last month?' Response categories were: irregularly (1); less than once a day (2); once a day (3); twice a day (4); more than twice a day (5).

Our measurements were not eligible for linear regression, since for the purpose of the study, we dichotomised the health behaviour variables (1 = no, 2 = yes, except for leisure time physical activity where 1 = no or occasionally, 2 = regularly) (KERESZTES et al. 2009) to clearly separate the respondents who take part in the mentioned behaviour at all and those who do not. With the dichotomisation process response categories were recoded. Category 1. stayed the same (1 = no), while categories 2. through 6. were contracted into a single category (2 = yes).

Competitiveness was measured by the revised Competitiveness Index (HOUSTON et al. 2002). The index contains 14 items designed to assess the desire to win in interpersonal situations (e.g., 'I am a competitive individual', 'I often try to outperform others'). The Likert-type responses include a 5-point scale format ranging Hungarian and back-translated by bilingual translators. The scale was reliable, with a Cronbach's alpha value of 0.85 with the current sample.

To detect the structure of the competitiveness we used factor analysis with varimax rotation. Eigenvalues above 1 were applied as the point to stop extracting factors. Variance explained was also calculated. In the final factor structure, factor loadings greater than 0.3 were included (Kaiser's criterion). The significant competitiveness variables were then summarised and the reliability for each scale was calculated. In the further analysis, the mean scores of the scales were included by using student t-tests.

3. Results

Table 1 presents the frequencies of health risk behaviours (namely, smoking, alcohol use, binge drinking and drug use) and preventive health behaviours (namely, leisure time physical activity, diet control and oral hygiene) in the dichotomised format. Of the sample, 64.6% of the students smoked, 66.9% of them drunk alcohol, 5.7% of

the respondents used drugs and 44.6% of the secondary school students took part in binge drinking in the last month. Regarding preventive health behaviours, 63.4% of the students were regularly active, 79.9% of them took care of their nutrition and 97.3% of the respondents brushed their teeth regularly.

HARRIS and HOUSTON (2010) identified two distinct factors and subscales of the *Revised Competitiveness Index* in an American undergraduate sample: 'Enjoyment of competition' and 'Contentiousness'. The factor analysis of the present data provided a three-factor solution with good reliability values (KMO = 0.875; Bartlett's test sign = 0.00; Cronbach's alpha: Factor 1 = 0.86; Factor 2 =0.75; Factor 3 = 0.61). Variance explained was 57.35%. *Table 2* presents the final factor structure.

Table 1
Frequencies of health behaviour variables

Health behaviour variables	*Frequencies (%)*
Smoking	
No	35.5
Yes	64.5
Alcohol use	
No	33.1
Yes	66.9
Binge drinking	
No	55.4
Yes	44.6
Drug use	
No	94.3
Yes	5.7
Leisure time physical activity	
No/occasionally	36.6
Regularly	63.4
Diet control	
No	20.1
Yes	79.9
Oral hygiene	
No	2.7
Yes	97.3

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 outperform 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 competitions as well, namely: I will do almost anything to avoid an argument; I try to avoid arguments; I often remain quiet 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 regarding competition: I find competitive situations unpleasant; I do not like competing against other people; I dread competing against other people; I do not enjoy challenging others even when I think they are wrong.

Based on the factor loadings, three competitiveness scales were developed with satisfactory reliability. Therefore, three competitiveness scales were computed by summing up the relevant factor variables described above. In further analyses, the mean scores of the scales were applied and analysed according to various health behaviours and competitiveness characteristics.

Table 3 shows the relationship between health risk behaviours and the competitiveness scales. The 'Enjoyment of competition' scale was in significant relationship only with binge drinking. Means scores among binge drinker students were significantly higher. In contrast to this, both the 'Avoidance of social conflict' and the 'Fear of competition' scales were in significant relationship with every health risk behaviour. All in all, means scores among students who smoke, drinke, binge drink and use drugs were higher.

Analysing the relationship between preventive health behaviours and the competitiveness scales *(Table 4)*, leisure time physical activity was in significant relationship with each competitiveness scale. Means scores were higher among regularly active students compared with the less active group of youth. According to 'Avoidance of social conflict' and 'Fear of competition', the means scores were lower among students who maintain a healthy diet and regular oral hygiene.

Table 2
Final factor structure for the Competitiveness Index

Variables	*Factor 1 'Enjoyment of competition'*	*Factor 2 'Avoidance of social conflict'*	*Factor 3 'Fear of competition'*
I am a competitive individual	0.821		
I like competition	0.802		
I often try to outperform others	0.776		
I get satisfaction from competing with others	0.741		
I enjoy competing against an opponent	0.697		
I try to avoid arguments	–0.584	0.320	
I do not like competing against other people	–0.477		0.415
I try to avoid competing with others		0.848	
I will do almost anything to avoid an argument		0.796	
I often remain quiet rather than risk hurting another person		0.692	
In general, I will go along with the group rather than create conflict		0.581	0.324
I dread competing against other people			0.801
I find competitive situations unpleasant			0.728
I do not enjoy challenging others even when I think they are wrong			0.411
Eigenvalues	3.64	2.48	1.88
% variance	26.17	17.71	13.46
Cronbach's alpha	0.86	0.75	0.61

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

Table 3
Relationship between health risk behaviours and Competitiveness Index factors

Health risk behaviours	*'Enjoyment of competition' factor* Mean (SD)	*'Avoidance of social conflict' factor* Mean (SD)	*'Fear of competition' factor* Mean (SD)
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)
Binge drinking			
No	20.62 (6.82)**	13.48 (4.44)***	17.23 (3.94)**
Yes	22.42 (6.60)	15.54 (4.38)	18.27 (3.75)
Drug use			
No	21.28 (6.69)	14.21 (4.47)***	17.58 (3.85)**
Yes	23.29 (8.17)	17.61 (4.49)	19.54 (4.18)

Table 4
Relationship between preventive health behaviours and Competitiveness Index factors

Preventive health behaviours	*'Enjoyment of competition' factor* Mean (SD)	*'Avoidance of social conflict' factor* Mean (SD)	*'Fear of competition' factor* Mean (SD)
Physical activity			
No/occasionally	19.54 (6.67)***	13.95 (4.56)*	17.20 (3.82)*
Regularly	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)
Oral hygiene			
No	24.42 (7.59)	18.35 (5.71)**	20.21 (7.59)*
Yes	21.34 (6.74)	14.30 (4.45)	17.63 (3.86)

Note: Student t-test, *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$

5. Conclusion

Since there are significant changes in the health behaviour pattern of young people, e.g., an increase of substance use and a decrease of sports activity (Pikó et al. 2010), a deeper understanding of the psychological components of youth health behaviour is an important goal of research. In our present study we found that most of the adolescent respondents smoked and used alcohol in the last month, and 44.6% of them have engaged in binge drinking; however, most of them were regularly active and were mindful of their diet and oral hygiene.

Youth's health behaviours are influenced by a variety of social factors (e.g., social network's behaviours, social status, social images, social comparison, social coping mechanism, see Gibbons & Gerrard 1997; Gibbons & Buunk 1999; Keresztes et al. 2008; 2009; Page et al. 2005; Pikó & Keresztes 2007). However, among the social variables, the relationship between health behaviours and competitiveness is a less investigated field of research. Our findings pointed out that different dimensions of competitiveness were in significant relationship with both health risks and preventive health behaviours than previous studies had suggested (Pikó et al. 2010; Huon et al. 2002).

Previous studies also suggested that competitiveness was a multidimensional concept. Therefore it is better to speak of qualitatively different competitive attitudes that may be related to adolescent health behaviours in a different way (Houston et al. 2002). Applying the Competitiveness Index on an American sample, Houston and his colleagues (2002) identified two different subscales and components of competitiveness:'Enjoyment of Competition' and 'Contentiousness'. In our study we identified three independent dimensions of competitiveness using factor analysis, namely: 'Enjoyment of competition', 'Avoidance of social conflict', and 'Fear of competition'. 'Enjoyment of competition' is very similar to the original subscale; it expresses a positive attitude towards competition, associates positive emotions with it like enjoyment or satisfaction, and involves a striving to perform better than others even if that causes conflict. In contrast, the 'Avodiance of social conflict' factor which was very similar to 'Contentiousness' in the original index expresses a fear that competition may lead to interpersonal conflict. In this case it is not competition per se but its negative social consequence that is in the focus of the attitude. In our study, a third independent factor emerged. Factor 3 was labelled 'Fear of competition' and expressed unpleasant feelings and fear associated with competition.

These factors indeed had a different role in varying health behaviours. In contrast with previous studies applying the Competitiveness Index as a unidimensional construct (Pikó et al. 2010), we pointed out that health risk behaviours (namely, smoking, alcohol use, binge drinking and drug use) were more frequent among respondents characterised by 'Avoidance of social conflict' and 'Fear of competition'. This relationship may be explained by maladaptive coping strategies in which health risk behaviours may act as a method of stress relief and anxiety reduction when participants face a competitive situation and social con-

flicts (Byrne & Mazanov 2003; Pikó et al. 2010; Stockdale et al. 2007). Because competition with peers is such an important phenomenon of adolescent peer groups (Fournier 2009), those who are comfortable with it may achieve higher social status, while those who have trouble competing – either because they are afraid of conflicts or, in their case, a higher level of anxiety is associated with competition, and therefore they fear and dislike it – may be more prone to turn towards health risk behaviour either as a way to gain status or to soothe social anxiety or depression. This may be supported by the results of Ryckman and his colleagues (2009) indicating that competition avoidance was associated with a higher level of neuroticism and emotional instability.

In terms of preventive health behaviours, we pointed out that physical activity was in significant relationship with every dimension of competitiveness. Regularly active students scored higher on each competitiveness dimension. On the other hand, diet control and oral hygiene were associated only with 'Avoidance of social conflict' and 'Fear of competition' factors. The relationship between competitiveness and physical activity is in concordance with previous studies which showed that athlete students scored higher in terms of their sport orientation in competitiveness, win and goal orientation compared with non-athletes (Finkenberg et al. 1998; Gill & Deeter 1988). It is assumed that individuals who are driven to compete and meet challenging sport-related goals are more likely to participate in sports (Swain & Jonas 1992). The relationship between regular physical activity and 'Avoidance of social conflict' and 'Fear of competition' factors might exist because adolescents characterised by these attitudes apply regular sport as an adaptive coping strategy to reduce their anxiety connected to competitive situations and social conflicts in this age group. This explanation, however, is in contradiction with our other result, namely, that 'Avoidance of social conflict' and 'Fear of competition' were associated with more frequent health risk behaviours, and these attitudes were also less likely to be related to other preventive health behaviours, namely, diet control and oral hygiene. Based on these results we may conclude that students characterised by avoidance of social conflict and fear of competition would be an important target group for health promotion programs.

Investigations of competitiveness drew attention to the cultural aspects of competitiveness (e.g., Furnham et al. 1994; Ryckman et al. 1992; Fülöp 2004; Fülöp 2009). In this study, 'Fear of competition' emerged as an independent attitude besides enjoying competition and avoiding conflict, and showed a positive relationship with health risk behaviour. Fülöp (1999) compared American, Japanese and Hungarian secondary school students' perception of competition in their society and found that Hungarian adolescents had the most negative view on competition and competitiveness. They associated more aggression and conflict with it than their American and Japanese peers. 'Fear of competition' as an independent scale may reflect this perception and is associated with more proneness to health risk behaviour potentially due to an increased distress over the negative aspects of competition. In contrast to this, those adolescents who are able to enjoy

competition and see its positive aspects in a cultural context that provides a more stressful social context are also more probable to be engaged in health-preventive behaviours.

Our study has some limitations since we have worked with a cross-sectional sample and only examined the prevalence of physical activity with no questions about its level, type, and organisation. As a result of this, these factors connect to competitive behaviour differently (Anshel & Sutarso 2007). However, based on our findings we have started another study completed with sports motivation and the condition of physical activity on a sample of university students with varying cultural backgrounds. This further study will supposedly lead to some more clarifications regarding these interrelationships. All in all, we hope that these findings provide some useful information on the relationship between competitiveness and health behaviours, particularly suggesting that while certain aspects of competitiveness may be risky to health, other competitive attitudes may have the reverse effect.

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