

Perceived Health Locus of Control, Self-Esteem, and Its Relations to Psychological Well-Being Status in Iranian Students

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Abstract

Background: Health locus of control (HLC) has been associated with a variety of ailments and health outcomes and designed to predict behaviors and cognitive processes relevant to mental and physical health. This study investigated the relationships between perceived health locus of control, self-esteem, and mental health status among Iranian students.

Methods: In this analytical study the subjects were recruited from students in Gonabad University of Medical Sciences, Iran, who studied in the first year (N=154). Students completed the questionnaires for assessing demographic, perceived health locus of control, self-esteem and psychological well-being data.

Results: The statistical analysis revealed a negative relationship between perceived Internal HLC and self-esteem with psychological well-being. The positive correlation of the perceived Chance HLC with psychological well-being was statistically significant ($r=0.21$, $P<0.01$) and the positive correlation of the perceived Internal HLC with self-esteem was statistically significant ($r=0.25$, $P<0.01$). A significantly direct relationship between low perceived Internal HLC, self-esteem and psychological problems was found among these students.

Conclusion: The findings will be addressed in relation to their implications for effective mental health education based on health locus of control especially internal and powerful others beliefs associated with self-esteem for students. This will require additional monitoring and uninterrupted trying in order to be effective.

Keywords: *Perceived health locus, Psychological well-being, Self-esteem, Student*

Introduction

Perceived health locus of control (HLC) is an important component in social learning theory models designed to predict behaviors and cognitive processes relevant to mental and physical health (1). As demonstrated by this special issue, attributions' regarding the nature, source, and extent of various sources of control over one's health has been the subject of empirical investigation for over two decades. The general concept of perceived HLC is both theoretically and practically significant because it has meaningful relations with health attitudes, behaviors, coping styles, and outcomes (2-4).

Self-esteem is having a good opinion of one's own character and abilities (5). This goodness is a general innate characteristic in all human beings. It is not only limited and unstable, but it is stable

and permanent whose score should be determined in order to low self-esteem people can be fitted with proper educational programs (6). Self-esteem can be high when self-perceived and self-ideal are equal, otherwise the individual self-esteem will be low. Thus, the difference between self-perceived and self-ideal is a factor that causes self-esteem problems (7). Belief in personal successes, mobilize individual towards determined goals that are some feedbacks in direct relation with self-esteem. Self-esteem comes with individual's perception of his/her acceptance or non-acceptance and shows that how much a person is informed of his/her own ability, worthiness, and value. Self-esteem is an individual experience, which can be shown in behavior and dialogue of that person (8).

Many students face with experiences and problems never seen before in their life. The prob-

lems that college students are faced with are different from those of non-college students. Students are frequently evaluated by their professor and they have continuous and active efforts to reach their own educational goals (9). Further, students are susceptible to psychological problems in different situations such as examinations, great deal of assignments, lack of leisure time, and long time study (10).

Moreover, the studies in the past 15 yr have indicated that self-esteem is a powerful and important psychological factor in health and the quality of life. It is recognized that the feelings of being worthy and empowered are associated with strong self-esteem, which can result in positive changes such as achievements, more effort to gain success, high self-esteem, and being hard working and tending to have a better health status (11).

A study showed that the most common problems that students are faced with in their educational life including: examinations and anxious due to exam results, class activities, a lack of spare time, and long-time study (10). Ross in 1999 reported that most of the newly-entered university students have some problems in their personal relationship with others such as their classmates, professors and university staffs (9).

There is a lack of evidence about psychological well-being status and its relation to health locus of control and self-esteem among Iranian students. Thus present study was aimed to investigate the relationship between mental health status, perceived HLC, and self-esteem among the students.

Ethical considerations

This research was granted ethical approval from Gonabad University of Medical Sciences (GUMS) Research Ethics Committee. Permission was also received from GUMS in order to distribution of the data collection tools. Participants were given written and verbal information about the study. The respondents were anonymous and participated willingly and voluntarily in this study. In addition, all of the responses were treated confidentially.

Material and Methods

The research is an analytical study conducted among students in GUMS during 2007-2008. The freshman students (first year students) were selected from GUMS, which were chosen, randomly. By simple randomized sampling allocation, 154 participants from the freshman students were recruited within mean age of 20.1.

Prior conducting the main project, a pilot study was carried out in which the relevant questionnaires were administered to 38 students who were similar to participants in main study to evaluate clarity, length, comprehensiveness, time of completing and also internal reliability (Chronbach's alpha coefficient) of the measures. Participants were instructed about how to complete the questionnaires. After excluding incomplete questionnaires, the result of the response rate was 93.5% (n=144). The questionnaires consisted of several sections that will be addressed as follows:

Demographic information included age, gender, course of study, the number of family members, parents' educational status, local/ non-local student, and household income.

Psychological well – being

Psychological well-being was measured by Persian version of Goldberg's General Health Questionnaire (GHQ-28), which was used widely in Iran (12, 13). The GHQ-28 was developed by Goldberg and Hillier in 1979 and the 28 items yield four robust factors with acceptable psychometric properties: somatic symptoms (e.g., run down), anxiety/ insomnia (e.g., lost sleep over worry), social dysfunction (e.g., taking longer over things), and sever depression (e.g., life not worth living). The sub-scales represented dimensions of symptomatology but do not necessarily correspond to psychiatric diagnosis. A total score served as a broad index of psychopathology and for identifying caseness with GHQ-28, the total sub- scales was used. All items have a 4-point scoring system that ranges from a 'better/healthier than normal' option, through a 'same as usual' and a 'worse/ more than usual' to a 'much worse/more than usual'

option. The simple Likert method scoring [0, 1, 2, 3] was applied and respondents with score 23 or more was identified as psychological caseness (14). The psychometric properties of the Persian version of GHQ-28 have been acceptable (15). For instance, a reliability coefficient was calculated for GHQ-28 ($\alpha = 0.89$) which demonstrated that the GHQ-28 was internally consistent.

Self-Esteem

The Persian version of the Rosenberg Self-Esteem scale (RSE) that is an attempt to achieve a one-dimensional measure of global self-esteem was used. It was designed to be a Guttman scale, which means that the RSE items were to represent a continuum of self-worth statements ranging from statements that are endorsed even by individuals with low self-esteem to statements that are endorsed only by persons with high self-esteem. Rosenberg scored his 10-question scale that was presented with four response choices, ranging from "strongly agree" to "strongly disagree", as a six-item Guttman scale. The ratings sum assigned to all the items after reverse scoring the positively worded items. Scores range from 10 to 40, with higher scores indicating higher self-esteem. Rosenberg in 1965 demonstrated that his scale was a Guttman scale by obtaining high enough reproducibility and scalability coefficients (16). The Persian version of RSE has shown good levels of reliability and validity (17, 18). A reliability coefficient was calculated for the RSE ($\alpha = 0.78$). This result revealed that the Persian version of RSE was internally consistent.

Perceived health locus of control

We used MHLC-Form A, developed by Wallston, Wallston and DeVellis in 1978 (19). Validity and reliability of the Persian version have assessed by the authors (20). The results revealed that Persian version of Form A were acceptable and respectable. Form A of the MHLC scales includes 18 items and consists of three subscales, namely Internal Health Locus of Control (IHLC), Powerful Others Health Locus of Control (PHLC), and Chance Health Locus of Control (CHLC). Each

of these subscales contains six items with a six-point Likert response scale ranging from 'Strongly Agree' (scored as six) to 'Strongly Disagree' (scored as one). Scales are scored by summing respective items for a total scale score. Higher scores reflect stronger endorsement of MHLC scales (19). Internal HLC refers to the extent that personal behavioral factors are responsible for one's health or illness; Powerful Others HLC encompasses the degree to which one's health is influenced by others for example, by physicians or other healthcare professionals; and Chance HLC taps one's belief that his health depends on chance, luck, or fate.

Results

Analyses were conducted by using SPSS 11.5 and an alpha level of 0.05 was used throughout. The results showed that 58% of participants were identified as psychological caseness. A summary of descriptive statistics related to the distribution of the main variables was presented in Table 1.

Intercorrelations among the perceived health locus of control components, self-esteem and psychological well-being measures are presented in Table 2. As it is apparent from Table 2, the perceived health locus of control components displayed the most obvious self-esteem-related influence on variance in self-esteem-reported psychological disturbance. Negative relationship between perceived IHLC and self-esteem with psychological well-being was observed. The positive correlation of the perceived CHLC with psychological well-being was statistically significant ($r = 0.21, P < 0.01$) and also the positive correlation of the perceived IHLC with self-esteem was statistically significant ($r = 0.25, P < 0.01$).

As it is apparent from Table 1 and Table 2, perceived CHLC and psychological well-being scores increased as self-esteem and perceived IHLC scores decrease.

Multiple regression analyses indicated that CHLC and self-esteem significantly determined psychological well-being and its interaction was obtained that account for an additional 47% of the variance in psychological problems (Multiple

$R=0.62$, $P<0.001$). The self-esteem scores was better predictor of total psychological well-being scores ($\beta = -0.52$, $P<0.001$) than the CHLC scores ($\beta = 0.19$, $P<0.006$).

As mentioned before, psychological well-being measured by General Health Questionnaire (GHQ-28) and the threshold score in order to decide on probable levels of morbidity is 23 (cutoff point) for it. Scores of 23 and above were considered for psychiatric "caseness". Therefore, respondents were divided to psychiatric caseness (58.3%, $n=84$) and non-case (41.7%, $n=60$). According to the median scores of perceived health locus of control components and self-esteem, we divided all subjects in to low or high level of health locus of control components and self-esteem. Thus, low scorers were those who had perceived internal health locus of control score less than 28 ($n=71$, 47.9%), perceived powerful others health locus of control score less than 24 ($n=69$, 49.3%), perceived chance health locus of control score less than 16 ($n=54$, 37.5%) and self-esteem score less than 28 ($n=64$, 44.4%).

A chi-square test was used in the sample in order to assess the relationship between low self-esteem and psychological status (caseness or non-case), IHLC, PHLC, and CHLC levels (low or high). As Table 3 makes clear, there is a significant relationship among students with low self-esteem regarding the psychological well-being and levels of HLC components. The findings also showed that there are significant relationships between low self-esteem with existing psychological well-being and IHLC among students (Table 3).

A chi-square test analysis revealed that there is no significant difference between local and non-local students for psychological problems ($\chi^2=0.003$, $df=0.1$, $P<0.55$).

A fisher's exact test was used in order to assess the relationship between levels of health locus of control (low or high) and psychological well-being. Results showed that there is a significant relationship among students with low perceived IHLC regarding psychological caseness ($P<0.02$, 2-sided). Nevertheless, there is no significant relationship among students with high perceived CHLC and PHLC regarding psychological caseness ($P<0.08$ & $P<0.91$, 2-sided).

A zero-order correlation was applied for assessing associations between birth rank, number of household family and age of subjects with perceived HLC, self-esteem, and psychological well-being scores. A two-tailed test at significance levels of 0.05 were the criteria for the Pearson correlation between variables and Analyses revealed that there were no significance relation between those variables.

One-way ANOVA revealed that there were no significant relationships between perceived HLC, self-esteem and psychological well-being scores based on parents' educational status and course of study at $P<0.05$. Regarding family status, chi-square tests showed that there were no significant relationship between participants that living with both parents or one parent regarding the perceived HLC, self-esteem and psychological well-being scores at significance levels of 0.05.

Table 1: Descriptive data for age, self-esteem, perceived health locus of control and psychological well-being

Variables	n	Mean	Median	SD	Min	Max	Range
Age	144	20.1	20	1.1	18	22	3
Self-esteem	144	27.7	28	4.6	17	39	22
Perceived IHLC	144	26.3	28	5.5	3	36	33
Perceived PHLC	144	23.5	24	4.1	12	34	22
Perceived CHLC	144	17	16	4.6	7	28	21
Psychological well-being	144	27.4	26	14.3	1	72	71

Table 2: Matrix of Pearson correlations among measures of perceived health locus of control components, self-esteem and psychological well-being

Variables	X ₁	X ₂	X ₃	X ₄	X ₅	X ₆	X ₇	X ₈
X ₁ Perceived IHLC	1							
X ₂ Perceived PHLC	-0.02	1						
X ₃ Perceived CHLC	-0.30**	0.22**	1					
X ₄ Self-esteem	0.25**	0.12	-0.04	1				
Psychological well-being:								
X ₅ Physical compliant	-0.18**	0.01	0.06**	-0.32**	1			
X ₆ Anxiety	-0.22**	0.45	0.10**	-0.50**	0.57**	1		
X ₇ Social dysfunction	-0.30**	0.21	0.18**	-0.30*	0.46**	0.54**	1	
X ₈ Depression	-0.25*	0.12	0.25*	-0.60**	0.41**	0.65**	0.48**	1
X ₉ GHQ ₋₂₈	-0.16**	0.02	0.21**	-0.53**	0.77**	0.86**	0.74**	0.78**

(N=144) *P<0.05, **P<0.01

Table 3: Comparison of students with high and low levels of self-esteem in relation to perceived health locus of control components and psychological well-being.

	Low self-esteem n (%)	High self-esteem n (%)	X ²	df	P-value (2-sided)
Psychological Caseness	48(33.34)	36(25.0)	10.7	1	0.00
Psychological Non-case	16(11.12)	44(30.56)			
Low Perceived IHLC	43(29.87)	28(19.45)	9.3	1	0.00
High Perceived IHLC	21(14.59)	52(36.12)			
Low Perceived PHLC	35(24.31)	34(23.62)	0.3	1	0.18
High Perceived PHLC	29(20.14)	46(31.95)			
Low Perceived CHLC	29(20.14)	25(17.37)	0.002	1	0.87
High Perceived CHLC	35(24.31)	55(38.20)			

Discussion

Different studies conducted in Iran on first year undergraduate students showed that there was different prevalence of mental disorders among students in some universities in Iran. For example, this figure was reported between 17 to 31 percent among Tehran and Shahid Beheshti universities of medical sciences; Tehran, Kashan and Shahid Beheshti universities (21). The similar studies conducted in different countries such as Scotland (22), England (23), Nigeria (24), Brazil (25) and Uganda (26) indicated that the prevalence of mental disorders is between 12 to 34.1 percent.

In addition, there was no significant relationship between gender and psychological well-being, which is comparable with other studies such as Karami and Pirasteh (27) and Abasi and colleagues' studies (28). However, Ziaei and colleagues (29) and Faraji (30) demonstrated that the prevalence of

psychological problems particularly anxiety and depression in females is more than males. In addition, the study showed that internal disorders were common among females like other studies carried out in Iran and the other countries (31). Furthermore, in the study belief in external factors was more that is comparable with other studies (21). While Kafi and colleagues showed that situation of mental health among Tehranian students was better than other students who studied in Tehran but were from the other cities of Iran, the results of the study did not show a significant relationship between mental health situation between local and non-local students. In findings of Keni and Donaldson's study, some psychological disorders were reported among non-local students due to living far from close family, financial problems and concern regarding payment for house as sources of emotional distress for students (32).

In the study, there was no significant difference between single and married students about the prevalence of mental health disorders. Other studies such as Ahmadi (33), Faraji (30) and Ziaei and colleagues (29) indicated the similar results. On the other hand, Ildar Abadi and colleagues (34) showed that the prevalence of depression was more in married students.

Linear regression model revealed that CHLC along with Self-esteem variable were predictors that had in turn significant positive and negative impacts on psychological well-being status. It means that with a strong or weak belief in chance, psychological well-being status in turn became better or worse. The results documented that with an increase or decrease of self-worth and personal characteristics in turn mental health status became worse or better. It appears to be this result is rational and correct with regard to the nature of the variables and applied scales and it has been confirmed by other studies (11, 35, 36). As Marks (36) and Luszczynska and Schwarzer (37) mentioned, Asian communities particularly people who live in Middle East have a stronger and more belief in chance and primarily fate (from factors of CHLC) which has different levels based on the discrepancies of cultural, ethnical, religious and spiritual exist among the people. It seems that this issue is recognized about the participants of the study and the effect of the beliefs on mental health condition.

The findings of the study indicated that there is a significant positive relationship between psychological well-being and CHLC. It means that with increasing the belief in chance, tendency towards psychological caseness has increased. This is fully comparable with the studies of Brannigan and Colleagues in 1977, Lefcourt in 1982, Ganellen and Blaney in 1984, Kelly and Colleagues in 1986, Sweeney, Dufour and Benassi in 1988, Holder and Levi in 1988, Petrosky and Birkimer in 1991, Lester and Colleagues in 1991, Presson and Benssi in 1996 (36).

In addition, with regard to the existing a significant relationship psychological well-being and IHLC, the educational/clinical programs or interventions de-

veloped based on increasing internal beliefs in participants were successful and useful. This issue was documented by Connolly in 1980, Husa in 1982, Cochran and Laub in 1994 (36). Therefore, people with internal control beliefs particularly in the context of health, have strong motivation to help themselves and as a part of this process they may find themselves as determinants of the changes (35).

The findings achieved about the health locus of control beliefs represented that there is a negative significant correlation between IHLC and CHLC, a positive significant correlation between PHLC and CHLC, but no significant correlation was found between IHLC and PHLC. The findings are consistent with reports of Wallston (35) and Luszczynska and Schwarzer (37).

Ozolins and Stenstrom (38), Steptoe and Wardel (39) reported the existing of a correlation between health locus of control and self-esteem among European adolescents and students, in which a positive significant correlation was found between IHLC and CHLC with self-esteem similar to the study.

In conclusion, although the present study has several strengths, such as being theory driven, having an adequate sample size, psychometrically sounds measures, and a multi domain measure of psychological well-being, self-esteem and health locus of control, the study is limited due to the homogenous sample. Thus, this group cannot be a representative sample for all student populations. Therefore, more studies are suggested to be carried out with students who study in the other courses, from other cities and among different private and public universities of Iran with a wide range of different cultural, social, and ethnical characteristics and backgrounds. Since, other factors such as ethnicity, customs, and habits of students may influence on how they think of self-esteem and psychological well-being, these aspects can provide the foundation for the future studies in the other regions of Iran. However, we believe that the current study is the first one has been done in among Iranian students. This study ensures researchers to move in the direction and

use confirmed education and skill methods to maintain psychological well-being in students to empower students.

In the summary, Concept belief in chance and fate and its influence on the Psychological well-being was analyzed and internal health control beliefs were emphasized.

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References

1. Wallston KA (1992). Hocus-Pocus, the focus is not strictly on locus: Rotter's social learning theory modified for health. *Cognitive Therapy and Research*, 16:183-99.
2. Armitage CJ (2003). The relationship between Multidimensional Health Locus of Control and perceived behavioral control: How are distal perceptions of control related to proximal perceptions of control? *Psychology and Health*; 18: 723-38.
3. Haslam C, Lawrence W (2004). Health-related behavior and beliefs of pregnant smokers. *Health Psychology*, 23: 486-91.
4. Wu AMS, Tang CSK, Kwok TCY (2004). Self-efficacy, health locus of control, and psychological distress in elderly Chinese women with chronic illnesses. *Aging and Mental Health*, 8: 21-8.
5. Mohr WK (2003). *Johnson's psychiatric-mental health nursing*. 5th Ed. USA: Lippincott.
6. Alan GJ (1999). *The psychology of fear and stress*. Cambridge university press.
7. Lawrence J, Ashford K, Dent P (2006). Gender differences in coping strategies of undergraduate students and their impact on self-esteem and attainment. *Learning in Higher Education*, 7: 273-81.
8. Pope AW, McHale SM, Craighed EW (1996). *Self-esteem enhancement with children and adolescents*. Translation in Persian by Parisa Tajalli, Tehran: Roshd press.
9. Ross SE (1999). Sources of stress among college student. *Coll Stud J*, 18: 205-14.
10. Monk EM, Mahmood Z (1999). Student mental health: a pilot study. *Couns Psychol Q*, 12: 199-210.
11. Mann M, Hosman CH, Schaalma HP, de Vries NK (2004). Self-esteem in a broad-spectrum approach for mental health promotion. *Health Educ Res*, 19(4): 357-72.
12. Noorbala A, Mohammad K, Yazdi AB, Yasami MT (2004). Mental health survey of the adult population in Iran. *Br J Psychiatry*, 184: 70-73.
13. Moshki M, Shams H, Ghahramani M, Tavakolizadeh J (2003). The Epidemiological Survey of Psychological well-being and its Relationship to Self-Concept among Adolescent Girls of Gonabad High Schools (IRAN). *Ofogh-e-Danesh*, 9(2):105-11(in Persian).
14. Goldberg DP, et al (1997). The validity of two versions of the GHQ in the WHO study of mental illness in general health care. *Psychological Medicine*, 27(1): 191-97.
15. Taghavi MR (2002). General Health Questionnaire: A validity and reliability study. *Journal of Psychology*, 5(4): 380-97(in Persian).
16. <http://www.athinson.yorku.ca/~psyc/test/rosenbrg.pdf>. Cited 12 Jan 2005.
17. Hemmati R (2004). Factors influencing women harassment: the case study of Tehran family (monograph on the Internet) (cited 28 June 2005). Available from: <http://www.uswr.ac.ir/S/WQ/refah12/so3.htm>.
18. Alizadeh T (2004). *Self-esteem and I-E locus of control and its relations to infertility stress among male and female in Tehran (IRAN)*. Master's thesis, Tarbiat Moalem University, Tehran.
19. Wallston KA, Wallston BS, DeVellis R (1978). Development of the Multidimensional Health Locus of Control (MHLC) scales. *Health Education Monographs*, 6: 160-170.

20. Moshki M, Ghofranipour F, Hajizadeh E, Azadfallah P (2007). Validity and reliability of the multidimensional health locus of control scale for college students. *BMC Public Health*, 7: 295.
21. <http://www.nrcms.ir/iranpsych/articles/detail.asp>, Cited: 14 May 2005.
22. Omokhodion FO, Gureje O (2003). Psychosocial problems of clinical students in the university of Ibadan medical school. *Afr J Med Med Sci*, 32(1): 55-58.
23. Ross S, Cleland J, Macleod MJ (2006). Stress, debt and undergraduate medical student performance. *Med Edu*, 40(6): 584-85.
24. Roberts R, Golding J, Towell T, Weinreb I (1999). The effects of economic circumstances on British students' mental and physical health. *J Am Coll Health*; 48(3): 103-9.
25. Facundes VLD, Ludermir AB (2005). Common mental disorders among health care students. *Rev Bras Psiquiatr*; 27(3): 1-13.
26. Ovuga E, Boardman J, Wasserman D (2006). Undergraduate student mental health at Makerere University, Uganda. *World Psychiatry*; 5(1): 51-52.
27. Karami S, Pirasteh A (2001). Mental health survey of the adult population in Iran. *Journal of Zanjan University of Medical Sciences*, 9(5): 66-73(in Persian).
28. Abbasi A, Kamkar A, Bagherizadeh Gh, Anbaripana A (2001). The mental health survey of students in Yasouj medical university. *Journal of Teb va Tazkieh*, 43: 34-38 (in Persian).
29. Ziaei V, Moinolghorabaei M, Jamali M, Faghih A, Malekinejad MH, Naziri Gh (2001). The mental health survey of students in Tehran medical university at the first based on SCL90-R and the result comparison with interview. *Journal of Teb va Tazkieh*, 43: 25-33(in Persian).
30. Faraji A (2000). *The mental health survey of medicine students of Tehran medical university at the end of internship and the result comparison with their entrance and the effective factors*. Unpublished MD's thesis, Tehran medical university.
31. Shams Alizadeh N, Bolhari J, Shahmohammadi D (2001). The prevalence of mental disorders among over 15 years old in Valian village of Savojblagh city. *Journal of Andishe va Rafter* (in Persian), 7(2, 1): 19-26.
32. Kafi SM, Bolhari J, Peyrovi H (1994). *The literacy and mental health survey of the students of Tehran University in 1993-94*. Tehran: Tehran University.
33. Ahmadi K (1999). *The prevalence of cigarette smoking problems of male internships in Tehran medical university* (Iran). Unpublished MD's thesis, Tehran medical university.
34. Ildarabadi A, Firoozkouhi MR, Mazloun SR, Navidian A (2004). The prevalence of student depression of Zabol medical college (Iran). *Journal of Sharekord Medical University*, 6(2): 15-21(in Persian).
35. Wallston KA (2005). Overview of the special issue on research with the multidimensional health locus of control (MHLC) scales. *J Health Psychol*, 10(5): 619-621.
36. Marks LI (1998). Deconstructing locus of control: implications for practitioners. *J Couns Dev*, 76: 251-58.
37. Luszczynska A, Schwarzer R (2005). Multidimensional health locus of control: comments on the construct and its measurement. *J Health Psychol*, 10 (5): 633-42.
38. Ozolins AR, Stenstrom U (2003). Validation of health locus of control patterns in Swedish adolescents. *J Adolesc*, 38(152): 651-57.
39. Steptoe A, Wardle J (20010). Locus of control and health behaviour revisited: a multivariate analysis of young adults from 18 countries. *Br J Psychol*, 92(4): 659-73.