

2012

Health Locus of Control of Polish Undergraduates: Gender, Faculty and Type of Physical Activity Differences

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Recommended Citation

Guskowska M, Kuk A. Health Locus of Control of Polish Undergraduates: Gender, Faculty and Type of Physical Activity Differences. *Balt J Health Phys Act.* 2012; 4(3):189-196. doi: 10.2478/v10131-012-0020-1

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Authors' Contribution:

A – Study Design
 B – Data Collection
 C – Statistical Analysis
 D – Data Interpretation
 E – Manuscript Preparation
 F – Literature Search
 G – Funds Collection

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Key words: *health locus of control, undergraduates, gender, study faculty*

Abstract

Background: *To effectively realise professional tasks, physical education (PE) teachers, physiotherapists and personal trainers should be convinced as to the fact that health depends on their behaviour and actions. The aim of the research was to investigate possible differences in health locus of control (HLC) between faculties, gender and type of physical activity.*

Material/Methods: *The subjects were 241 undergraduates (111 female and 130 male ones) from the faculty of physical education (n = 96), tourism and recreation (n = 74) and physiotherapy (n = 71), who practiced sports (n = 101) or were involved in recreational physical activity (n = 140). The Polish version of the Multidimensional Health Locus of Control Scale (MHLC; Wallston & DeVellis) was applied. Data on physical activity and academic status were collected with a survey prepared by the authors.*

Results: *Results show that Polish undergraduates presented a moderate level of a belief in personal control over their health. MHLC scores were only slightly dependent on students' gender, faculty and type of physical activity.*

Conclusions: *Comparisons with earlier research data show that greater differences in HLC appear among undergraduates of the same faculties but from different universities than among students from various faculties within one university.*

Word count: 3,375

Tables: 1

Figures: 2

References: 38

Received: July 2012

Accepted: September 2012

Published: October 2012

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Introduction

The notion of health locus of control is a type of the general locus of control concept introduced to psychology by Rotter [1]. He described two types of locus of control: internal and external. In the first case, an individual believes that he controls his own life and that what is happening to him is the result of his own actions. In the case of external locus of control it would be a result of a play of factors beyond the control of an individual. Research results show that persons with internal locus of control take decisions more independently, feel more responsible for their health and are more prone to be engaged in health-beneficial actions [2]. Due to the fact that general beliefs were weakly correlated to undertaking healthy behaviour, general locus of control was redefined into health locus of control (HLC) with internal HLC and external locus expressed in a form of beliefs in the impact of others (powerful others HLC) and a play of chance (chance HLC) [3].

Health locus of control is related to positive (beneficial to individual health: health promotion, prevention and recovery) and negative health-oriented actions (detrimental to individual health, posing a risk to health or disturbing the process of recovery), but relevant research results are inconsistent as to the character of their relationship [4]. Both no relationship and negative correlation was recorded for internal HLC and smoking [5, 6, 7]. Incoherent conclusions concern also the relationship between health locus of control and healthy diet, alcohol consumption and oral hygiene [5, 6, 9, 10].

Explaining these diverse research results, Wallston [11] suggested that internal HLC had a stronger impact on health-related behaviour of those who highly valued health. This conclusion was supported by the research on American college students [12]. In this research, the perceived health value was a better predictor of health-related behaviour than health locus of control. Internal HLC was correlated to positive health actions only for the group of students who highly valued health.

Part of this research ambiguity probably results from a very diverse group of health-related behaviours. This may include health endangering habits like smoking, positive action such as physical activity, preventive check-ups (e.g. breast cancer prevention) as well as alcohol consumption and culturally determined eating habits.

Research carried out in the Polish population revealed a correlation between external HLC and more frequent health preventive action (reporting for medical check-ups, following medical recommendations); internal HLC was correlated to better compliance with daily healthy behaviour [13]. The research on 457 students from the Podkarpacki region in the south of Poland did not reveal differences in health locus of control for smoking and non-smoking patients [14]. External HLC fostered negative health behaviour, such as the use of psychoactive substances by the adolescents [15]. No significant relationship was claimed for health locus of control and eating habits of overweight female adolescents [16]. Internal HLC was a positive predictor of dietetic restrictions (with persons of strong internal HLC higher dietetic restrictions is to be expected), while the impact of powerful others was a negative predictor of habitual overeating (female adolescents who perceive a high impact of others on their own health are expected to be less prone to overeating) [16].

Polish physical education (PE) teachers face nowadays a new significant challenge. Health education tasks in junior high and high schools were transferred to PE teachers. To effectively introduce a program of health education, PE teacher should be truly convinced that every individual is responsible for his or her own health.

Personal belief that an individual has a real impact on his or her own health seems to be important not only to the PE teachers involved in health education. It is equally important when encouraging pupils to leisure-time physical activity. Health locus of control also seems to be one of the factors influencing the level of professional engagement among physiotherapists. If he or she believes that results of the therapy depend to a great extent on the patient himself or herself, therapist's professional duties may be fulfilled more effectively. An interesting research question is whether PE students and tourism and recreation students becoming professionally involved in active lifestyle and health promotion and maintenance as well as physiotherapy students trained for the domain of health recovery are all a homogeneous group with regard to health locus of control.

Another interesting issue is the gender difference in health locus of control of this specific group of undergraduates. In the majority of research on the Polish population no significant differences in HLC were observed for males and females [17]. In a study on Japanese social workers no gender differences were found in internal and external HLC [18]. There were no apparent gender differences in a validation study of MHLC [19]. Canadian females and males students also did not differ in HLC [20]. In the group of students of the Podkarpacki region universities, a higher level of internal HLC was yet observed among men [14].

In adults it was observed that internal locus of control declines while the importance of both external factors increases with age [17]. Interestingly, a negative correlation between the age and internal locus of control was noticed also in the case of the Podkarpacki region students [14], while no significant relationships concerning the remaining dimensions of locus of control (powerful others and chance) were recorded. The place of residence was also an important variable differentiating locus of control. Stronger internal HLC was reported for adult inhabitants of big cities and stronger external HLC for rural regions inhabitants [17].

Moreover, the relationship between the type of physical activity and HLC is still an interesting field of investigation. Some research shows that regular physical activity is positively correlated with internal HLC and negatively correlated with the influence of others and a role of chance [2, 8, 10]. A large-scale cross-national study confirmed these relationships [21]. But there is also research evidence that there are no significant relationships between these variables [6]. Most students of Warsaw University of Physical Education are involved in regular physical exercises. Yet, some of them practice competitive sport and some exercise just for recreational reasons. According to Drabik [22], there are major differences between the approach to health in sport training and health training (as part of recreation). The aim of health training is to reach a designed level of fitness and physical capacity. It serves exclusively health promotion and is a process controlled by an individual. Sport training may improve one's health, but its key goals are quite different. High training loads create a risk of injuries and other health problems. In such a type of physical training an athlete is usually fully subordinated to decisions of a coach. We may therefore expect that being involved either in sport activity or recreational activity may result in a different type of HLC.

The aim of the research presented in this paper was to investigate possible differences in locus of control between faculties, gender and type of physical activity (competitive versus recreational).

Material and Methods

Participants

There were 241 undergraduates investigated in the research. They were full-time students from the faculty of physical education ($n = 96$; 39.8%), the faculty of tourism and recreation ($n=74$; 30.7%) and the faculty of physiotherapy ($n = 71$; 29.5%). The sample included 111 women (46.1%) and 130 men (53.9%). 101 respondents (41.9%) practiced sports (i.e. took part in sport competitions) and 140 respondents (58.1%) were involved in recreational physical activity (without elements of competition). The distribution of athletes and recreationists, and of men and women was similar in each of the three subgroups.

Methods

Multidimensional Health Locus of Control Scale (MHLC) of K.A. & B.S. Wallston and R. DeVellis was applied in the research. The Polish adaptation of this scale was prepared by Z. Juczyński [17]. The scale consists of 18 items concerning generalised expectations in three dimensions of health locus of control (6 items in each subscale): 1) Internal control – a belief that an individual has a power of controlling his own health; 2) Powerful others – a belief that our state of health is a result of others' actions, mainly of medical professionals; 3) Chance – belief that our health is dependent on a play of chance or on other external factors.

The scale has a sufficient level of reliability (Cronbach's alpha varied between 0.54 and 0.74; the test-retest correlation coefficient varied from 0.38 to 0.72 depending on the subscale and scale version). Scale's validity was defined through correlating internal locus of control with the self-efficacy level (0.32), self-esteem perception (0.32) and the perceived value of health (0.30). Differ-

ences observed for the group of patients and healthy respondents were also in compliance with the theoretical background of the research. This proves satisfactory validity of the research tool [17].

The authors' own survey was also used. This provided basic information about respondents (age, gender, faculty) and also concerned their leisure-time physical activity (frequency, duration, intensity, type: sport - recreation). Students who took part in sport competitions were numbered among athletes (and called "the sport activity group"). The sport and recreation groups did not differ significantly in terms of exercise frequency, duration and intensity.

Results

In order to find out differences between the investigated groups, univariate analysis of variance was applied. Three factors were analysed: faculty (PE, tourism and recreation, physiotherapy) x gender x type of physical activity (sport versus recreation). Table 1 shows M values and SD for factor groups, F value, p and η^2 for major effects.

Tab. 1. Multidimensional Health Locus of Control Scale scores (M±SD) and ANOVA (gender x faculty x type of physical activity) results

Variable	Women (n = 111)	Men (n = 130)	F; p; η^2	Physical Education (n = 96)	Tourism & Recreation (n = 74)	Physiotherapy (n = 71)	F; p; η^2	Recreational (n = 101)	Sports (n = 140)	F; p; η^2
Internal control	28.26±4.449	27.41±4.122	0.819; ns	27.65±4.744	27.96±3.873	27.85±4.098	0.196 ns	27.99±3.696	27.53±5.001	0.957 ns
Powerful others	16.41±5.199	16.44±4.642	0.062; ns	16.95±5.067	15.85±4.948	16.32±4.591	1.010; ns	16.14±5.026	16.82±4.706	0.340; ns
Chance	15.78±4.418	17.55±5.429	2.951; .087; .013	16.05±5.153	18.20±5.102	16.14±4.6095	2.877; .058; .025	17.23±5.090	16.06±4.955	0.851; ns

No significant major effect of gender, faculty and type of physical activity was observed for the internal control scale. The only noticed interaction concerned the faculty and gender factors (F = 3.236; p = 0.041; η^2 = 0.027). This relationship is presented in Figure 1. With the group of PE and tourism students, a stronger belief in personal influence on one's health was presented by women, while in the case of physiotherapy students this view was more popular among men. Yet, considering all participants together, no significant gender differences were observed for the internal control scale.

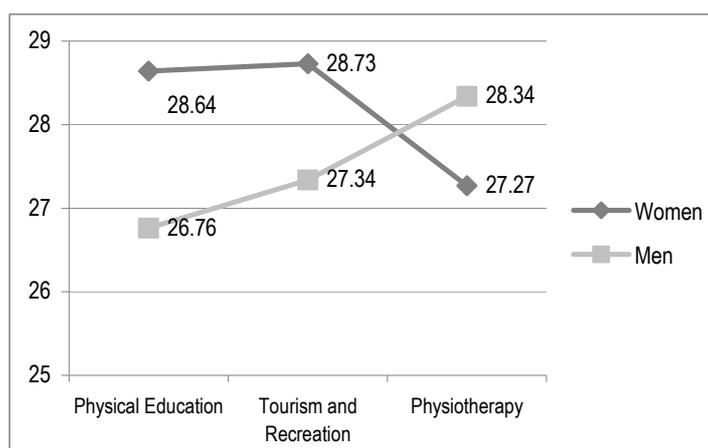


Fig. 1. Internal control according to gender and faculty

Interaction between gender and type of physical activity reached the level of tendency (F = 3.028; p = 0.083; η^2 = 0.013) (Figure 2). Male results were independent of the type of physical activity. In the case of women, those who were involved in recreational activities represented stronger internal locus of control than the group of women practicing competitive sports. The type

of physical activity did not differentiate results within the whole group. Interactions between the faculty and sport ($F = 0.763$) and faculty, gender and type of physical activity ($F = 0.118$) were not statistically significant.

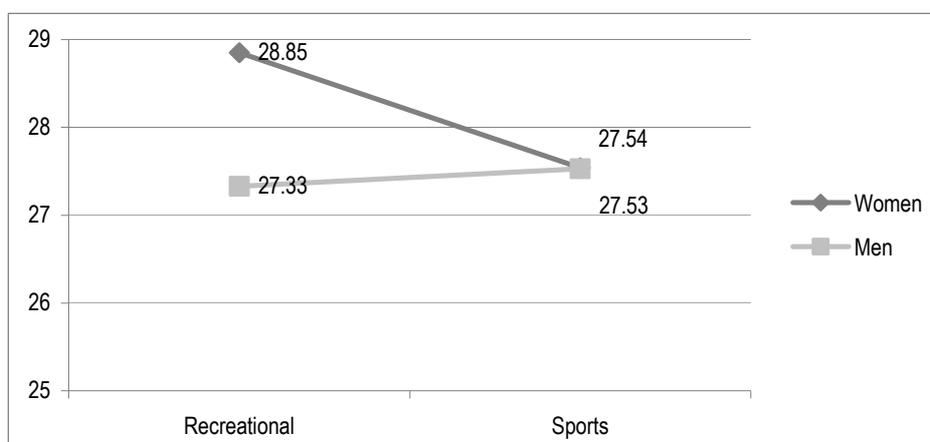


Fig. 2. Internal control according to gender and physical activity

No major interaction effect was recorded for the powerful others scale (faculty x gender: $F = 0.055$; faculty x type of physical activity: $F = 0.720$; gender x type of physical activity: $F = 1.674$; gender x faculty x type of physical activity: $F = 0.642$). We may therefore claim that Warsaw University of Physical Education students' beliefs on how their health is dependent on powerful others (medical staff mainly) is not dependent on gender, university faculty and type of physical activity.

The strength of beliefs in the play of chance was independent of the type of physical activity. Study faculty did differentiate the perception of chance on the level of tendency – stronger belief in the importance of this factor was represented among tourism and recreation students than among PE and physiotherapy students. The gender major effect also reached the level of a tendency. The investigated men were convinced more than women that their health depends on the fate. The type of physical activity did not differentiate results for the scale of chance. No significant interaction was observed also for the gender and faculty ($F = 0.539$), gender and the type of physical activity ($F = 0.562$) or faculty and the type of physical activity ($F = 0.314$). The second level interaction (gender x faculty x type of physical activity) was not statistically significant either ($F = 2.030$).

Discussion

Students of Warsaw University of Physical Education presented a moderate level of a belief in personal control over their health. This type of control seems especially important nowadays, when the major causes of death are not contagious diseases any more or those caused by parasites, but chronic cardiovascular conditions and cancer [23, 24]. In the latter case, psycho-sociological factors are more important [25]. They play a significant accompanying role in the process of illness development and in the process of recovery and rehabilitation. It is estimated that 53% of human health depends on the lifestyle, and therefore, health-related actions are of such importance [26]. It includes both positive actions (beneficial to individual health: health promotion, prevention and recovery) and negative ones (detrimental to individual health, posing a health hazard or disturbing the process of recovery) [4, 27].

Internal HLC is related to accepting more responsibility with regard to own health and to undertaking health-oriented behaviours. Investigation of Canadian students aged 14–20 [10] showed that respondents presenting internal HLC were more physically and psychologically healthy, more often took health prevention actions and used external social support for this purpose, were more physically active and had healthier eating habits. A large-scale cross-national study has demonstrated that positive health behaviours are positively associated with internal HLC and negatively associated with chance health locus [21]. Internal HCL influences health related behaviours directly and indirectly – this factor mediated the effect of personality traits on a diet strategy of Canadian

students [20]. Other research [28] shows that students' beliefs in the influence of others on their health was positively correlated with the level of depression, anxiety and hostility and recently experienced physical symptoms of illness, while believing in the major role of chance was additionally correlated with chronic illnesses symptoms and severe health problems. In the case of research on Australian students, external HLC was a significant predictor of the level of emotional distress [29]. Still other research shows that adults with internal HLC were reported to have a higher level of physical health, lower depression, anxiety, stress and psychotic symptoms [30, 31].

MHLC scale scores were only slightly dependent on students' gender. Men reached slightly higher scores in the chance scale, but gender differences did reach the level of tendency. No gender differences were observed for internal locus of control and powerful others. Within the group of PE and tourism and recreation students, women reached higher scores in the internal locus of controls scale. For the group of physiotherapists, higher scores in this scale were noticed in the case of men. Yet, for the whole sample of Warsaw University of Physical Education students no significant impact of gender for the internal locus of control scale was observed. In majority of research in Poland no significant differences in HLC were observed for males and females [17]. In the study of students of the Podkarpacki region universities, it was observed that men presented higher internal locus of control in comparison to women [14].

In general, locus of control gender differences are usually observed: men are more internally oriented than women [1, 32]. This difference was also observed among students [33-35], although not in all studies [36, 37]. The fact that women are more externally controlled than men is in agreement with the findings of psychology of gender. Given their social roles, women are prone to experience decreased control over their lives. They are discriminated in workplaces and in marriage and they experience the duality of being working women and mothers. The socialization to the feminine traditional social gender-role develops more external control [32].

The relationship between gender and type of physical activity did reach the level of tendency. The male group results are not dependent on the type of their physical activity. Female students who were involved in recreational physical activity presented stronger internal locus of control in comparison to competitive sport female practitioners. These results are difficult to interpret. Possible explanations can be found in different life experiences in both groups. This issue should be analysed more in further research.

HLC of Warsaw University of Physical Education students is very little dependent on study faculty. Slightly higher scores in the chance scale were reached by tourism and recreation students. Differences between faculties reached only the level of tendency. No faculty-related differences were observed for the internal locus of control and powerful others scales, although – due to the future professional role and a role in the treatment process – one might expect physiotherapy students to present a stronger belief in the role of medical staff. In the case of the above-mentioned Podkarpacki region research on students, the lowest score in internal locus of control scale was noticed in the group of nursing students (PE, tourism and obstetrics students had higher scores), while the lowest score in the chance scale was represented by the obstetrics students [14]. Interestingly, even though the two groups of investigated student were soon to join the health service professional staff, no differences were recorded for the powerful others scale.

It is still to be identified what the direction of the relationship between HLC and study faculty is. At the moment, we cannot tell whether students with previously established certain HLC chose certain faculties or their health locus of control changes during their study shifting toward internal locus of control. A strong personal belief concerning having an impact on individual health may be associated with choosing a career path related to the promotion of healthy behaviour. On the other hand, study curricula for PE, physiotherapy, and tourism and recreation should include elements reinforcing internal health locus of control. Positive feedback could be an explanation, but it is yet to be confirmed in further longitudinal research.

The type of physical activity also was not an important factor in HLC perception and it did not differentiate the investigated students of Warsaw University of Physical Education. Students who were involved in recreational physical activity and sport competition represented similar opinions on how their health depends on their own action, powerful others and the play of chance, even if

only in the first case the main aim of activity is to maintain or restore health. Research examining the relationship between HLC and physical activity has produced a mixed set of results [21]. In a representative sample of over 13,000 adults in Wales, Norman and colleagues [38] found weak correlations between HLC and exercise behaviours – leisure-time exercise behaviour was positively correlated with internal HLC and negatively correlated with powerful others and chance health locus of control. Athletes and recreationists – subgroups established in our study – differed only in the character of physical activity; the duration and frequency of exercise in both groups was similar. Perhaps this factor has decided about no significant difference in HLC.

Polish undergraduates present a moderate level of a belief in personal control over their health and their health locus of control is slightly differentiated according to students' gender, faculty and the type of physical activity. These conclusions are limited to one Polish university of physical education. It does not allow extending research conclusions to the total Polish population of PE, tourism and recreation and physiotherapy students. Further research on students from other Polish universities is needed.

Conclusion

Comparisons with earlier data of research on Polish students allow us to conclude that greater differences in HLC appear for undergraduates of the same faculties but from different universities than for students from various faculties within one university.

Acknowledgements

Preparation of this manuscript was supported by the grant No. 1.56 from Jozef Pilsudski University of Physical Education in Warsaw, Poland.

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