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Association of Health Risk Perception and Physical Activity among Adolescents

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ASOCIACIÓN DE LA PERCEPCIÓN DEL RIESGO PARA LA SALUD Y LA ACTIVIDAD FÍSICA ENTRE LOS ADOLESCENTES

KEYWORDS: Health risk perception, perception bias, physical activity, adolescent.

ABSTRACT: The current study was to identify health risk perceptions and perception bias in adolescents. Moreover, the study investigated the relationship of risk perceptions with physical activity. A total of 625 adolescents (314 male and 311 female) were voluntarily participated from the Nowon district, geographically located in northern Seoul. In order to measure health risk perceptions a Korean version of self-other risk judgments profile and leisure time exercise questionnaire were used. Results indicated that the study participants, regardless of gender and age, tend to underestimate their vulnerability to the majority of health risk events. The finding revealed that there were significant differences in perception bias toward to health risks by gender and the physical activity level. Furthermore, it is revealed that risk perceptions are directly associated with physical activity participation. The significance of this study lies in the fact that it made a unique contribution to the existing knowledge in exercise and health psychology on relationship between risk perceptions and physical activity.

It is well established that physical activity is one of the significant health protective behaviors to prevention and reduction of many health problems (Annesi, Faigenbaum, Smith, Unruh and Hamilton, 2007). In spite of the benefits of physical activity, the majority of adolescents have failed to participate in physical activity on a regular basis. In the last decade, it has become increasingly important to identify ways to promote physical activity for health and wellness among adolescents in western societies (Woods, Mutrie, and Scott, 2002). In this regard, variables that affect adolescent physical activity should be understood with the psychological behavioral domains (Deforche, De Bourdeaudhuij, Tanghe, Hills, and De Bode, 2004). Risk perception has been commonly studied in Western countries as key psychological variables influencing adolescent physical activity behavior (Stephan, Boiche, Trouilloud, Deroche, and Sarrazin, 2011). Risk perception is defined as a belief that one is susceptible to future negative outcomes and unprotected from a dangerous situation Weinstein, 1982). Given these concepts related to the risk construct, a ready explanation for why people take risks is that they ignore or at least greatly underestimate the likelihood of negative outcomes. That is, it is generally assumed that a large volume of people tend to recognize their chances of the risks as lower than those of other people in the same age (Weinstein, 1982). Many studies have attempted to identify how people perceive their own health risk and compare it with other's (Jones, Gell, Roth, Scholes, and LaCroix, 2015). Lee, Lemyre, Mercier, Bouchard, and Krewski (2005) indicated that people generally judged themselves as less vulnerable than other from various health risks such as pollution, drugs, diabetes, and cancer. In addition, Lapsley and Hill (2009) investigated subjective invulnerability and perception bias in drinking,

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smoking, and illegal drug use among college students, and found that male students scored higher on both danger invulnerability and perception bias than female counterparts.

In exercise psychology it is important to notice that our recent efforts have been directed toward risk perceptions that might be significant for initiating and promoting physical activity because perceptions toward health risks can primarily affect initiating or maintaining positive health behavior (i.e., physical activity) (Connolly et al., 2016; Stephan et al., 2011). Several studies have indicated that risk perception plays an important role for motivating people to engage in physical activity as they feel more susceptible to certain diseases associated with physical inactivity, such as obesity, cardiovascular disease, and diabetes (Renner, Spivak, Kwon, and Schwarzer, 2007; Schwarzer, 2008)

Limited research has been conducted into the relationship between physical activity and risk perceptions among adolescents, and, as indicated above, has been primarily undertaken in western societies; such research is lacking in other cultures, such as Korea, where risk perceptions in the physical activity research has only recently gained attention. Therefore, the current study was to identify health risk perceptions and perception bias in adolescents. Moreover, the study investigated the relationship of risk perceptions with physical activity.

Method

Participants

A total of 625 adolescents (314 males and 311 females, *Mage* = 14.76yrs, *SD* = 1.10) ranging from 7th to 9th grade who attended junior high schools in Seoul, Korea were voluntarily participated in a survey designed to assess their risk perception and physical activity. 640 adolescents and their parents gave their consent to participate in the study. Of those, 625 (97.7%) of the participants completed the survey form. This study was approved by the Research Committee of Seoul National University of Science and Technology.

Instruments

The self and risk judgments profile developed by Whalen and the colleagues (1994) was revised into Korean to measure participants' health risk perceptions (Kim, 2007). This measure has three subscales with 25 negative health-risk events individuals might experience in their lifetime (9 items for general health, 9 items for lifestyle, and 7 items for environment). The study participants were asked to indicate how they perceived their likelihood of encountering various health risks (i.e., cancer and smoking etc.) with 5-point response rates range from -2 (very unlikely) to 2 (very likely). The alpha reliabilities by domain were .89 for general health, .90 for lifestyle, and .84 for environment.

A leisure time physical activity scale developed by Godin and Shephard (1985) was adapted for Korea (Kim and Kosma, 2013), and used in the present study to assess habitual weekly physical activity behaviors. Participants reported how many times during a typical week they took part in strenuous (e.g., running, vigorous cycling), moderate (e.g., fast walking, easy swim), and mild (e.g., yoga, golf) physical activity for more than 15 minutes. Scores were calculated by multiplying each reported activity session by its metabolic equivalent (MET) value and adding the result [MET score = (strenuous × 9) + (moderate × 5) + (mild × 3)]. The two-week, test-retest Cronbach's α reliability coefficient for the Korean version of the LTEQ was .86.

Data analysis

Means and standard deviations were presented to identify the differences between self and other health risk perceptions in adolescents. Univariate and multivariate *F*-test were carried out to investigate the differences in health risk perceptions between male and female adolescents. In addition, regression analysis was performed to test an effect of risk perceptions in explaining physical activity.

Results

Adolescents' health risk perceptions

Table 1 shows that adolescents tend to underestimate their vulnerability to the majority of health risk events. In the self-risk events , adolescents perceived themselves as not being vulnerable to most health risks (i.e., 'illegal drugs', 'AIDS', and 'homicide etc.), meanwhile they perceived themselves as being vulnerable to 'flu', 'excessive stress', 'tooth decay', and 'air pollution'. In addition, the findings indicated that adolescents have significant perception bias for all health risk events. In specific, among the three risk domains the lifestyle domain showed the highest perception bias (t = -19.59, p<.001).

Differences in risk perceptions by gender and physical activity

The t-test was carried out to identify the differences in risk perceptions between male and female adolescents and between regular exercisers and non-regular exercisers (see Table 2). Overall, in health risk events there were significant mean differences between male and female adolescents in all sub health risk domains (t = -19.59 for lifestyle, -13.66 for general health, -14.37 for environment, all p<.001). In addition, adolescents who are not regularly exercising have a tendency to perceive that their likelihood of health risks are significantly lower than their counterparts who are regularly exercising (t = 24.61 for lifestyle, 9.10 for general health, all p<.001).

Discussion

The current study indicates that Korean adolescents perceived their own chances of experiencing health risks would be less than those of other people in the same age. This finding agrees with previous studies which indicate that many individuals engage in risky behaviors in part because they underestimate the likelihood that they will experience health problems, and such underestimates have been referred to as perception bias (Kim, 2007; Nezlek and Zebrowski, 2001). As for underestimation and perception bias, it is plausible to hold view that people have egocentric dispositions and either underestimate or ignore the risks. This underestimation has been attributed to a personal fable, which posits that people perceive themselves as being invulnerable and somewhat immune to risks.

The current findings indicated that female adolescents exhibited greater unrealistic perception than their male counterparts. Specially, females perceived their chances as significantly lower than those of male in the same age group at almost all of health risks. These results were supported by many previous studies (Bassett and Martin Ginis, 2011; Renner et al., 2007). It is plausible to explain that gender differences in risk perception could be at least partially attributed to gender socialization, the fact that women have less power and control. In other words, males are typically assumed to frequently experiment various risk behaviors compared to females due to traditional social role and more conforming behavior in our society (Davidson and Freudenburg, 1996; Finucane, Slovic, Mertz, Flynn, and Satterfield, 2000). However, this is not concretely generalized to support in previous studies. Therefore, it is suggested that further research is needed to identify realistic and unrealistic perception mechanism for a large number of people in the different demographic and socioeconomic backgrounds. The significance of this study lies in the fact that it made a unique contribution to the existing knowledge about the relationship of physical activity with risk perceptions. Its strength was in the sample which allowed data to be explored on a hitherto relatively unstudied ethnic group.

	Self-risk	Other-risk	
	M(SD)	*M(SD)*	*t*
General health	-.29(.75)	.05(.74)	-13.66**
Bone fracture	-.20(1.19)	.10(1.13)	-6.42*
AIDS	-1.55(1.01)	-.91(1.13)	13.32*
Cancer	-.26(1.14)	.03(1.12)	-6.72*
Diabetes	-.33(1.20)	.06(1.06)	8.28*
Severe car accident	-.42(1.14)	-.08(1.06)	-8.61*
Heart disease	-.31(1.18)	.04(1.05)	7.84*
Tooth decay	.28(1.14)	.45(1.01)	-3.66*
Flu	.51(1.17)	.65(1.01)	3.17*
Depression	-.30(1.51)	.17(1.06)	-7.79*
Lifestyle	-.60(.74)	-.01(.76)	-19.59**
Smoking	-.71(1.58)	.13(1.24)	-12.85*
Illegal Drug	-1.66(.84)	-1.14(1.07)	11.94*
Heavy drinking	-.22(1.47)	.38(1.21)	-10.05*
Junk food	-.59(1.27)	-.12(1.23)	10.34*
Physical inactivity	.06(1.27)	.44(1.06)	-6.49*
Obesity	-.31(1.36)	.31(1.05)	10.38*
Suicide	-1.39(.97)	-.68(1.10)	-15.37*
Excessive stress	.02(1.26)	.37(1.16)	15.37*
Smartphone addiction	-.20(1.34)	.26(1.20)	8.90*
Environment	-.64(.87)	-.29(.90)	-14.37**
Toxic waste	-.76(1.16)	-.48(1.18)	-7.49*
Chemicals in food	-.47(1.26)	-.23(1.21)	6.21*

Homicide	-1.23(1.03)	-.86(1.14)	-9.26*
Water pollution	-.59(1.15)	-.36(1.26)	6.90*
Fire	-.55(1.10)	-.30(1.06)	-7.50*
Radioactive pollution	-.88(1.15)	-.65(1.13)	6.00*
Air pollution	.19(1.26)	.27(1.19)	-7.04

**p<0.01; **p<0.001*

Table 1. Differences in means and standard deviations between self and other health risk perceptions

	Gender			Physical Activity		
	Male	Female		Regular Exerciser	Non-regular Exerciser	
	M(SD)	*M(SD)*	*T*	*M(SD)*	*M(SD)*	*t*
General health	-.36(.77)	-.22(.73)	-10.32***	-.27(.65)	-.47(.49)	9.10**
Bone fracture	-.18(1.23)	-.25(1.17)	-4.76**	-.32(1.05)	-.23(1.01)	.65
AIDS	-1.51(.98)	-1.58(1.06)	11.12***	-.14(1.01)	-.15(.99)	.39
Cancer	-.25(1.19)	-.31(1.10)	-4.91***	-.27(.95)	-.60(1.17)	8.08***
Diabetes	-.32(1.27)	-.39(1.14)	5.71***	-.27(.96)	-.79(1.33)	17.47***
Severe car accident	-.50(1.17)	-.38(1.10)	-6.55***	-.38(.92)	-.16(.78)	5.45*
Heart disease	-.27(1.12)	-.40(1.16)	5.19***	-.17(.99)	-.67(1.38)	15.04***
Tooth decay	.25(1.10)	.33(1.18)	-2.07*	-1.88(1.03	-.09(1.18)	.09
Flu	.37(1.18)	.61(1.15)	2.12*	-.43(1.08)	-.22(1.09)	3.63
Depression	-.53(1.68)	-.06(1.22)	-6.05***	-.42(.59)	-.74(1.89)	14.323***
Lifestyle	-.55(73)	-.63(.74)	-14.91***	-.14(.73)	-.69(1.36)	24.61***
Smoking	-.14(1.65)	-1.30(1.25)	4.90**	-.40(.90)	-.69(1.43)	.50
Illegal Drug	-1.53(1.00)	-1.76(.68)	-7.99***	-.38(1.29)	-.33(.80)	3.08
Heavy drinking	.17(1.42)	-.64(1.40)	4.37**	-.45(.95)	-.65(1.50)	4.23*
Junk food	-.55(1.26)	-.62(1.30)	-7.11***	-.13(1.16)	-.68(1.02)	30.68***
Physical inactivity	-.10(1.24)	.32(1.27)	6.27***	-.36(1.34)	-.89(1.33)	16.20***
Obesity	-.48(1.32)	-.12(1.36)	-9.06***	-.62(1.02)	-.99(1.51)	2.32
Suicide	-1.42(1.00)	-1.38(.94)	10.83***	-.34(1.11)	-.79(1.02)	1.87
Excessive stress	-.01(1.25)	.05(1.27)	-4.73**	-.58(1.16)	-.51(1.09)	1.43
Smartphone addiction	-.18(1.34)	-.17(1.36)	7.47***	-.34(.53)	-.73(1.09)	.42
Environment	-.63(.88)	-.64(.86)	-9.45***	-.30(.64)	-.31(.90)	2.86
Toxic waste	-.73(1.17)	-.81(1.16)	-4.04**	-.30(.97)	-.48(.89)	.51
Chemicals in food	-.47(1.22)	-.50(1.28)	4.00**	-.40(.98)	-.38(.90)	.54
Homicide	-1.20(1.07)	-1.25(1.00)	5.83***	-.38(.73)	-.48(.97)	3.48
Water pollution	-.50(1.20)	-.70(1.10)	4.02***	-.32(.77)	-.22(.82)	2.10
Fire	-.56(1.09)	-.56(1.28)	-5.33***	-.35(.89)	-.21(.95)	1.72
Radioactive pollution	-1.00(1.234)	-.76(1.17)	4.75**	-.38(.95)	-.25(.96)	1.51
Air pollution	.15(1.29)	.26(1.25)	-1.38	-1.77	-.06(1.09)	1.11

**p<0.05; **p<0.01, ***p<0.001*

Table 2. Health risk perceptions by gender and physical activit

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PALABRAS CLAVE/KEYWORDS: Percepción del riesgo para la salud, sesgo de percepción, actividad física, adolescente.

RESUMEN/ABSTRACT: El presente estudio tuvo como objetivo identificar las percepciones del riesgo para la salud y el sesgo de percepción en adolescentes. Además, el estudio investigó la relación entre las percepciones de riesgo y la actividad física. De forma voluntaria, participaron un total de 625 adolescentes (314 hombres y 311 mujeres) del distrito de Nowon, geográficamente ubicado en

el norte de Seúl. Con el fin de medir las percepciones de riesgo sobre la salud se utilizó una versión coreana del perfil de juicios de riesgo *self-other* y el cuestionario de ejercicio de tiempo libre. Los resultados indicaron que los participantes del estudio, independientemente del sexo y la edad, tienden a subestimar su vulnerabilidad a la mayoría de los. El hallazgo reveló que había diferencias significativas en el sesgo de percepción hacia los riesgos de salud por género y el nivel de actividad física. Además, se revela que las percepciones de riesgo están directamente asociadas con la participación en la actividad física. La importancia de este estudio reside en el hecho de que hizo una contribución única al conocimiento existente en el ejercicio y la psicología de la salud sobre la relación entre las percepciones de riesgo y la actividad física.

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