Self-efficacy as a moderator in the relationship between physical activity and perceived social and physical environmental factors in older adolescents

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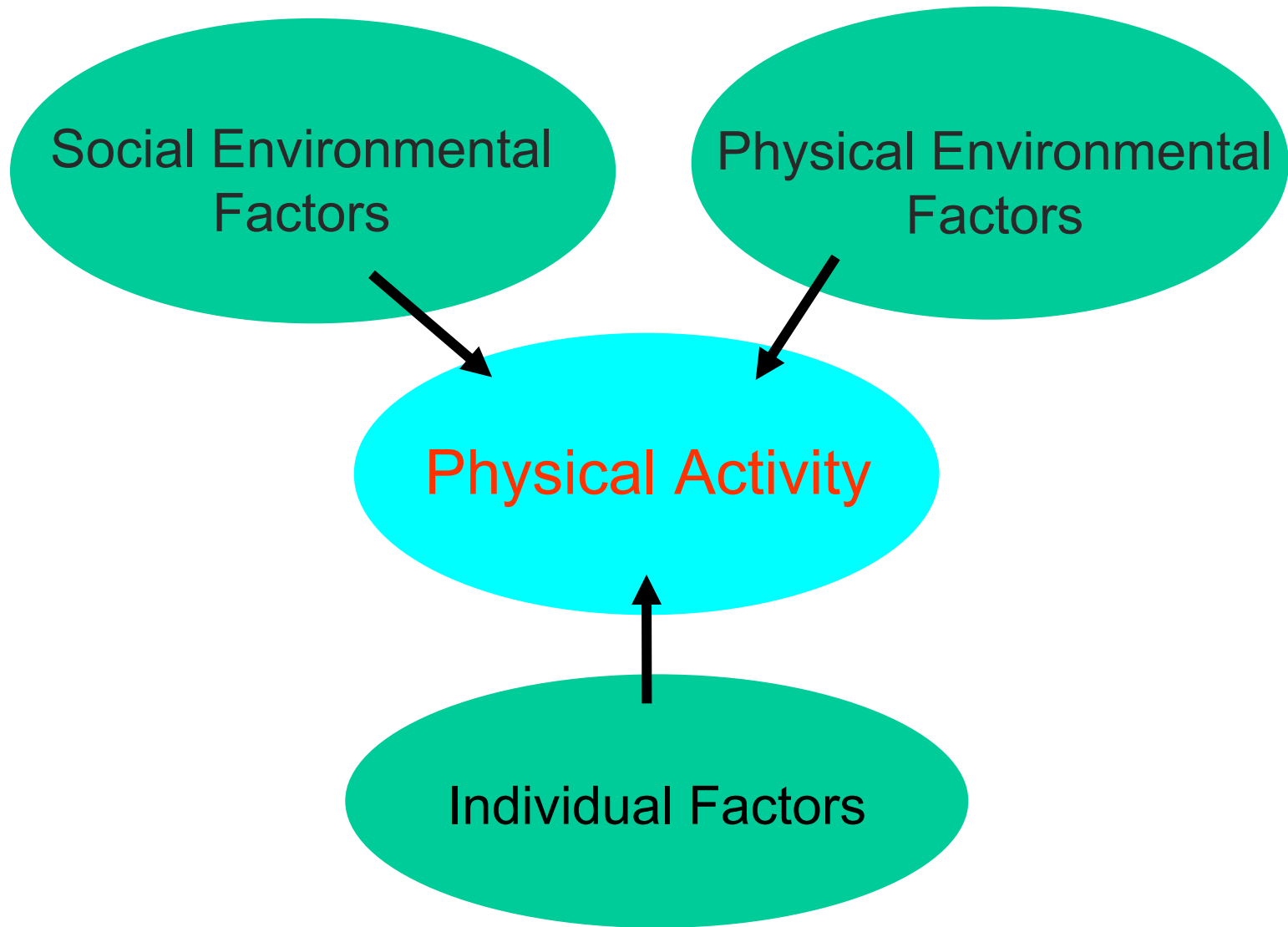Department of Human Biometrics and Biomechanics

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Background

- Adolescents not engaged in recommended levels of physical activity

- During adolescence: steep decline in physical activity

- Which factors influence adolescents' physical activity behaviour?

Ecological Model

Social Environmental Factors

Physical Environmental Factors

Physical Activity

Individual Factors

INTRODUCTION

Purpose

1. To determine if perceptions of the social and physical environment are associated with physical activity in Belgian youngsters

2. To investigate if this relationship is moderated by self-efficacy

Subjects

- 1445 youngsters
- 20 randomly selected general secondary schools in East- and West-Flanders
- 17.4 ± 0.6 years old
- 96% Belgian nationality
- 44% boys
- 34% of mothers and 41% of fathers had no higher education
  (only primary/secondary school education)

Questionnaires

Physical Activity

Flemish Physical Activity Questionnaire (Philippaerts, 2006): 4 indices

- Total Physical Activity (1) =
  Active Transportation (2) + Sports Participation (3)

- Leisure Time Physical Activity (4)

Self-efficacy

- Self-efficacy towards 14 potentially difficult situations (Chronbach's apha = 0.091)

- 5-point Likert Scale

(Deforche et al, 2004; De Bourdeaudhuij et al., 2005)

Social environmental factors

- Modeling of family and friends
- Social support of family and friends

- 5-point Likert Scale

(Deforche et al, 2004; De Bourdeaudhuij et al., 2005)

Physical environmental factors

Flemish Neighborhood Environmental Walkability Scale questionnaire (De Bourdeaudhuij et al., 2003)

- land use mix diversity
- access to neighborhood services
- connectivity of the street network
- availability/quality of sidewalks/bike lanes
- neighborhood aesthetics
- perceived safety from traffic and crime
- PA equipment in home environment
- electronic devices in bedroom
- access to PA facilities
- satisfaction with neighborhood services
- emotional satisfaction with neighborhood

Statistical analyses

- Descriptive Statistics (SPPS 15.0 for windows)

- 2.7%, 5.5%, 2.5% and 1.8% of the variance in total PA, active transportation, sport participation and leisure time PA was due to differences between schools (variance component analysis)

- Moderated multilevel regression analysis was used to examine the association between PA and possible correlates (MLwiN version 2.02)

- In case of significant interactions between self-efficacy and environmental variables: separate models fitted for youngsters with high (score>3) versus low (score≤3) self-efficacy

- Statistical significance was set at 0.05

Descriptive Statistics

Min/day	Low self-efficacy	High self-efficacy
Total PA	79 ± 44	122 ± 57
Active Transport	46 ± 29	60 ± 36
Sports	32 ± 26	62 ± 40
Leisure Time PA	49 ± 38	85 ± 50

Correlates of total physical activity

	β (SE)
Self-efficacy	0.134 (0.006)***
Physical Environmental factors	
Connectivity	0.018 (0.011)*
Neighborhood aesthetics	0.026 (0.012)**
Perceived safety from traffic	0.025 (0.015)*
Perceived safety from crime	-0.025 (0.011)**
Physical activity equipment in home environment	0.007 (0.002)***
Electronic devices in bedroom	-0.008 (0.003)**
Access to physical activity facilities	-0.021 (0.008)**
Satisfaction with neighborhood services	-0.015 (0.005)***
Emotional satisfaction with neighborhood	0.021 (0.006)***

RESULTS

	β (SE)
Social Environmental factors	
Modeling family	0.022 (0.005)***
Modeling friends	0.030 (0.007)***
Social support family	0.061 (0.005)***
Social support friends	0.015 (0.006)**
Interactions between self-efficacy and environmental factors	
Self-efficacy x modeling friends	-0.011 (0.007)*
Self-efficacy x connectivity	0.020 (0.012)*
Self-efficacy x safety from crime	0.037 (0.013)**
Self-efficacy x access to PA facilities	0.020 (0.009)**

Correlates of active transportation

	β (SE)
Self-efficacy	0.068 (0.009)***
Physical Environmental factors	
Neighborhood aesthetics	0.032 (0.014)**
Perceived safety from crime	-0.023 (0.014)*
Electronic devices in bedroom	-0.007 (0.004)*
Access to physical activity facilities	-0.022 (0.010)**
Emotional satisfaction with neighborhood	0.020 (0.007)**

<u>Remarkable:</u> land use mix diversity, connectivity, safety from traffic, availability and quality of sidewalks and bike lanes were no sign correlates

RESULTS

	β (SE)
Social Environmental factors	
Modeling family	0.029 (0.007)***
Modeling friends	0.018 (0.010)*
Social support family	0.028 (0.007)***
Interactions between self-efficacy and environmental factors	
Self-efficacy x safety from crime	0.043 (0.016)**
Self-efficacy x access to PA facilities	0.019 (0.012)*
Self-efficacy x satisfaction with neighborhood services	-0.010 (0.006)*

Correlates of sport participation

	β (SE)
Self-efficacy	0.198 (0.008)***
Physical Environmental factors	
Perceived safety from traffic	0.051 (0.018)**
Physical activity equipment in home environment	0.015 (0.003)***
Electronic devices in bedroom	-0.010 (0.004)**
Access to physical activity facilities	-0.019 (0.011)*
Satisfaction with neighborhood services	-0.014 (0.006)**
Social Environmental factors	
Modeling family	0.015 (0.007)*
Modeling friends	0.039 (0.010)***
Social support family	0.025 (0.008)***
Social support friends	0.100 (0.007)***

Correlates of leisure time physical activity

	β (SE)
Self-efficacy	0.178 (0.009)***
Physical Environmental factors	
Availability and quality of sidewalks	0.022 (0.012)*
Neighborhood aesthetics	0.044 (0.016)**
Perceived safety from crime	-0.028 (0.015)*
Physical activity equipment in home environment	0.011 (0.003)***
Electronic devices in bedroom	-0.008 (0.005)*
Access to physical activity facilities	-024 (0.011)**
Satisfaction with neighborhood services	-0.017 (0.007)**
Emotional satisfaction with neighborhood	0.019 (0.008)**

RESULTS

RESULTS

	β (SE)
Social Environmental factors	
Modeling family	0.022 (0.007)***
Modeling friends	0.036 (0.010)***
Social support family	0.024 (0.008)***
Social support friends	0.089 (0.007)***
Interactions between self-efficacy and environmental factors	
Self-efficacy x neighborhood aesthetics	-0.032 (0.017)*
Self-efficacy x safety from crime	0.044 (0.018)**
Self-efficacy x access to PA facilities	0.025 (0.012)*

Most consistent environmental correlates in Belgian older adolescents:

Social environmental factors:
- modeling family & friends
- social support family & friends

Physical environmental factors:
- neighborhood aesthetics
- perceived safety from crime
- PA equipment in home environment
- electronic devices in bedroom
- access to PA facilities
- satisfaction with neighborhood services
- emotional satisfaction with neighborhood

CONCLUSIONS

Most consisting finding regarding moderating effect of self-efficacy:

- Perceived safety from crime and access to PA facilities: only in youngsters with <u>lower</u> self-efficacy

General conclusions:

- Correlates quite consistent with international studies
- More supportive environments: potential to affect Belgian adolescents with high ánd low self-efficacy
- Reducing crime and increasing availability of PA facilities might help adolescents with lower levels of self-efficacy to overcome PA barriers

Thank your for your attention!

Any suggestions, remarks or questions?