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Autonomous Motivation Mediates the Relation between Goals for Physical Activity and Physical Activity Behavior in Adolescents

Michael J. Duncan, Emma, L. J. Eyre, Elizabeth Bryant

Coventry University, UK

Jan Seghers

KU Leuven, Belgium

Niall Galbraith, Alan M. Nevill

University of Wolverhampton, UK

Running Head: Goal Content for Physical Activity

Corresponding Author: Michael J Duncan, Centre for Applied Biological and Exercise Sciences, Coventry University, Priory Street, Coventry, UK, CV1 5FB. Tel +44247666813. E-mail:s.birch@coventry.ac.uk

Abstract

Five hundred and forty four children (Mean age ± S.D. = 14.2 ± .94 years) completed self-report measures of PA goal content, behavioral regulations and PA behavior. Body mass index was determined from height and mass. The indirect effect of intrinsic goal content on PA was statistically significant via autonomous (*b*=162.27; 95% CI [89.73, 244.70]), but not controlled motivation (*b*=5.30; 95% CI [-39.05, 45.16]). The indirect effect of extrinsic goal content on PA was statistically significant via autonomous (*b*=106.25; 95% CI [63.74, 159.13]) but not controlled motivation (*b*=17.28; 95% CI [-31.76, 70.21]). Weight status did not alter these findings.

Keywords: Goal Content Theory; Self-Determination Theory; Physical Activity Behaviour; Motivation

Introduction

The impact of regular physical activity (PA) on health including cardiovascular disease risk, obesity, type II diabetes, and psychological well-being is well documented (Reiner, Niemann, Jekauc, & Woll, 2013). There is also considerable emphasis on promoting PA in children and adolescents for health benefit with evidence suggesting that PA habits developed between the ages of 9 and 18 years of age track into adulthood (Telama, Yang, Viikari, Valimaki, Wanne, & Raitakari, 2005). Despite this, European data suggest the greatest decline in PA can be observed between the ages of 12 and 16 years (Telama, & Yang, 2000; VanMechelen, Twisk, Post, Snel, & Kemper, 2000).

It is therefore important to better understand the factors that are associated with sustained engagement in PA during adolescence to effectively promote and encourage lifelong participation in PA. One relevant factor which has previously been shown to impact PA, the quality of motivation to engage in PA, may be crucial in developing the scientific understanding of PA habits in adolescents (Seghers, Vissers, Rutten, Decroos, & Boen, 2014). The Self-Determination Theory (SDT) (Deci, & Ryan, 2000) provides a robust theoretical framework that has been previously used to understand associations between the quality of motivation and PA in children and adolescents (Ntoumanis, 2012). The purpose of this current study was to assess the quality of motivation towards PA in terms of goal content and behavioural regulation from SDT in a sample of British adolescents. In the current context understanding the goal content and behavioural regulation towards PA will provide understanding of the ‘what’ of motivation to engage in PA as well as the

'why' of motivation to engage in PA (Deci, & Ryan, 2000). Whereas behavioural regulations relate to why a person may engage in a behavior, either for autonomous reasons (e.g., undertaking a behavior as it has an intrinsic benefit such as it being pleasurable) or for controlled reasons (e.g., undertaking a behavior because of pressure to do so such as coercion or avoiding guilt), goal content refers to what the person undertakes the behavior for, either for intrinsic goals (e.g., to develop skills or enhance health) or extrinsic goals (e.g., to look more attractive or gain external recognition).

The SDT has been used widely to explain motivations to engage in exercise in several populations including children and younger adolescents (Gillison, Standage, & Skevington, 2006; Seghers, et al., 2014; Vierling, Standage, & Treasure, 2007) and a full description of SDT in PA contexts can be found elsewhere (Standage, & Ryan, 2012). In brief, SDT postulates that the reasons why individuals persist with or refrain from sport and PA can be conceptualized along a continuum of self-determined motives that differ qualitatively in the perceived origin or causality of action (Chatzisarantis, Hagger, Biddle, Smith, & Wang, 2003). SDT assumes that the positive behavioural effects of autonomous motivation are important throughout the lifespan but it is possible that certain forms of motivation may be more salient than others at different life stages (e.g., in adolescents compared to older adults) (Seghers, et al., 2014). It is also possible that motivation towards PA differs as children move into and through adolescence due to changes in independent mobility and control over behavior that increase in adolescence. The SDT also suggests that controlled forms of motivation can elicit desired behavior at least in the short term (Deci, & Ryan, 2000). Previous research has consistently reported null correlations between controlled motivation and objectively assessed PA (Aelterman,

Vansteenkiste, Van Keer, Van den Berghe, De Meyer, & Haerens, 2012; Sebire, Jago, Fox, Edwards, & Thompson, 2013).

In understanding why an individual might undertake PA it is also important to determine what an individual hopes to gain from participation (i.e., the 'what' of motivation, e.g. to develop skills). Goal Content Theory (GCT), a mini theory within the larger SDT framework suggests that goals can be classified as intrinsic or extrinsic (Deci, & Ryan, 2000) and there is evidence that being physically active in the service of intrinsic or extrinsic goals yields different behavioral outcomes (Vansteenkiste, Soenens, & Lens, 2007). Despite this, SDT assumes goal content and behavioural regulation are related but theoretically distinct components of motivation (Deci, & Ryan, 2000). With such a circumstance the content and regulation of goal pursuits can be empirically crossed (Vansteenkiste, Niemiec, & Soenens, 2010), i.e., both intrinsic and extrinsic goals can be pursued for either autonomous or controlled reasons.

Prior studies in children and adolescents (Sebire, Standage, & Vansteenkiste 2011; Sebire, Standage, & Vansteenkiste, 2009) have shown that goal content has a positive indirect effect on physical activity behavior through autonomous motivation. This is coupled with prior work showing a positive effect of autonomous motivation on leisure time PA and daily PA volume (Standage, & Ryan, 2012; Vierling et al., 2007). To date, few studies have tested the motivational sequence aligned with SDT and GCT where goals for PA predict PA behavior through behavioural regulation. This is particularly the case for children and adolescents. Few prior studies have also considered the impact of weight status on this motivational sequence. This is despite overweight and obesity having direct links to pursuit of exercise for 'image' related reasons (Schwartz, & Brownell, 2004).

One recent study by Seghers, et al. (2014) has however considered this topic in a large sample of 10 to 12 year old children. This work built on prior studies (e.g., Gillison, Standage, & Skevington, 2006) by using more valid measures of PA based goal content. Using structural equation modeling they reported a motivational sequence whereby intrinsic goals for leisure time PA predicted children's PA behavior through autonomous motivation (Seghers, et al., 2014). Seghers, et al. (2014) also reported that their proposed model was invariant across BMI groups, pubertal status and gender and concluded that emphasis should be placed on intrinsic goals for PA in 10 to 12 year old children. The study by Seghers, et al. (2014) is useful in that it establishes a motivational sequence where goals influence PA behavior via behavioural regulation. However, Seghers, et al. (2014) noted that, due to the age range of their sample, many physical activities are predetermined (e.g., children are scheduled to go to an after school sports club where a coach tells them what to do). As a consequence the chance for motivational differences to manifest in PA behavior are limited (Seghers, et al., 2014). It has also been reported that as children move through adolescence there are increases in independent mobility and changes in actual and perceived control over their behavior (Carver, Timperio, Hesketh, Ridgers, Salmon, Crawford, 2011). Adolescence is also a period where peer relations and socio cultural pressures become increasingly important for attitudes and behaviours (McCabe, Ricciardelli, & Finemore, 2002) which may result in fluctuations in both the goal content and behavioral regulation for PA through adolescence. As certain forms of motivation may be more salient as individuals age (Seghers, et al., 2014) and as adolescence is a period of biological changes in body composition (increased fat storage for females, increased muscle mass for males), understanding motivation towards PA in terms of goal content and behavioural

regulation is important in relation to targeting interventions and changing instructional practices (e.g., in Physical Education) to increase the possibility of lifelong PA. It is therefore potentially important to examine an older age group than that examined by Seghers, et al. (2014). The present study sought to build on that of Seghers, et al. (2014) by exploring differences in goal content for physical activity and behavioral regulations towards physical activity between gender and weight status groups whilst accounting for habitual physical activity in a sample of 13 to 16 year old British children.

Method

Participants

Following institutional ethics board approval and parental and child informed consent 544 secondary school children (324 boys, 220 girls, 92% Caucasian, 3% Black/African Caribbean, 5% South Asian) aged 13 to 16 years (Mean age ± S.D. = 14.2 ± .94 years) participated in this study. Data was collected from five schools in Warwickshire, UK, one from each quintile of deprivation based on electoral ward data. This process was employed to provide a spread of participants across the range of deprivation found within the county of Warwickshire whereby schools were stratified in quintiles ranging from least to most deprived with one school from each quintile participating in the study. Children within each school volunteered to participate from a total possible sample population of 572 children. Twenty eight children (all girls) did not consent to participate or did not provide full completed data sets and were therefore excluded from analysis. It is difficult to ascertain why only girls did not consent or provide full data although post data collection consultation

with the various schools involved suggested that some participants did not consent to participate as they study required them to have their body mass determined.

Procedures

All assessment took place during a scheduled physical education sessions. Children were provided with a short introduction to the study and were then asked to complete the questionnaires described below. The questionnaires were administered by a research assistant in small groups (n=4 to 6) to ensure they were completed correctly and so that the schoolchildren could ask any questions or be prompted if required. Once the questionnaires were completed the participants then undertook assessment of height, mass and waist circumference with a research assistant.

Measures

Physical Activity Behavior

Physical activity was assessed using the International Physical Activity Questionnaire (IPAQ, 2005) long form, as this has previously been used to assess habitual physical activity in children of the ages in the present study (Hagstromer et al. 2008). Details regarding the IPAQ have been extensively reported previously and administration of this form was conducted according to recommended protocols (Hagstromer, et al., 2008; Craig, et al., 2003). However, in the current study data are presented as (MET/Min week $^{-1}$) in line with recommendations for scoring of the IPAQ measure (IPAQ). The IPAQ questionnaire is scored to provide a measure of

Metabolic Equivalents (METs) to yield a score in MET-minutes, whereby METs are defined as multiples of the resting metabolic rate and a MET-minute is computed by multiplying the MET score of an activity by the minutes it is performed for. MET-minute scores are equivalent to kilocalories for a 60 kilogram person. When presented as MET/Min week $^{-1}$ this provides a measure of total weekly physical activity (IPAQ).

Physical Activity Goal Content

PA goal content was measured using the Goal Content for Exercise Questionnaire (Sebire, Standage, & Vansteenkiste, 2008). Participants were first explained that the questionnaire aimed at gaining insight into their goals for participating in sport and PA. Congruent with other work in young people (Seghers, et al., 2014), the term 'exercise' was replaced by 'Sport and PA' in the questionnaire. The questionnaire begins with the stem question 'Please indicate to what extent these goals are important for you when doing sport or PA' followed by items representing intrinsic goals (skill development, health management, social affiliation) or extrinsic goals (image and social recognition). Each goal factor was measured by four items rated on a 7 point Likert scale ranging from 1 (not at all important) to 7 (extremely important). Internal consistencies of the five scales as indexed by Cronbach's alpha between .81 and .89. A composite score for intrinsic goal value (Cronbach's alpha = .895) was calculated by averaging the items of the three intrinsic goal factors (skill development, health management, and social affiliation). Similarly, a composite score for participants' extrinsic goal value (Cronbach's alpha = .875) was calculated by averaging the items of the two extrinsic goal factors (Image and social

recognition). This is congruent with that performed previously (See Seghers, et al., 2014)

Behavioral Regulations

Motivation for being physically active was measured using the behavioral regulation for exercise questionnaire-2 (BREQ-II) (Markland, & Tobin, 2004). Consistent with the Goal Content for Exercise Questionnaire, the term 'exercise' was replaced with 'sport and PA' in the BREQ-II. Participants were explained that the questionnaire was aimed at gaining insight into their reasons for participating in sport and PA. They were then presented with the stem: 'I participate in sport and physical activity because…' followed by items representing an autonomous motivational style (identified or intrinsic motivation) or a controlling motivational style (external or introjected regulation). Items were rated on a 5 point Likert scale (1 = strongly disagree, 5 = strongly agree). Internal consistencies of the four subscales as indexed by Cronbach's alpha ranged between .720 and .800. An autonomous motivation composite score (Cronbach's alpha = .903) was calculated by averaging four items of intrinsic motivation and four items of identified motivation. A controlled motivation composite score (Cronbach's alpha = .760) was measured by taking the average of the four items of introjected regulation and three items from external regulation.

Weight status

Height (m) and mass (kg) were also assessed using a Seca stadiometre and weighing scales (Seca Instruments Ltd, Germany) from which body mass index (BMI

kg/m^2) was determined and participants' weight status classified using IOTF criteria (Cole, Bellizzi, Flegal, & Dietz, 2000).

Statistical Analysis

Data analysis was performed using the Statistical Package for Social Science (SPSS), Version 20. Bivariate correlations were used to examine the relationship between children's physical Activity (MET/Min week $^{-1}$), BMI (kg/m^2), goal content and behavioral regulations. These are included as a supplementary table (See Table 1). Two, 2 (boys vs girls) X 2(normal weight vs. overweight/obese) multivariate analysis of covariance (MANCOVA) controlling for total physical activity were then employed to examine any effects of gender and weight status on goal content for physical activity and behavioral regulations.

Four mediation analyses using the Preacher and Hayes (2008) bootstrapping approach were also conducted. In all analyses physical activity was the outcome variable. In the first two analyses the indirect effect of the predictor, intrinsic goal content, upon the outcome was tested. This was tested firstly via the mediator autonomous behavioural regulation and subsequently via the mediator controlled behavioural regulation. In the second two analyses the indirect effect of extrinsic goal content was tested, again via autonomous behavioural regulation and then via controlled behavioural regulation. These mediation effects were confirmed in a structural equation model using AMOS v20.

In order to examine the effect of weight status upon the indirect effects a moderated mediation effect was tested. This involved testing whether the relationship between the mediator and the outcome was dependent upon the

moderator – in this case weight status group. SPSS was used together with the 'PROCESS' mediation and moderation macro (Hayes, 2012). The use of the Preacher and Hayes (2008) bootstrapping mediation analysis enables the determination of any mediating effect of autonomous and controlled motivation towards PA on the relation between goal content (intrinsic vs. extrinsic goals) and PA with the subsequent use of structural equation modelling being performed to test the hypothesised motivational sequence identified in the mediation analysis. The process of bootstrapping involves repeatedly sampling form the dataset to estimate the indirect effect. This procedure has several advantages including no assumption of normality of the sampling distribution. Compared with other methods such as the Sobel test and the causal steps approach, bootstrapping has the best power and confidence interval placement and the best overall type-I error (Preacher and Hayes, 2008).

Results

MANCOVA analysis for goal content for physical activity indicated no significant main effect for gender ($F(2,423)=1.672$, $p=.189$, *Wilks' Lambda* = .992, η_p^2 = .008) and a significant effect for weight status ($F(2,423)=3.09$, $p=.040$, *Wilks' Lambda* = .986, η_p^2 = .014). Physical activity was also significant as a covariate ($F(2,423)=24.77$, $p=.001$, *Wilks' Lambda* = .895, η_p^2 = .105). In particular, normal weight children had significantly higher scores for intrinsic goals compared to their overweight/obese peers ($F(1,424)=4.06$, $p=.044$, η_p^2 = .009). Physical activity was

also positively associated with intrinsic (F(1,424)=49.4, p=.0001, η_p^2 = .104, β = .000245) and extrinsic (F(1,424)=13.1, p=.0001, η_p^2 = .030, β = .000153) goals.

When data for behavioral regulations were analyzed there was no significant main effect for gender (F(2,423)=1.374, p=.688, *Wilks' Lambda* = .999, η_p^2 = .001). There was a significant main effect for weight status (F(2,423)=13.2, p=.0001, *Wilks' Lambda* = .951, η_p^2 = .049). Physical activity was also significant as a covariate (F(2,423)=23.2, p=.001, *Wilks' Lambda* = .917, η_p^2 = .083). Normal weight children had significantly higher scores for autonomous motivation compared to their overweight/obese peers (F(1,424)=13.9, p=.001, η_p^2 = .033). Physical activity was also positively associated with controlled (F(1,424)=13.1, p=.0001, η_p^2 = .025, β = .000076) and autonomous (F(1,424)=42.8, p=.0001, η_p^2 = .077, β = .000162) motivation. Mean ± SE of scores for behavioral regulations and goal content for physical activity for gender and weight status groups are presented in Table 2.

Mediation Analysis

Using bootstrapping, a test of the indirect effect of intrinsic goal content (IGC) on physical activity was statistically significant via autonomous behavioral regulation (ABR). (b=162.27; 95% bootstrapped CI [89.73, 244.70]), but not via controlled behavioral regulations (b=5.30; 95% bootstrapped CI [-39.05, 45.16]). A bootstrapped test of the indirect effect of extrinsic goal content on physical activity was statistically significant via autonomous behavioral regulation (b=106.25; 95% bootstrapped CI [63.74, 159.13]) but not via controlled behavioral regulation (b=17.28; 95% bootstrapped CI [-31.76, 70.21]). A structural equation model confirmed the set of relationships, whereby both intrinsic and extrinsic goals predicted physical activity via autonomous motivation but not controlled motivation.

Neither extrinsic goals nor controlled motivation maintained a direct relation with physical activity in this model. Intrinsic motivation did yield a direct relationship with physical activity (see Figure 1). The chi-square analysis was non-significant (χ^2 = .341; df=1; *p*=.559), both the normed fit index (.990) and the comparative fit index (1.00) exceeded .95 and the root mean square error of approximation (.001) was less than .05. All these indices indicate very strong model fit and confirm the mediation analyses.

A test of the moderated mediation effect with weight status as a moderator of the autonomous behavioral regulation➔physical activity relationship was not significant (*b*=-207.16; 95% CI [-514.16, 99.84]). Although controlled behavioral regulation was not a significant mediator, a further moderation test of its relationship with physical activity was conducted, again with weight status as a moderator. This also was non-significant (b=-153.44; 95% CI [-440.08, 133.19]). Thus the mediation effects of autonomous regulation, were not dependent on weight status group.

Discussion

The present study examined differences in goal content for physical activity and behavioral regulations towards physical activity between gender and weight status groups whilst accounting for habitual physical activity in a sample of 13 to 16 year old children. To our knowledge this is the first study examining this issue in British adolescents which controls for habitual physical activity whilst also examining differences in weight status.

The results show differences in goal content for physical activity and behavioral regulations between normal weight and overweight/obese children but no

differences in these variables between gender groups. In particular, normal weight children were more likely to pursue intrinsic goals for physical activity and to feel more autonomously motivated towards physical activity. These results support recent work by Seghers, et al. (2014) in a slightly younger population than that examined in the present study. It is also important to consider the magnitude of differences between normal weight and overweight/obese children reported in the present study. It is somewhat difficult to determine how meaningful a 4.0 score for intrinsic goals (for overweight/obese children) is compared to a 4.3 (for normal weight children). Few studies have examined differences in goal content and behavioural regulations between adolescents of different weight status groups although the magnitude of differences reported in the present study is similar to shoe reported by Seghers, et al. (2014) in their study of Belgian children.

When mediation analysis was considered, the data presented in the current study suggest that autonomous motivation mediates the effect of intrinsic goals on PA and the effect of extrinsic goals on PA was mediated by autonomous motivation. Despite significant differences in intrinsic goals and autonomous motivation between weight status groups, the results of mediation analysis indicated that the model was similar across weight status groups. This finding is consistent with Seghers, et al. (2014) and indicates that interventions aimed at modifying goals or motivation towards physical activity may not need to create different strategies for overweight/obese children compared to their normal weight peers.

As a consequence the results presented here are suggestive that the more children pursued intrinsic PA goals (e.g., developing skill), the more autonomous they felt to engage in PA, which in turn predicted their PA behavior. This finding is not unexpected and adds to the work of Seghers, et al. (2014) which identified a

similar sequence but in a younger age group of Belgian children compared to the older and UK based sample employed in the present study. These findings are however in contrast to those of Gillison et al. (2006) who examined a similar age range of UK based adolescents as those examined in the present study. However, in the case of Gillison et al. (2006) the Reasons for Exercise Inventory was employed as a measure of goal content. Subsequent research has identified that the questions within this measure reflect a combination of both goal content and behavioral regulation (Sebire, et al., 2008) and direct associations between measures of goal content and PA in their study may be because the measure employed actually contained aspects of behavioral regulation.

Within SDT, the content of goals and behavioral regulations are conceptually separated and the results of the present study might lead some to suggest goal content for PA does not play an important role in influencing PA behavior. It is however important to consider whether the 'why' (goal) of PA behavior exists above or beyond or instead via behavioral regulations (the 'what' of behavior) (Carver, & Bird, 1998). The results of the current study align with assertions previously made in both adults (Sebire et al., 2009; 2011) and preadolescent children (Seghers, et al., 2014) that intrinsic goal content for PA may influence PA behavior to the degree that it is associated with autonomous behavioral regulation. The relations between PA goal content, behavioral regulations and PA behavior are also likely to have a temporal aspect with goals and regulations working in different time frames for any individual (Sebire et al., 2011). For example, the intrinsic goal of developing skill or the extrinsic goal of enhancing the way you look have a longer time scale component (i.e., it takes time to develop the skill or to improve appearance), compared to the present oriented behavioral regulations (i.e., because the activity is fun). Therefore,

the why of PA (i.e., the goals) is more distally related to PA behavior but that this relation is transmitted through the more proximal variable of behavioral regulations (Sebire, 2011).

In addition, the results of the present study also highlighted that the effect of extrinsic goals on PA was mediated by autonomous motivation. To our knowledge such a finding has yet to be reported. However, as the participants in the present study are likely to have been undergoing or had undergone puberty, this finding is not surprising. Literature has highlighted that young adolescence is a period where greater emphasis is placed on external impact of PA, including increased body satisfaction (McCabe et al., 2002) and also that the process of puberty modifies the way in which children and adolescents view their bodies in the context of sociocultural norms for what is the ideal body (Presnell, Bearman, & Stice, 2003). As a consequence, it is perhaps not surprising that extrinsic goals such as to be slim and attractive or to change my body shape indirectly impact on PA behavior through autonomous motivation in this age population. The above points also highlight the need for future studies to study both goal content and behavioral regulations simultaneously in children and adolescents. Understanding why adolescents undertake PA and what they undertake PA for may be particularly important given the potentially temporal nature of adolescent goals for PA. Future longitudinal work examining the temporal nature of the mediation effects reported here would be useful to try to better explain the relationship between goals and behavioral regulations.

This study is not without its limitations. This is a cross sectional study which does not imply causality. The self-reported nature of PA data presented here can also be considered a limitation. Although every effort was made to minimize over or

under-reporting by the participants, the limitations of assessing PA among adolescents using self-reported questionnaire must be considered when interpreting the present study findings. Future research would therefore benefit from using longitudinal designs and objective measures of PA behavior to better model how goal content and behavioral regulations impact on PA over time. Sexual maturation was not assessed in the current study. Researchers should therefore consider assessment of sexual maturation in future studies examining this issue.

Conclusions

The present study sought to build on prior research with primary school children by exploring differences in goal content for physical activity and behavioral regulations towards physical activity between gender and weight status groups whilst accounting for habitual physical activity in a sample of 13 to 16 year old British children. This study indicates that intrinsic goals for PA positively impact PA behavior in British adolescents but only through autonomous motivation. Extrinsic goals for PA also positively impacts on PA behavior but were mediated by autonomous and controlled motivation. Weight status did not influence these mediation effects. Physical education teachers, sport psychologists and coaches may therefore be best stimulating children to engage in PA in the pursuit of intrinsic goals (e.g., skill development). In regard to policy and practice, via school physical education curriculum or sport coaching qualification curricula, emphasis should be placed on the development of a climate in school physical education or in organized youth sport where intrinsic goals are emphasized and promoted thereby aiming to foster

greater autonomous motivation for physical activity. For example, focus on skill development or health improvement aspects of sport participation rather than engagement in sport to enhance attractiveness or for external recognition. By doing this children are more likely to develop autonomous motivation for PA leading to longer term engagement and enjoyment of habitual PA.

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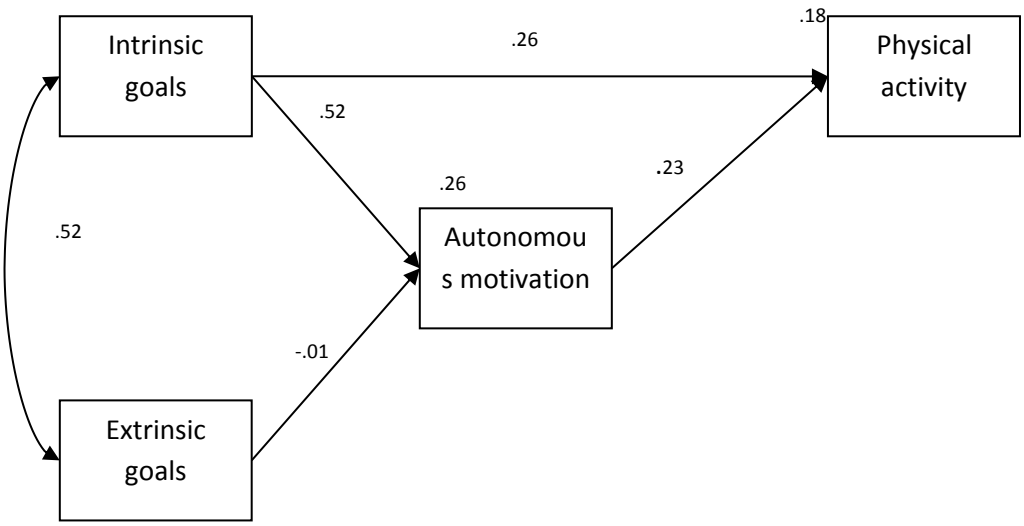

Figure 1. The structural equation model of the indirect pathways from intrinsic and extrinsic goals to physical activity via autonomous motivation (coefficients are standardised).

Table 1.

Pearson correlation coefficients between BMI, Physical Activity, Goals for Physical Activity and Behavioral Regulations

	BMI (kg/m^2)	Physical Activity (MET/Min week $^{-1}$)	Controlled Motivation	Autonomous Motivation	Intrinsic Goals	Extrinsic Goals
BMI (kg/m^2)		-.284**	.012	-.290**	-.180**	063
Physical Activity (MET/Min week $^{-1}$)			.143**	.331**	.370**	.162**
Controlled Motivation				.296**	.339**	.425**
Autonomous Motivation					.519**	.260**
Intrinsic Goals						.534**

**P = .001

Table 2.

Mean ± SE of scores for Behavioral Regulations and Goal Content for Physical Activity for Gender and Weight Status Groups

	Controlled Motivation (1-5)		Autonomous Motivation (1-5)		Intrinsic Goals (1-7)		Extrinsic Goals (1-7)	
	M	SE	M	SE	M	SE	M	SE
Boys	1.3	.05	1.9	.063	4.2	.08	4.1	.09
Girls	1.3	.06	1.8	.07	4.1	.09	4.3	.11
Normal Weight	1.2	.04	2.1	.04	4.3	.06	4.1	.07
Overweight/Obese	1.3	.07	1.6**	.09	4.0*	.122	4.2	.14

*P < .05, ** P < .001