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ORIGINAL

**SELF-DETERMINED PSYCHOSOCIAL CONSEQUENCES
OF RESPONSIBILITY PROMOTION IN PHYSICAL
EDUCATION**

**CONSECUENCIAS PSICOSOCIALES
AUTODETERMINADAS MEDIANTE LA PROMOCIÓN DE
RESPONSABILIDAD EN EDUCACIÓN FÍSICA**

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ABSTRACT

The aim of this study was to examine the relationships among responsibility perceived by students, psychological mediators, self-determined motivation, sportsmanship, life style and intention to be physically active. To do this, a prediction model was proposed in line with the postulates of the hierarchical model of intrinsic and extrinsic motivation. Participants were 128 physical education students (68 boys and 60 girls) aged between 11 and 15 years ($M = 12.45$; $SD = 1.15$). A cross-sectional study was designed. The questionnaires PSRQ, BPNES, CMEF, MSOS, IPAS and Krece Plus short test were used to measure the variables studied. The results showed that responsibility perceived

by students positively predicted psychological mediator satisfaction and self-determined motivation. Consequently, greater importance of sportsmanship, intention to practise physical activity in the future and life style perception of the participating students was explained.

KEYWORDS: psychosocial consequences, sportsmanship, life style, psychological mediators, self-determined motivation, responsibility.

RESUMEN

El objetivo de este estudio fue conocer las relaciones existentes entre la responsabilidad percibida por los estudiantes, los mediadores psicológicos, la motivación autodeterminada, deportividad, estilo de vida e intención de ser físicamente activo, proponiendo un modelo de predicción en consonancia con los postulados del modelo jerárquico de la motivación (intrínseca y extrínseca). Participaron 128 estudiantes de Educación Física (68 chicos y 60 chicas) con edades comprendidas entre los 11 y los 15 años ($M = 12,45$; $DT = 1,15$). Se utilizó un diseño transversal. Se administraron los cuestionarios *PSRQ*, *BPNES*, *CMEF*, *MSOS*, *IPAS* y *Test corto Krece Plus* para medir las variables estudiadas. Los resultados mostraron que la responsabilidad percibida predijo positivamente la satisfacción de los mediadores psicológicos y estados de motivación autodeterminada. Como consecuencia, se explica una mayor importancia de la deportividad, de la intención de práctica futura y percepción del estilo de vida en los participantes.

PALABRAS CLAVE: consecuencias psicosociales, deportividad, estilo de vida, mediadores psicológicos, motivación autodeterminada, responsabilidad.

1. INTRODUCTION

The teacher has been highlighted as a key determining agent on students' attitude towards their implication and participation in the teaching-learning process and their academic commitment (Walsh, Ozaeta & Wright, 2010). In this regard, the learning environment promoted through methodological aspects may be seen as a determining social factor for the development of motivational processes in the classroom (Cheon, Reeve, Yu & Jang, 2014).

One of the most frequently used socio-educative programmes in an educational context is the Teaching for Personal and Social Responsibility (TPSR) (Hellison, 2011), which explains responsibility development in students using five working levels (Hellison, 2011; Sánchez-Alcaraz, Díaz & Valero, 2014). It encourages being a model of respect, giving voice to all students, enhancing their autonomy and leadership, and trying to make all students experience success in the tasks they perform (Escartí, Gutiérrez, Pascual & Wright, 2013).

In doing so, a teacher who promotes a task-oriented classroom environment and encourages responsibility would be positive and receptive, encourage effort to achieve success, let students participate in the task selection and provide

success, decision-making and problem-solving opportunities. With this, a more responsible behaviour intends to be encouraged in order to make the student a better person within the achievement contexts that he/she is involved in (Guan, Xiang, McBride & Bruene, 2006).

Responsibility climate is positively related to a student's intrinsic motivation for a specific activity (Belando et al., 2015; Moreno-Murcia, Huéscar & Cervelló, 2012). Thus, this climate is determined by *social motives* that make students do certain activities called "social goals" (Urdañ & Maehr, 1995), which have been examined in other physical education research studies (Garn, McCaughtry, Shen, Martin & Fahlman, 2011). Among the various social goals, Guan et al. (2006) considered responsibility goal as one of the most important in physical education, it representing the wish to respect social rules and the pre-established role (Wentzel, 1991). Although studies that have deeply studied responsibility as a social goal in physical education and sport class are still limited, it is related to positive consequences such as persistence and activity enjoyment (Méndez-Giménez, Fernández-Río & Cecchini, 2014; Méndez-Giménez, Cecchini, Fernández-Río & González, 2012; Menéndez & Fernández-Río 2016).

In agreement with the above and within the self-determination theory framework, the hierarchical model of intrinsic and extrinsic motivation (HMIEM) proposed by Vallerand (2007) reveals that those social motives, including responsibility (Belando et al., 2015; Méndez et al., 2012; Moreno-Murcia, et al., 2012), act as precursors to satisfaction of basic psychological needs (competence, autonomy and relatedness) in order to promote a more self-determined motivation in the student (Garn & Wallhead, 2014). Nevertheless, non-fulfilment of any of the three basic psychological needs may lead to the student's amotivation (Deci & Ryan, 2012). Consequently, psychological mediators become essential to promote a more self-determined motivational state that is related with cognitive, affective and behavioural positive consequences, such as enjoyment or future intention to practise physical activity (Su & Reeve 2011), sportsmanship (Chantal & Bernache-Assollant, 2003) or leading a healthier lifestyle (Moreno-Murcia & Sánchez-Latorre, 2016).

2. AIMS AND HYPOTHESES

The aim of this study was to examine the relationships among responsibility perceived by the student, psychological mediators, self-determined motivation, sportsmanship, life style and intention to be physically active. In order to do this, responsibility's predicting role for the rest of variables was analysed, since it was considered the triggering factor at contextual level in physical education class. It was hypothesised that responsibility would act as a trigger and would satisfy psychological mediators. These would predict higher levels of self-determination, which would lead to adaptive behaviours such as greater sportsmanship, more active life style or the intention to be physically active. It was also hypothesised that responsibility and psychological mediators would have significant indirect effects on the aforementioned consequences.

3. MATERIAL AND METHOD

3.1. PARTICIPANTS

The sample consisted of 128 physical education students, 68 boys (53%) and 60 girls (47%) aged between 11 and 15 years old ($M = 12.45$; $SD = 1.15$), from three state schools from the Region of Murcia, with similar characteristics and environment. They were selected based on accessibility and convenience.

3.2. MEASUREMENTS

Personal and social responsibility. The *Personal and Social Responsibility Questionnaire* (PSRQ), proposed by Li, Wright, Rukavina and Pikeing (2008) and validated by Escartí, Gutiérrez and Gutiérrez (2011) for Spanish context, was used to measure participants' personal and social responsibility. The questionnaire is composed of 14 items, divided into two seven-item factors: personal responsibility (e.g. "I want to improve") and social responsibility (e.g. "I respect others"). Participants were requested to answer using a 6-point Likert-type scale that ranged from 1 (*strongly disagree*) to 6 (*strongly agree*). Internal consistency of the subscales, measured with Cronbach's alpha, was 0.83 and 0.80, respectively. The complete scale yielded a value of 0.90.

Psychological mediators. The Spanish version (Moreno-Murcia, González-Cutre, Chillón & Parra, 2008) of the *Basic Psychological Needs in Exercise Scale* (BPNES) (Vlachopoulos & Michailidou, 2006) was used. The questionnaire comprises 12 items, divided into three factors that assess satisfaction of the three basic psychological needs in physical exercise contexts: autonomy (e.g. "The exercises I perform match my interests"), competence (e.g. "I perform the exercises effectively") and relatedness (e.g. "I interact with my class mates in a very friendly way"). Participants were asked to answer on a 5-point Likert-type scale that ranged from 1 (*strongly disagree*) to 5 (*strongly agree*). Cronbach's alpha values obtained for the different subscales were 0.70, 0.72 and 0.79, respectively. The complete scale yielded a value of 0.85.

The mean scores obtained from every subscale were combined into one single value called psychological mediators, which allowed a total score to be introduced in the subsequent statistical analysis (Soenens, Sierens, Vansteenkiste, Dochi & Goossens, 2012).

Self-determined motivation. The motivation in physical education questionnaire (*Cuestionario de Motivación en la Educación Física*, CMEF), proposed by Sánchez-Oliva, Amado, Leo, González-Cutre and García-Calvo (2012), was applied. This scale comprises 20 items divided into five four-item factors that measure the different types of motivational regulation: intrinsic motivation (e.g. "because physical education is fun"), identified regulation (e.g.

“because I can learn skills that I can apply to other areas”), introjected regulation (e.g. “because it is what I must do to feel good”), external regulation (e.g. “because it is regarded as positive by the teacher and class mates”), and amotivation (e.g. “but I do not understand why we need to have physical education”). Participants were asked to answer on a 5-point Likert-type scale that ranged from 1 (*strongly disagree*) to 5 (*strongly agree*). Cronbach’s alpha values obtained for the different subscales were 0.71, 0.86, 0.72, 0.74 and 0.84, respectively. The complete scale yielded a value of 0.79.

The scores obtained from every CMEF subscale were used to calculate the self-determination index (SDI): $(2 \times (\text{intrinsic motivation} + \text{identified regulation}) - ((\text{introjected regulation} + \text{external regulation}) / 2 + 2 \times \text{amotivation}))$ (Vallerand & Rousseau, 2001). The SDI provides the degree of motivational self-determination by calculating the weight of every motivation type according to its positioning on the self-determination continuum. This index has been widely used in research regarding motivation in physical education class (Moreno-Murcia et al., 2008; Sicilia, Ferriz & González-Cutre, 2014).

Sportsmanship. The Spanish version (Martín-Albo, Núñez, Navarro & González, 2006) of the *Multidimensional Sportsmanship Orientation Scale* (MSOS), designed by Vallerand, Brière, Blanchard and Provencher (1997), was applied to measure sportsmanship. This scale is composed by 25 items divided into five five-item factors: personal commitment to sport practice (e.g. “I do not give up even after making many errors”), social conventions (e.g. “When I lose, I congratulate my opponent, no matter who it is”), respect for rules and officials (e.g. “I respect officials’ decisions despite them being wrong”), respect for one’s opponent (e.g. “When an opponent gets injured, I ask the official to stop the game so that he/she can be assisted”), negative approach to sportsmanship (e.g. “I compete to achieve personal honour, trophies and medals”). Participants were requested to answer on a 5-point Likert-type scale that ranged from 1 (*strongly disagree*) to 5 (*strongly agree*). Cronbach’s alpha values obtained for the different subscales were 0.69, 0.77, 0.80, 0.70 and 0.56, respectively. The complete scale yielded a value of 0.87. Given the low consistency of the “negative approach to sportsmanship” dimension, it was decided to remove it (De Bofarull & Cusí, 2014). The value of the sportsmanship construct was calculated using the mean of the other four dimensions, obtaining a single value called *global sportsmanship index* (GSI) (Chantal, Robin, Vernet & Bernache-Assolant, 2005; Vallerand & Losier, 1994). Higher scores on this index reflect firmer attitudes of concern and respect for rules, opponents, social conventions, as well as a positive attitude toward sport participation.

Intention to be physically active. The Spanish version (Moreno-Murcia, Moreno & Cervelló, 2007) of the *Intention to be Physically Active Scale* (IPAS), designed by Hein, Müür and Koka (2004), was used. It is composed of five items grouped into one single factor with the aim to measure the participant’s intention to be physically active after school graduation (e.g. “I am interested in my physical fitness development”). It had to be answered on a 5-point Likert-

type scale that ranged from 1 (*strongly disagree*) to 5 (*strongly agree*). Cronbach's alpha for this scale was 0.87.

Life style. The *Krece Plus* short test (*Test Corto Krece Plus*) (Serra, Aranceta & Rodríguez-Santos, 2003) was applied. It consists of two questions: *how many hours on average do you watch television or play videogames or on the computer every day?* and *how many hours do you spend on sport activities after school every week?* Participants were asked to answer on a 6-point Likert-type scale that ranged from 0 to longer than 4 hours. Cronbach's alpha for this scale was 0.71. This questionnaire allows for classification of a participant's life style as bad (0 to 3 points), average (4 to 6 points) or good (7 points).

3.3. DESIGN AND PROCEDURE

Descriptive methodology with a cross-sectional design (Montero & León, 2007) was applied. Once the study was approved by the ethics committee, parents were requested to provide informed consent. The questionnaires were administered in the presence of the main researcher and the physical education teacher in a quiet environment and lasted 20 minutes. Anonymity and non-influence of the answers on school marks were assured, trying to reduce the effect of social expectations on the answers.

3.4. DATA ANALYSIS

First of all, descriptive statistics of the latent variables were calculated: mean, standard deviation, asymmetry and kurtosis. Internal consistency of each variable was also calculated by means of Cronbach's alpha. The correlations among variables were analysed. Subsequently, structural regression analysis using a two-step approach was conducted as recommended by Anderson and Gerbing (1988). Firstly, a measurement model was established in order to guarantee construct validity of the instruments and, secondly, a variable prediction model was built through which the influence of some variables of the hypothesised model on others was analysed. The analyses were performed with the statistical packages SPSS 19.0 and Amos 19.0.

4. RESULTS

4.1. DESCRIPTIVE ANALYSIS AND BIVARIATE CORRELATIONS

The results (see Table 1) revealed that responsibility was the highest ranked variable at contextual level by the students, with a mean value of 4.72, although the questionnaire answering scale was one point longer than the rest, as it also happened with life style. Participants' perception of psychological mediator satisfaction was given a mean value of 3.46. Self-determination index was given a mean score of 3.38. According to the continuum established by the self-determination theory, students reached, in general, values above the middle point and close to the highest end of self-determination. Regarding the variables

related to the consequences within Vallerand's (1997) hierarchical model, sportsmanship was given a mean score of 3.61, life style reached 2.37 and the intention to be physically active yielded a mean value of 3.55.

Asymmetry and kurtosis indices were below 2 for all variables, indicating univariate normality of the data (Bollen & Long, 1993). Cronbach's alpha yielded acceptable values (George & Mallery, 2003) for all variables, since they were above 0.70. Finally, the correlation analysis revealed significant positive correlations among all study variables.

Table 1
Reliability, descriptive statistics and bivariate correlations of the variables

Variables	M	SD	Range	A	K	α	1	2	3	4	5	6
1. Responsibility	72	.77	1-6	.122	-1.22	.88	-	.63**	.45**	.69**	.22**	.18**
2. Mediators	3.46	.70	1-5	-.131	.01	.84		-	.56**	.48**	.42**	.33**
3. SDI	3.38	.46	1-5	.269	.02	.78			-	.42**	.12**	.36*
4. Sportsmanship	3.61	.65	1-5	.039	-.66	.83				-	.18**	.12*
5. IPA	3.55	.94	1-5	-.314	-.56	.87					-	.18**
6. Life style	2.37	1.25	1-6	-.169	-.89	.77						-

* $p < .05$; ** $p < .01$; M = Mean; SD = Standard deviation; A = Asymmetry; K = Kurtosis; α = Cronbach's alpha; SDI = Self-Determination Index; IPA = Intention to be Physically Active

4.2. STRUCTURAL REGRESSION ANALYSIS

4.2.1. MEASUREMENT MODEL

The number of latent variables per factor was reduced in order to conduct the analysis of the measurement model and then test the structural equation model (SEM). To do so, the items were grouped in pairs (Marsh, Richard, Johnson, Roche & Tremaye, 1994). The model was, therefore, identified, since every latent variable was measured by at least two indicators (McDonald & Ho, 2002). Mardia's coefficient (12.20) was used to check factors' multivariate normality, it being lower than 0.70 (Rodríguez-Ayán & Ruiz, 2008). Besides, the multicollinearity assumption was met, since all bivariate correlations between variables were below 0.85. The errors of the endogenous variables were independent since they were not correlated with other variables. The maximum likelihood estimation method was applied.

Various absolute and relative measures of fit were calculated. χ^2 and the ratio $\chi^2/g.l.$ (Barrett, 2007) were used as absolute measures. Likewise, partial comparative indices of fit (IFI, CFI and TLI) were calculated, their values having to be 0.90 or higher for a model fit to be considered acceptable (Hu & Bentler, 1999). Authors such as Kline (2005) recommend the use of RMSEA and SRMR indices. Values under 0.08 of these two indices are regarded as acceptable (Hu & Bentler, 1999). The following values were obtained: χ^2 (32, $N = 128$) = 49.61, $p < 0.024$, $\chi^2/g.l.$ = 1.55, CFI = 0.98, IFI = 0.98, TLI = 0.96, RMSEA = 0.06, SRMR = 0.05. The standardised regression weights ranged between 0.52 and

0.89. They were statistically significant and yielded satisfactory variance of the error (Hu & Bentler, 1999).

4.2.2. STRUCTURAL EQUATION MODEL

The model was recursive and identified. Mardia's coefficient (12.20) was calculated and the covariance matrix was used for data entry. The maximum likelihood estimation method was applied in the analysis. The goodness of fit test yielded appropriate fit values (Hu & Bentler, 1999) according to the established parameters: $\chi^2(37, N = 128) = 64.09, p < 0.004, \chi^2/g.l. = 1.73, CFI = 0.97, IFI = 0.97, TLI = 0.94, RMSEA = 0.07, SRMR = 0.05$. All relationships were significant, the standardised regression weights ranging between 0.43 and 0.88 (see Figure 1).

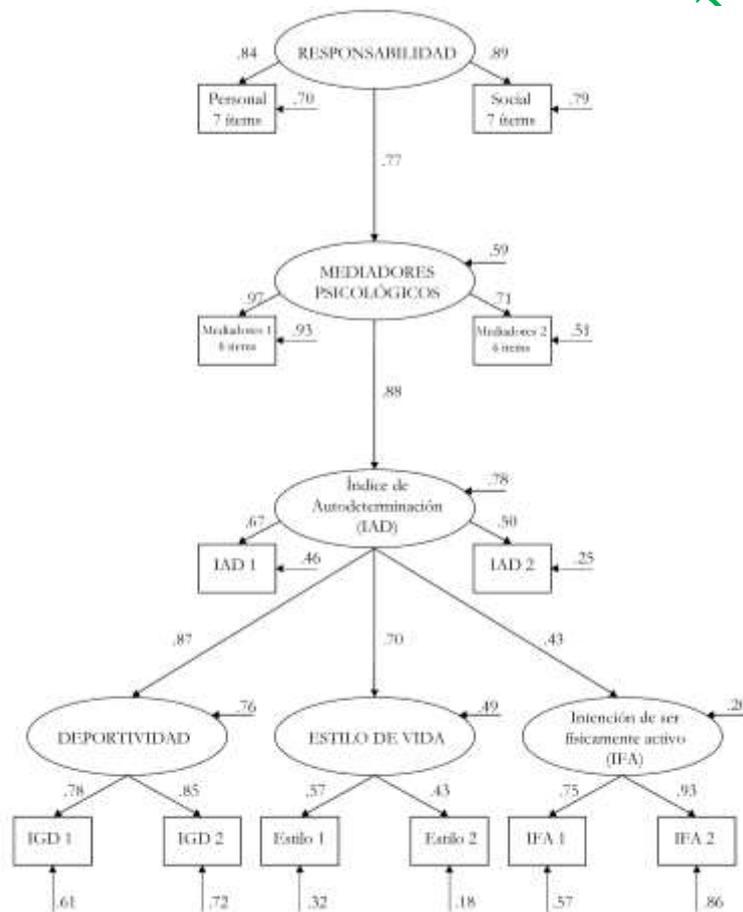


Figure 1. Structural equation model (SEM) that analyses the relationships among responsibility, psychological mediators, SDI, sportsmanship, life style and intention to be physically active. Variances are shown on the short arrows. All parameters are standardised and significant at $p < 0.05$.

Similarly, the contribution of each factor to the prediction of other variables was examined using standardised regression weights. The model's results (see Figure 1) revealed that perceived responsibility predicted psychological

mediators' satisfaction ($\beta = 0.77$), which predicted a more self-determined motivation of the participants ($\beta = 0.88$). On the other hand, self-determined motivation predicted higher level of sportsmanship ($\beta = 0.87$), a more active life style ($\beta = 0.70$) and the intention to be physically active ($\beta = 0.43$), explaining 76%, 42% and 20% of the variance, respectively.

4.2.3. INDIRECT EFFECTS

Mediated or indirect effects must be analysed when explaining a model (Edwards & Lambert, 2007). In the present study, the standardised indirect effects (see Table 2) revealed that responsibility had a positive effect on self-determined motivation ($\beta = 0.68$), sportsmanship ($\beta = 0.59$), intention to be physically active ($\beta = 0.31$) and life style ($\beta = 0.47$). On the other hand, psychological mediators had a positive effect on sportsmanship ($\beta = 0.77$), intention to be physically active ($\beta = 0.40$) and life style ($\beta = 0.62$).

Table 2
Standardised indirect effects of the variables

Variables	β
Responsibility \rightarrow SDI	.68*
Responsibility \rightarrow Sportsmanship	.59*
Responsibility \rightarrow Intention to be physically active	.31*
Responsibility \rightarrow Life style	.47*
Mediators \rightarrow Sportsmanship	.77*
Mediators \rightarrow Intention to be physically active	.40*
Mediators \rightarrow Life style	.62*

* $p < .05$

5. DISCUSSION

The aim of the present study was to test the relationships among responsibility perceived by physical education students, psychological mediators, self-determined motivation, sportsmanship, intention to be physically active and life style, proposing a prediction model in accordance with HMIEM.

The results support the applicability of the proposed model of responsibility promotion in physical education class, confirming the initial hypothesis. Therefore, students who respect classroom rules, value their teachers, are respectful and, as a consequence, show positive values, could have their teacher trust them more and give them progressively more responsibility in the teaching-learning process.

Previous studies regarding physical education (Moreno-Murcia et al., 2008) had already analysed the relationships among variables contained in the social goals and the self-determination theory. In this context, there are studies that justify the prediction of basic psychological needs through responsibility (Moreno-Murcia et al., 2008). In this regard, making students responsible for

different tasks in the learning process improves perceived autonomy, perceived competence and relatedness through respect for the established role or social rules (Belando et al., 2015; Méndez-Giménez et al., 2012).

As second key element analysed in the tested model, and in accordance with the postulates of Vallerand's hierarchical model (1997; 2007), the results showed that the perception of psychological mediators satisfaction predicted self-determined motivational states, in agreement with other studies' findings (Baena-Extremera, Gómez-López, Granero-Gallegos & Martínez-Molina, 2016; Garn et al., 2011). It seems that responsible students who perceive themselves as autonomous (opportunity to choose), competent (able) and who feel well related during practice, as well as valued by the rest, generate more self-determined motivational states at contextual level during physical education classes (Belando et al., 2015; Moreno-Murcia et al., 2012; Méndez-Giménez et al., 2012). In this regard, some authors (Li, Lee & Solmon, 2005) stated that promoting responsibility lets the student perceive him/herself as more competent and, therefore, more motivated.

As third key element analysed in the tested model, high self-determined motivation fostered greater importance of sportsmanship, future intention to be physically active and leading a healthy life style, adopting habits among which physical activity has great relevance. Previous studies have pointed out that intrinsic motivation predicts greater sportsmanship and reduced unsportsmanlike behaviour (Fernández-Río, Méndez-Giménez, Cecchini & González, 2012). In light of these results, responsibility promotion is associated with sportsmanlike behaviour. Therefore, we believe that designing strategies based on responsibility promotion will produce prosocial behaviours in students (Hellison, 2011; Méndez-Giménez, Fernández-Río & Méndez-Alonso, 2015). On the other hand, students' intention to practise physical activity is predicted under self-determined motivational states (González-Cutre, Sicilia, Beas-Jiménez & Hagger, 2014; Su & Reeve, 2011; Moreno-Murcia & Huéscar, 2013). This could be due, as reported by several authors (Samperio, Jiménez-Castuera, Lobato, Leyton & Claver, 2016), to the fact that students who present better motivational states and internal locus of causality could undergo experiences of practice that make them feel better with themselves, once their basic psychological needs are satisfied, in opposition to those with lower self-determined motivation and external locus of causality.

Taking the above into account, this could lead to the generation of a healthier life style by the students. Once reality is known, as well as how ingrained sedentary leisure is among youth, we propose that the physical education teacher manages and designs strategies to activate them.

6. CONCLUSION

We believe that this study's findings are relevant since teachers can, within a responsibility-promoting environment, generate healthy habits on students,

mainly by increasing physical activity (González-Cutre et al., 2014; Moreno-Murcia et al., 2012; Moreno-Murcia & Sánchez-Latorre 2016).

As regards the study's limitations, the structural equation model presented was the one which showed highest goodness of fit, but we assume that it is only one of the possibilities (Hershberger, 2006; McDonald & Ho, 2002). Nevertheless, it was grounded in a solid theoretical basis with a large body of research that justifies our approach.

It is recommended to replicate this study with a larger sample size, so that the variable dimensions can be studied and the results generalised, what would increase the study's external validity. It is proposed to conduct experimental studies that allow for determination of cause-and-effect relationships between the analysed variables.

The major contribution of the present study is to relate responsibility promotion to various motivational theories that explain human behaviour, proposing a theoretical relationship model that allows for increasing self-determined motivation and generation of healthy habits in students.

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