

# Understanding Contextual Relation in Promotion Physical Exercise from Autonomy Support

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## Abstract

To analyze the relationship between perception of support for student autonomy and the interaction of different motivational contexts of the intention to do physical exercise from the framework of the trans-contextual model of motivation (Hagger & Chatzisarantis, 2016) was the aim of this study. The sample consisted of 441 adolescents in physical education classes aged between 12 and 16 ( $M_{age} = 14.74$ ,  $SD = .80$ ), who responded to various questionnaires on perceived autonomy support, motivation in the education and leisure contexts, and intention to do exercise. The model was tested using a structural equation model. The results of structural equation modeling [ $\chi^2(48, N = 441) = 489.69$ ,  $p = .001$ ,  $\chi^2/df = 3.98$ , CFI = .94, IFI = .94, TLI = .93, RMSEA = .08] marked that perceived autonomy support from the teacher was positively related with intrinsic motivation in physical education classes, which in turn was positively associated with intrinsic motivation in leisure time. Perceived autonomy support from family and peers was positively associated with motivation in leisure time, which in turn positively associated with the attitude and control standards. While the intention to practice physical activity was positively associated with the main concepts of the theory of planned behavior. Results are discussed in view of the importance of considering the importance of social models in the stage of adolescence, highlighting the role of promoting autonomy and their influence on inter-contextual motivation in physical exercise.

**Keywords:** autonomy, motivation, trans-contextual, physical education, leisure, theory of planned behavior

## 1. Introduction

There is a general agreement that the nature of personal and instructional supports from the teacher is one of the aspects that could condition students' intentions towards learning, their level of academic commitment and their motivation with respect to proposed activities (Turner et al., 2002). In order to provide further knowledge about the variables that could be involved in the commitment to or abandonment of physical-sports habits by youth, another aspect that some studies (Boiché & Sarrazín, 2007) have focused on is to study how far the motivation a teacher projects towards students in physical education classes is related to motivation towards other contexts, such as doing sports in leisure time. The trans-contextual model of motivation (Hagger et al., 2007, 2009; Hagger & Chatzisarantis, 2016) postulates the possibility of extrapolating the self-determined motivation from the academic to leisure context, specifically, from physical education to students leisure time context. For a decade, the Hagger's proposal from the *trans-contextual* model of autonomous motivation integrated tenets of self-determination theory (Deci & Ryan, 1985b, 2000), Vallerand's (1997) hierarchical model of intrinsic and extrinsic motivation, and the theory of planned behavior (Ajzen, 1985, 1991). So, in this framework, and drawn heavily from the self-determination theory (Deci & Ryan, 1985b, 2000) some studies (Chatzisarantis & Hagger, 2009) have pointed out that the style of autonomy support in physical education classes increased students' intention to commit to class activities (McLachlan & Hagger, 2010) as well as their participation in sports during leisure context. The concept of autonomous motivation reflects engaging in behavior for reasons of volition and to obtain feeling of satisfaction or competence (Hagger & Chatzisarantis, 2016).

On the other hand, the Theory of Planned Behavior (TPB) (Ajzen, 1991, 2001) has been shown to contribute to an understanding of the processes which lead adolescents to initiate and maintain a behavior of doing physical

activity regularly, including their motivations and the different factors that can influence their doing it. Although this theory has demonstrated its efficacy in the explanation of variables that contribute to doing physical exercise, the relations tend to be presented in an isolated way. This being the case, it would be beneficial to use this theoretical perspective to find out about the relation of autonomy support from different social agents (e.g., peers, family, trainers, teachers) towards a person and commitment to doing physical-sports activity jointly.

The TPB is a parsimonious model which has been applied in a wide range of behaviors including physical exercise (e.g., Hagger, Chatzisarantis, & Biddle, 2002; McEachan, Conner, Taylor, & Lawton, 2011). The central aspect of this model is based on the acceptance that any type of behavior is related to behavioral intention and perceived behavioral control (Ajzen, 1991). Behavioral intention refers to the action plans and motivation that people have in order to carry out a behavior. Therefore, the more motivated adolescents are to do physical exercise, the more likely it is that they will do it. Perceived control reflects people's confidence in their skills to carry out a determined behavior. Behavioral intention, on the other hand, is determined by three independent factors: subjective norm is defined by a person's perception of the social pressures put on them to carry out or not the action in question; attitude reflects positive or negative evaluation of carrying out a behavior; perception of behavioral control, that is to say, a person's perception of how far they believe they have control over behavior. Therefore, adolescents would be likely to do physical exercise if they believed it was good for them, if they perceived social pressure to do it and if they believed that they were capable of doing it. Different studies, which have used TPB to analyze the relations between behavioral intention for doing exercises and subsequent behavior, have revealed a relation between these variables. The results of a meta-analysis by Hagger et al. (2002) showed that 44.5% of the variance of intention was predicted by perceived behavioral control, subject norm and attitude. Other studies, where intention is explained by the three variables proposed by the model, also showed similar results (Armitage, 2005; McEachan et al., 2011).

On the other hand, the Hierarchical Model of Intrinsic and Extrinsic Motivation (HMIEM), developed by Vallerand (1997, 2001, 2007), define mechanisms through which a specific motivational orientation (e.g., motivation towards physical education classes) could condition the type of motivation towards more global contexts in a student's life, such as leisure. In this way, the HMIEM could lead to an understanding of the nature of the psychological processes through which motivation in physical education classes could be connected to motivation in other contexts. According to Vallerand (2007b), there are three types of interaction: facilitative, conflicting and compensative. With respect to facilitative interactions, studies that have tested the trans-contextual motivation model (Hagger et al., 2003; Hagger, Chatzisarantis, Barkoukis, Wang, & Baranowsky, 2005; Hagger et al., 2009) have demonstrated how self-determined motivation in the context of physical education facilitates self-determined motivation respect pshysical-activity during leisure. However, motivational conflict between two contexts (e.g., education-sport) would be associated to possible negative academic consequences (Boiché & Sarrazín, 2007). Compensation, on the other hand, occurs when a decrease in self-determined motivation in a ambit causes the person to balance this fact by incrementing this type of motivation with respect to other contexts (Vallerand, 2007b).

In conjunction with stated before, this study proposed firstly to analyze the relations between the climate of autonomy support developed by the teacher, students' self-determined motivation in physical education classes and in leisure time and perceived autonomy support from peers and family. Secondly, it analyzes the role of attitude, subjective norm and perceived control in the intention of doing physical sport. In view of this, the climate of autonomy support generated by the teacher is expected to predict intrinsic motivation in the context of physical education classes. Thirdly, intrinsic motivation in physical education classes will predict this motivation in leisure context, which will be predicted by autonomy support generated by peers and family. Finally, intrinsic motivation in leisure time will predict attitudes, subjective norms and perceived behavioral control of physical activity behavior and they in turn will predict the intention to do physical activity.

## 2. Method

### 2.1 Participants

441 students (230 men and 211 women) participated in this study, from the third and fourth year of Compulsory Secondary Education, aged between 12-16 ( $M = 14.74$ ,  $SD = .80$ ) from nine Spanish state and subsidized schools.

### 2.2 Measures

Autonomy support. The *Perceived Autonomy Support Scale in Exercise Settings (PASSSES)* by Hagger, Chatzisarantis, Hein, Pihu, Soós and Karsai (2007) was used, validated to the Spanish context by Moreno, Parra and González-Cutre (2008). This scale originally measures autonomy support from teachers, so it was necessary to

adapt the phrasing of some items to evaluate autonomy support from peers and family. This scale is made up of 12 items (e.g., “What options provide me (teacher, classmates and family) as to how to do physical exercise or sport in my free time”). It is preceded by the phrase “In my physical education classes/In my physical activity outside school...”. The answers were given on a Likert scale from 1 (*completely disagree*) to 7 (*completely agree*). For autonomy support from the teacher the internal consistency was  $\alpha = .93$ , from peers it was  $\alpha = .94$  and from family it was  $\alpha = .95$ .

**Intrinsic Motivation in Physical Education.** The intrinsic motivation dimension of the *Perceived Locus of Causality Scale (PLOC)* by Goudas, Biddle and Fox (1994) was used, validated to the Spanish context by Moreno et al. (2008). This dimension is made up of four items (e.g., “Because physical education is fun”), and is preceded by the phrase “I take part in physical education classes...”. Responses were given on a Likert scale from 1 (*completely disagree*) to 7 (*completely agree*). Internal consistency was  $\alpha = .89$ .

**Intrinsic motivation in the leisure contest.** The intrinsic regulation dimension from the BREQ-3 (Behavior regulation in exercise questionnaire) by González-Cutre, Sicilia, and Fernández (2010) was used to know motivation in the leisure time. Four items were (e.g., “Because I believe exercise is fun”), preceded by the phrase: “I do physical exercise ...”. The questions were answered on a Likert scale of 0 (*not true at all*) to 4 (*completely true*). Internal consistency was  $\alpha = .91$ .

**Planned behavior in Physical Exercise.** The measure of planned action was carried out by means of the scale by Tirado, Neipp, Quiles and Rodríguez-Marín (2012). This questionnaire has 20 items and four typologies: seven in the attitude dimension (e.g., “For me doing exercise at least 6 times a week would be ...”), five for subjective norm (e.g., “Important people in my life think that I should do exercise at least 6 times in the next two weeks ...”), four for behavioral control (e.g., “If I wanted to, I could do exercise at least 6 times in the next two weeks”) and four for intention (e.g., “I’ve thought about doing exercise at least six times in the next two weeks”). A Likert scale from 1 (*completely disagree*) to 7 (*completely agree*) measured responses.  $\alpha = .91$  for attitude,  $\alpha = .84$  for subjective norm,  $\alpha = .83$  for control and  $\alpha = .92$  for intention.

### 2.3 Procedure

Educational centers and students’ families were contacted and presented with the research proposal. They were asked to give their authorization for the questionnaires to be administered to the students included in the study. First of all, the participants completed the questionnaires evaluating the perception of autonomy support and self-determined motivation in physical education. A week later, the following evaluations were carried out: perceived autonomy support from peers and parents, self-determined motivation towards physical activity in leisure time, attitudes towards physical activity, subjective norms, perceived behavioral control and the intention to be physically active. An interval of one week between the first evaluation and the second was established so as to minimize the error variance which is attributed to the use of similar self-determined measures in physical education and leisure time. The teacher helped participants read through the questionnaire and answered any queries. It took approximately twenty minutes to complete. Participation was voluntary and students’ identity was kept anonymous.

### 2.4 Data Analysis

In order to analyze and interpret the results, the descriptive statistics of the entire target variables were calculated (averages and typical deviations) and internal consistency for each factor was analyzed with Cronbach’s Alpha coefficient and bivariate correlations. Meanwhile, in order to analyze the relation between this variables a measure model and structural equation model were developed to analyze the predicted relations between the variables studied. The treatment of data was carried out using SPSS 19.0 and AMOS 19.0.

## 3. Results

### 3.1 Descriptive Analysis and Bivariate Correlations

The autonomy support generated from the family obtained a higher average value than that of autonomy support generated by the teacher and by peers. The averages for intrinsic motivation in physical education and intrinsic regulation in leisure were 5.02 and 5.66, respectively. Attitude was valued higher than perceived behavioral control, intention and subjective norm. All variables were observed to relate positively and significantly with each other in the correlation analysis (Table 1).

Table 1. Descriptive statistics and correlations of all the variables

Variables	<i>M</i>	<i>DT</i>	<i>Range</i>	1	2	3	4	5	6	7	8	9
1. Teacher autonomy support	4.71	1.36	1-7	-	.60**	.24**	.57**	.45**	.28**	.43**	.41**	.39**
2. Intrinsic motivation in physical education	5.02	1.36	1-4	-	-	.26**	.45**	.36**	.45**	.38**	.37**	.43**
3. Intrinsic regulation in leisure time	5.66	1.45	1-4	-	-	-	.23**	.32**	.47**	.33**	.65**	.43**
4. Peer autonomy support	4.68	1.41	1-7	-	-	-	-	.51**	.30**	.39**	.41**	.41**
5. Family autonomy support	5.70	1.29	1-7	-	-	-	-	-	.35**	.46**	.53**	.48**
6. Attitude	5.79	1.24	1-7	-	-	-	-	-	-	.43**	.46**	.53**
7. Subjective norm	4.87	1.54	1-7	-	-	-	-	-	-	-	.48**	.71**
8. Control	5.70	1.24	1-7	-	-	-	-	-	-	-	-	.65**
9. Intention	5.18	1.64	1-7	-	-	-	-	-	-	-	-	-

Note. \*  $p < .05$ ; \*\*  $p < .001$ .

### 3.2 Structural Equation Model

With the aim to test the predictive model, the two step method proposed by Anderson and Gerbing (1988) was used. For the first step, a measure model was carried out which would give the scales construct validity; and for the second step, the structural equation model was used to analyze the predictive relations between the variables that make up this model, based on eighteen observed measures which were randomly grouped and nine latent constructs. For all the target variables, their items were divided into two homogenous groups whose measures were used as indicators.

As the Mardia multivariate coefficient was 45.87, the maximum verisimilitude method was carried out together with the bootstrapping procedure, which provides an average for the estimations obtained from bootstrap resampling and its standard error. It also compares the estimated values without bootstrap with the measures obtained through resampling, indicating the bias level. On the basis of the intervals of confidence (the difference between the highest and lowest estimated values in the different resamplings), the regression weights and the standard regression weights, it was possible to appreciate that zero was not within the limits of confidence, which indicated that the estimated values were significantly different from zero. It was therefore possible to consider that the estimation results were robust and, as such, were not affected by lack of normality (Byrne, 2001).

A measure model was analyzed, whose validity was tested by considering the so-called goodness of fit indices. Based on the contributions made by different authors (Bentler, 1990; Bollen & Long, 1993; McDonald & Marsh, 1990), the fit indices or goodness of fit indices considered to evaluate the goodness of the measure model were: RMSEA (Root Mean Square Error of Approximation) and CFI (Comparative Fit Index), IFI (Incremental Fit Index) and TLI (Tucker-Lewis Index). The indices obtained were adequate: [ $\chi^2 (72, N = 441) = 204.29, p = .001, \chi^2/d.f. = 2.06$  CFI = .98, IFI = .98, TLI = .97, RMSEA = .04]. The model's discriminant validity was also examined, taking into account that the correlation between the latent variables, decreased by the model's measure error (+/- 2 times the measure error), was lower than 1.0. The different results indicated that the measure model was adequate.

Next, the structural model was tested. In order to test this model's goodness or similarity with existing empirical data, the goodness of fit indices described above were considered. So, the data obtained [ $\chi^2 (48, N = 441) = 489.69, p = .001, \chi^2/d.f. = 3.98$ , CFI = .94, IFI = .94, TLI = .93, RMSEA = .08] fit the established parameters, and as such this model was considered adequate.

The analytical results of the structural equation model (Figure 1) showed that perceived autonomy support from the teacher positively predicted intrinsic motivation in physical education classes. Intrinsic motivation generated

in the classroom, for its part, positively and significantly predicted intrinsic motivation experienced by those who do physical activity in leisure context. In turn, this motivation, influenced by perception of autonomy support from peers and family, positively predicted attitude, subjective norm and perceived behavioral control, which positively predicted the intention of doing physical exercise after school.

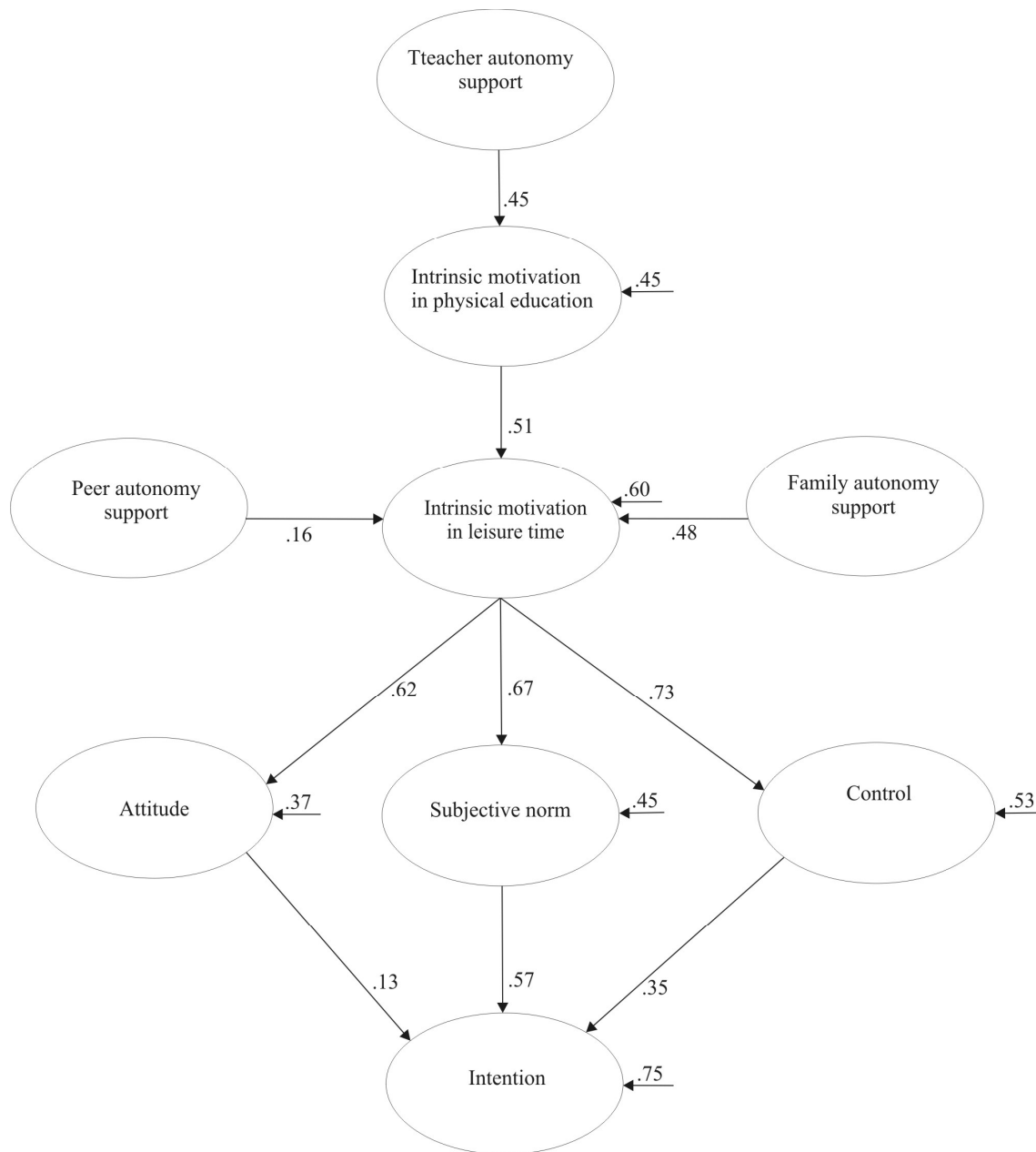


Figure 1. Structural Equation Model (SEM)

Figure 1. Structural Equation Model (SEM) that shows the predictive relations between perceived autonomy support from the teacher, intrinsic motivation in physical education, intrinsic motivation in leisure time influenced by perceived autonomy support from peers and family, attitude, subjective norm and perceived behavioral control dimensions and intention. All the parameters have been standardized and are statistically significant. Variances are shown by the small arrows.

#### 4. Discussion

Although the trans-contextual model has received considerable empirical support, particularly for the relationship between autonomous motivation in PE contexts and autonomous motivation for physical activities outside of school (Hagger & Chatzisarantis, 2016) it needs to provide further replications of the model in diverse educational settings beyond physical education. The aim of this study was to analyze the relations between the climate of autonomy support from the physical education teacher, students' self-determined motivation in physical education classes, autonomy support from peers and family, self-determined motivation towards doing physical activity in leisure time, attitudes, subjective norm and the perception of behavioral control of physical activity and the intention to do physical activity. The results for the structural equation model proposed supported the hypotheses presented, showing that autonomy support predicted students' intrinsic motivation, which also predicted motivation in leisure time. Perception of autonomy support from family and peers predicted intrinsic motivation in leisure time, which predicted attitude, norm and control from the theory of planned behavior, and in turn they predicted the intention to continue doing physical exercise.

With respect to the positive relations between the variables related to the context of autonomy support and intrinsic motivation, our results are coherent with the idea, by Deci and Ryan (1985), that the *style of autonomy support*, where the teacher minimizes extrinsic pressures and demands by offering opportunities and taking the student's perspective into account, facilitates autonomous motivational regulations. To be exact, in the area of physical education, these variables have been analyzed in some studies (Hagger et al., 2007; Standage, Duda, & Ntoumanis, 2006), corroborating the close relations between autonomy and self-determined regulation. In the context of dance, Balaguer, Castillo, Duda, Quested and Morales (2011) have also reported positive relations between the perception of autonomy support and students' self-determined motivation.

With respect to the second objective, the results show that intrinsic motivation in physical education influences intrinsic motivation in leisure time, showing a positive relation between both variables. These results are coherent with the HMIEM, which suggests that motivation in a particular context can be explained by motivation in other contexts (Vallerand, 2007a), so that intrinsic motivation in physical education classes would facilitate the flow of this motivation towards the leisure context. In this line, the studies based on HMIEM (Boiché & Sarrazín, 2007; González-Cutre, Sicilia, & Águila, 2011) and on the transcontextual model of motivation (Hagger et al., 2003, 2005, 2009; Sicilia, Águila, & González-Cutre, 2011) also confirm this result, indicating this facilitative effect between both contexts in the area of physical activity.

On the other hand, the results also showed that perceived autonomy support from peers and family related positively to intrinsic motivation in leisure time. In this sense, the theory of self-determined motivation (Deci & Ryan, 1985, 1991, 2000) indicates that if those who do physical activity perceive a positive relation with their classmates, teacher, family, etc., in a way that makes them feel autonomous, able to participate in decision making and competent, they will achieve self-determined motivation based on satisfaction and on the positive evaluation of the activity.

The three TPB variables (attitude, subjective norms and perceived behavioral control) explained 75% of the variance of the intention to do physical exercise. The effect of attitude on intention was low, although relations between perceived control and subjective norm with intention were moderate. These results are consistent with previous studies and meta-analysis which have researched the relations between the TPB variables in both the adolescent and general population (for example, Armitage, 2005; Hagger et al., 2002; McEachan et al., 2011). However, in this study, there is an apparent difference in the size of the relation between subjective norm and intention which does not appear in other studies. Normally, this variable is the one which has the least relation with intention in comparison to the other two variables, which usually have greater effects. This strong influence of subjective norm on intention could be due to the age bracket of the population studied. Adolescents are known to be particularly sensitive to social pressures from peers and family members. It is possible that in this population, social influences are much more powerful than in other stages of life. Therefore, this study shows that for adolescents, it is not so important to believe that they are capable of doing physical exercise and to think that it is good, but "to feel under pressure" from their family members or friends in order to do exercise, in the sense of perceiving that for these social agents doing exercise is considered an important and positive feature of a person. In short, it would be necessary to take social context and the demographic characteristics of adolescents into account to explain the intention of doing physical exercise and in this way be able to design intervention programs to increase doing physical exercise among adolescents.

Finally, some limitations to this study should be pointed out with respect to the fact that a correlational methodology is used. Consequently, experimental studies which study the cause-effect relations of the variables

studied would be necessary in order to control the common method bias (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Furthermore, the suggested model is the one which has the best fit, but due to the problem of equivalent models produced by the structural equation technique (Hershberger, 2006) it is assumed that the model established would be only one of several possibilities. Finally, it would be interesting to corroborate the results obtained through: the creation of measure instruments which are able to evaluate self-determined motivation in different contexts; the inclusion of objective measures of physical activity, such as accelerometers; and the inclusion of other populations as well as identifying the possible differences between sexes.

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