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ONE STEP CLOSER TO UNDERSTANDING MOTIVATION IN SCIENTIFIC EDUCATION: THE INCORPORATION OF SCIENCE TEXTBOOKS AS A PREDICTOR, TOGETHER WITH MOTIVATIONAL CLIMATE AND BASIC PSYCHOLOGICAL NEEDS

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ABSTRACT

Students' increasing lack of interest in science has led to a disturbing situation that compels us to continue researching educational motivation, in this line, and within the framework provided by self-determination and achievement goal theories. The great importance of this variable can be attributed to its relevance in classes and its competence-related nature, which in principle makes it a motivating resource, as is the case with science textbooks. In particular, this study provides an in-depth understanding of motivation using various motivational predictors, while incorporating the motivational competence relevance of science books. One thousand students between the ages of 10 and 14 years participated. The research instrument used was a questionnaire consisting of 4 scales that measured the motivational competence relevance of science books, the task-oriented motivational climate, the basic psychological need for competence and the intrinsic motivation. Data were analyzed using correlation analysis and a structural equations model. The results showed that, among other aspects, motivation is influenced by competence, while competence is influenced by the task climate and the motivational competence relevance of science books. These findings suggest that in order to increase students' intrinsic motivation, teachers must create a task-oriented climate, emphasize the value that student should attribute to science books from a motivational competence perspective, and satisfy the need for competence.

Keywords: intrinsic motivation; science textbooks; the need for competence; task climate

INTRODUCTION

It is during academic training that scientific education should instil in students the value of the natural environment, curiosity regarding science, and an interest in scientific careers (Rivera & Coronado, 2015; Zeidler et al., 2019). It would ensure that such characteristics as a high degree of self-confidence and enjoyment of the sciences, both of which were detected in 5- and 6-year-old students by Oppermann et al. (2018), will be maintained throughout students' scientific training. However, the latest studies on scientific competence conducted by the Program for International Student Assessment (PISA) have shown that only a minority of Spanish students participate in scientific activities (OCDE, 2016). The average score in science is significantly lower than the OECD average. It is also the lowest score in the last ten years (Ministerio de Educación y Formación Profesional, 2019). Thus, a lack of interest in a scientific study is increasingly prevalent among students in developed countries; it manifested principally in secondary school and is further reflected in the choice of university studies (Couso et al., 2011).

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All of these circumstances focus our attention once again on motivation, which is indispensable for the development of students' competence and is considered an essential driving force for learning (OCDE, 2016).

In this sense, self-determination theory (SDT) (Deci & Ryan, 1985, 2000) and achievement goal theory (Nicholls, 1989), which are the frames of reference for this study, consider that motivation is influenced by the motivational context from different elements, including schoolwork or tasks. In particular, the participation of students in their studies has been related to the value that students assign to school assignments, among other motivational aspects, taking into account that this value refers to the intrinsic interest, usefulness and importance of school assignments (Pintrich et al., 1994). At the same time, school tasks are influenced by the characteristics of, among other resources, school textbooks, given that they continue to be used primarily by teachers (Travé et al., 2016).

On the other hand, diverse authors point out that the value assigned to tasks can be determined by the characteristics of the person who assigns this value that is, by their needs, objectives and values (Esquivel & Sánchez Rosas, 2018). However, others insist that the teacher's way of being or of teaching influence student motivation (Keller et al., 2017; Suhartono et al., 2019).

According to this context, school assignments are a variable to be taken into account to promote student motivation, (Ames & Archer, 1988; Pintrich et al., 1994; Jiménez & Tapia, 2011; García et al., 2015; González & Paoloni, 2015; Garrote Rojas et al., 2016). Thus, due to the textbook continues being the main resource used by teachers and it is the one that collects most of the school assignments (Travé et al., 2015), it is a key topic in the study of school motivation. So, although student motivation is a variable widely investigated from different perspectives (Bieg et al., 2011; Lozano et al., 2011; Miñano & Castejón, 2011; Rosales, 2011; Diseth et al., 2012; Fernández et al., 2012; Sánchez-Oliva et al., 2014), the textbook has not had enough attention despite being such a relevant resource in teaching practice.

As a result, the identification and study of variables that may influence student motivation are essential for reversing the current rejection of the sciences. For this reason, the present study attempts to develop a more in-depth understanding of intrinsic motivation in the scientific field through analysis of the incorporation of another variable —the science textbook— into the group of predictors of student motivation. Thus, the importance of the study is twofold: first, to know the connections between the variables studied can help to understand how the science textbook influences the motivation of the students. Secondly, this knowledge can help to modify teaching practice and the way of using science textbooks, to promote student motivation.

Self-determination Theory

SDT (Deci & Ryan, 1985, 2000) analyzes the degree to which human behaviour is the result of free choice. Within this theory, the mini-theory of organic integration centres on different forms of motivation and the contextual factors that promote or impede the internalization and integration of the regulation of motivated behaviour (Deci & Ryan, 1985).

Internalization is understood as a natural process through which the individual transforms requests or habits into personal and self-regulated values (Ryan et al., 1985). When this process functions optimally, the individual will identify with the importance of social regulations, assimilating and integrating them and therefore becoming more psychologically and socially integrated. However, the process can be only partially completed, which leads to varying degrees of internalization of regulation, which is reflected in different types of motivation (Deci & Ryan, 2000). Therefore, the same authors established different types of motivation along a continuum from less to more self-determination: demotivation, extrinsic motivation and intrinsic motivation. In demotivation, the student lacks the intention to act, showing apathy. External rewards determine extrinsic motivation. In this type of motivation, a person can be motivated by classroom grades (external regulation), feelings of guilt (introjected regulation), an understanding of the benefits of the activity in question (regulation through identification) or by the fact that such behaviour is part of their lifestyle (integrated regulation). Last, according to Vallerand (1997), intrinsic motivation regarding knowledge refers to the completion and a commitment to the activity for personal pleasure and satisfaction from learning.

At the same time, the effectiveness of the internalization process is influenced by the social context (Deci et al., 1991) from different elements, including school tasks (Deci & Ryan, 2000). In this way, as pointed out above, student involvement and motivation have been related to the value assigned to tasks (Pintrich et al., 1994). School tasks, in turn, are influenced by the materials that teachers use, of which textbooks are the

most relevant due to their ubiquitous presence in educational activities (Travé et al., 2016; Sari & Islami, 2020). Specifically, the educational proposals of the textbooks should serve to encourage the development of attitudes and capabilities in students that would enable them to "act effectively in a certain type of situation, mobilizing and combining intellectual and emotional resources in real-time and in a pertinent fashion" (Perrenoud, 2012). Furthermore, motivation should be a goal, given that it is an essential aspect of the development of scientific competence (OCDE, 2016) due to its link with emotional intelligence, which is necessary for development (Stiefel, 2008). Therefore, school textbooks are highly relevant element due to their competence-related nature, which should include a motivating resource. As such, they can be analyzed from the motivational competence perspective in order to generate more in-depth studies on educational motivation.

On the other hand, Deci & Ryan (1985) argue that psychological well-being and optimal functioning are based upon three basic psychological needs: autonomy, competence and relatedness. According to these authors, in all human beings, needs must be satisfied in order for natural processes such as intrinsic motivation or the integration of extrinsic regulations to occur optimally. The satisfaction of these needs allows conditions to be specified that will facilitate motivation, development and performance. The reason is that contexts that provide the opportunity to satisfy these needs are those that will favour and drive these aspects (Deci et al., 1991). In particular, the need for competence encompasses individuals' efforts to control outcomes and experience mastery (Deci & Ryan, 1985).

From an SDT perspective, various studies have revealed the close relationship between the satisfaction of these needs and student motivation (Giménez et al., 2013; Castillo et al., 2015; Moreno-Murcia et al., 2015).

Achievement Goal Theory

Achievement goal theory (Nicholls, 1989) conceives of the human being as an intentional organism whose actions are the result of a rational attempt to achieve a goal within the context of achievements. Studies seek to explain the motivation to seek achievement through the goals that people set using this approach, which is determined in part by the beliefs that each person has regarding his or her capability (Ames & Archer, 1988). Goals are "individuals' objectives for initiating and developing behaviour directed toward that goal" (Pintrich & Schunk, 2006).

Within this theory, various authors understand these goals in terms of two general types according to whether the goals have a more intrinsic or extrinsic orientation. In this sense, Nicholls (1989) distinguishes between task-centred goals and ego-centred goals, thus, according to this approach, goal-directed behaviour is understood as behaviour whose goal is competence or perceived competence in contexts of achievement. Likewise, it indicates that achievement contexts refer to situations in which people should demonstrate their competence, taking into account the contextual conditions of the specific action. If grades are the most important thing for the people surrounding the student, the transmitted climate will involve the ego; however, if the people surrounding the student believe the effort, self-improvement or the development of abilities is the most fundamental aspect of learning, they will transmit a climate that involves school tasks. In this sense, different studies have shown that individuals who perceive a task-centred motivational climate exhibit a more adaptive behavioural pattern (Calvo et al., 2010; Fernández et al., 2012).

Taking into account all of the circumstances presented, the study of the different factors involved in motivation, among which the textbooks stand out due to their relevance in science classes, could help to improve methodological strategies related to the textbook that foster student motivation. For this reason, this study's objective is to explore the relationships between the motivational competence relevance of science books, the task-oriented motivational climate, and satisfaction of the basic psychological need for competence as a way of explaining intrinsic motivation in the Natural Science classes. Specifically, our research question is: How are the motivational competence relevance of science books, the task-oriented motivational climate, the basic psychological need for competence and intrinsic motivation related in the Natural Science classes? Thus, we intend to ascertain whether the task climate predicts the value that students assign to their science textbooks at the same time that these two variables predict the satisfaction of the need for competence, with this last variable being what ultimately predicts educational motivation.

METHODS

The selection of the sample was carried out in the province of Huelva (Spain) using a non-random sampling design (Bisquerra, 2014) and taking into account that the sample size had to be ten times greater than the number of items

(Velicer & Fava, 1998). Specifically, 13 educational centres were selected: 8 located in towns and 5 in the capital. Eleven of these centres were public institutions, and 2 were subsidized schools.

The sample included a total of N=1000 students between the ages of 10 and 14 years. The sex distribution was 504 (49.6%) male students and 496 (50.4%) female students. In terms of educational level, 475 (47%) were third-year primary school students, and 525 (53%) were first-year secondary school students.

The instrument used to gather data was a questionnaire consisting of four scales, which are described below:

Intrinsic motivation to know. This factor was selected from Núñez et al. (2010) Academic Motivation Scale. This version contains various subscales that refer to different reasons for which students go to an educational centre. Specifically, intrinsic motivation to know is formed by four items.

This construct obtained a few adequate fit indices: $\chi2=2.91$, $p=0.23$, $\chi2/d.f.=1.45$, CFI=0.99, IFI=0.99, GFI=0.99, SRMR=0.007, RMSEA=0.02. Likewise, the scale's internal consistence was considered acceptable, since the Cronbach's alpha value was 0.84.

The basic psychological need for competence. To analyze this, the *competence* factor, translated and adapted from the Basic Psychological Needs Scale created by Betoret & Artiga (2011), was used. The scale consisted of 4 items.

The goodness-of-fit indices for the construct were adequate: $\chi2=0.89$, $p=0.34$, $\chi2/d.f.=0.89$, CFI=1.00, IFI=1.00, GFI=1.00, SRM=0.005, RMSEA=0.00. Regarding internal validity, an acceptable value of 0.701 was obtained.

Task-oriented motivational climate. To examine this variable, the items most relevant to this study were selected from the Perceived Motivational Climate in Sport Questionnaire created by Galván et al. (2013). The scale comprised four items.

The fit indices obtained were adequate: $\chi2=0.017$, $p=0.896$, $\chi2/d.f.=0.017$, CFI=1.00, IFI=1.00, GFI=1.00, RMSEA=0.00, SRMR=0.0007.The internal consistency was 0.75 and was therefore considered satisfactory.

Relevance scale for the science textbook's motivational competence (MCRSB). The scale was designed and validated by Romero (2016) and should be understood from the motivational aspects of the competence design of these types of resources; it is not based on other aspects of these competencies. This scale comprised four items, forming a single construct that measured the students' perceived relevance of their science textbooks from a motivational competence perspective.

The fit indices were adequate: $\chi2=5.31$, $p=0.07$, $\chi2/d.f.=2.66$, CFI=0.99, IFI=0.99, GFI=0.99, SRMR=0.011, RMSEA=0.041. Internal consistency was 0.83, which was considered adequate.

Procedure

Once the sample was specified, the directors of the selected centres were contacted to inform them of the study's objectives, the content of the questionnaires and the time required to apply them. Following the centres' authorization, one of the researchers went to the site to administer the questionnaires. First, the researcher explained the purpose of the study and the procedure to the students and guaranteed their anonymity. Then, the students completed the questionnaires individually in the classroom and during their natural sciences class.

Data Analysis

As a first step, the descriptive statistics of all study variables were estimated, and the bivariate correlations between them were analyzed.

Following this, a structural model was created to analyze the ability to predict intrinsic motivation to know through the relationships between the motivational competence relevance of the science book (MCRSB), the task-oriented motivational climate and the satisfaction of the basic psychological need for competence. This analysis was carried out in two steps, following Lévy & Varela (2006). In the first step, the confirmatory factor analysis was performed to prove the validity of the measurement model. In the second step, a mediation analysis was conducted. Finally, the structural model was executed to analyze the relationships between latent variables, at which point the structural and measurement model were evaluated simultaneously.

A covariance matrix and the following adjusted indices, both absolute and relative, were used to prove the model's validity, following Lévy & Varela (2006): the chi-square and degrees of freedom ratio ($\chi^2/d.f.$), root mean square errors if approximation (RMSEA), standardized root mean square residual (SRMS), and the incremental comparative fit index (CFI) and incremental fit index (IFI).

All of these analyses were carried out with the statistical program SPSS 19.0 and AMOS 22.0.

RESULTS AND DISCUSSION

In this study, we first analyzed the correlation between the variables studied and the descriptive statistics of the variables were determined (see Table 1).

Table 1. Descriptive Statistics and Intercorrelations of Study Variables

	Mean	SD	A	K	1	2	3	4
1.MCRSB	3.58	0.99	-.0491	-0.355	-	0.559**	0.432**	0.472**
2.Intrinsic motivation to know	4.04	0.87	-0.588	0.133	-	-	0.404**	0.460**
3. Task climate	3.92	0.88	-0.902	0.610	-	-	-	0.376**
4. Need Competence	4.07	0.70	-0.693	0.126	-	-	-	-

Note: Asymmetry (A) and kurtosis (K)

The correlation analysis showed that positive and significant relationships were established between all of the variables.

The analysis of the impact of the task climate, the need for competence and the MCRSB on intrinsic motivation to know was carried out using a structural equations model. Specifically, the hypothesized model was tested using a two-step approximation, as recommended by Lévy & Varela (2006).

First, a measurement model was made with four latent constructs that grouped a total of 16 observed measurements. Confirmatory factor analysis was carried out for all of the variables using the maximum-likelihood estimation method to corroborate the suitability of the applied scales. Asymmetry (A) and kurtosis (K) indices below two were obtained for all the indicators, and therefore, univariate normality could be assumed (Byrne, 2001). Additionally, Mardia's multivariate kurtosis coefficient obtained a value of 66.08 (*critical ratio, c.r.*=43.53). For this reason, a complementary analysis was conducted using the bootstrapping procedure following Marôco's indications (2010). This procedure compares the values of estimators calculated without the bootstrap with those obtained in the resampling, indicating the level of bias. Likewise, taking into account that the confidence intervals for the estimators in the different resampling did not contain the number zero within their confidence limits, the estimated values could be considered significantly different from zero. As a result, the results of the estimates could be considered robust (Byrne, 2001).

The measurement model obtained some adequate fit indices: $\chi2=290.51$, $p<0.001$, $\chi2/d.f.=3.02$, CFI=0.97, IFI=0.97, GFI=0.96, SRMR=0.04, RMSEA=0.04. Consequently, the results indicated that the measurement model was adequate.

The structural equations analysis of the second step allowed us to focus on the conceptual interactions between the latent factors. In this case, four structural equations analyses were carried out to evaluate both the mediation among variables and the final model. Mardia's multivariate kurtosis coefficient obtained a value of 66.08 (*c.r.=43.53*) for the final model. For this reason, the original sample was analyzed again, and a complimentary analysis was carried out through bootstrapping, following Marôco's indications (2010). The bootstrapping revealed that the results of the estimates were robust (Byrne, 2001).

Examining the relationship between task climate, the MCRSB and the need for competence (stage 1), we found that the mediation model obtained several adequate fit indices: $\chi2=191.25$, $p<0.001$, $\chi2/d.f.=3.9$, CFI=0.96, IFI=0.96, GFI=0.97, RMSEA=0.05, and SRMR=0.04.

The task climate predicted the need for competence (β=0.30, p<0.001) and the task climate (β=0.54, p<0.001), while the MCRSB predicted the need for competence (β=0.52, p<0.001). Therefore, the results showed that the MCRSB partially mediated the relationship between the task climate and the need for competence. It also explained 53% of the variance of the latter.

The mediation model through which the mediating effect of the need for competence on the relationship between the task climate and intrinsic motivation to know was examined (stage 2) and demonstrated a good fit to the data, χ2=168.59, p<0.001, χ2/d.f.=3.44, CFI=0.97, IFI=0.97, GFI=0.97, RMSEA=0.04, and SRMR=0.04.The positive and direct relationship that was established between the task climate and the intrinsic motivation to know (β=0.18, p<0.001) was not significant. Nonetheless, an indirect and positive relationship was established through the mediation of the need for competence given that the task climate predicted the need for competence (β=0.58, p<0.001) and this, in turn, predicted intrinsic motivation to know (β=0.55, p<0.001). In this way, 45% of the variance of intrinsic motivation to know was explained.

An analysis of the relationships between the MCRSB, the need for competence and intrinsic motivation to know (stage 3) found that mediation model had several adequate fit indices, χ2=192.71, p<0.001, χ2/d.f.=3.8, CFI=0.97, IFI=0.97, GFI=0.97, RMSEA=0.05, and SRMR=0.04.The MCRSB predicted intrinsic motivation to know(β=0.44, p<0.001; the need for competence was predicted by the MCRSB (β=0.68, p<0.001) and predicted the intrinsic motivation to know (β=0.34, p<0.001). In this manner, the need for competence partially mediated the relationship between the MCRSB and intrinsic motivation to know, explaining 52% of the variance.

The final mediation model (stage 4) is represented in Figure 1.

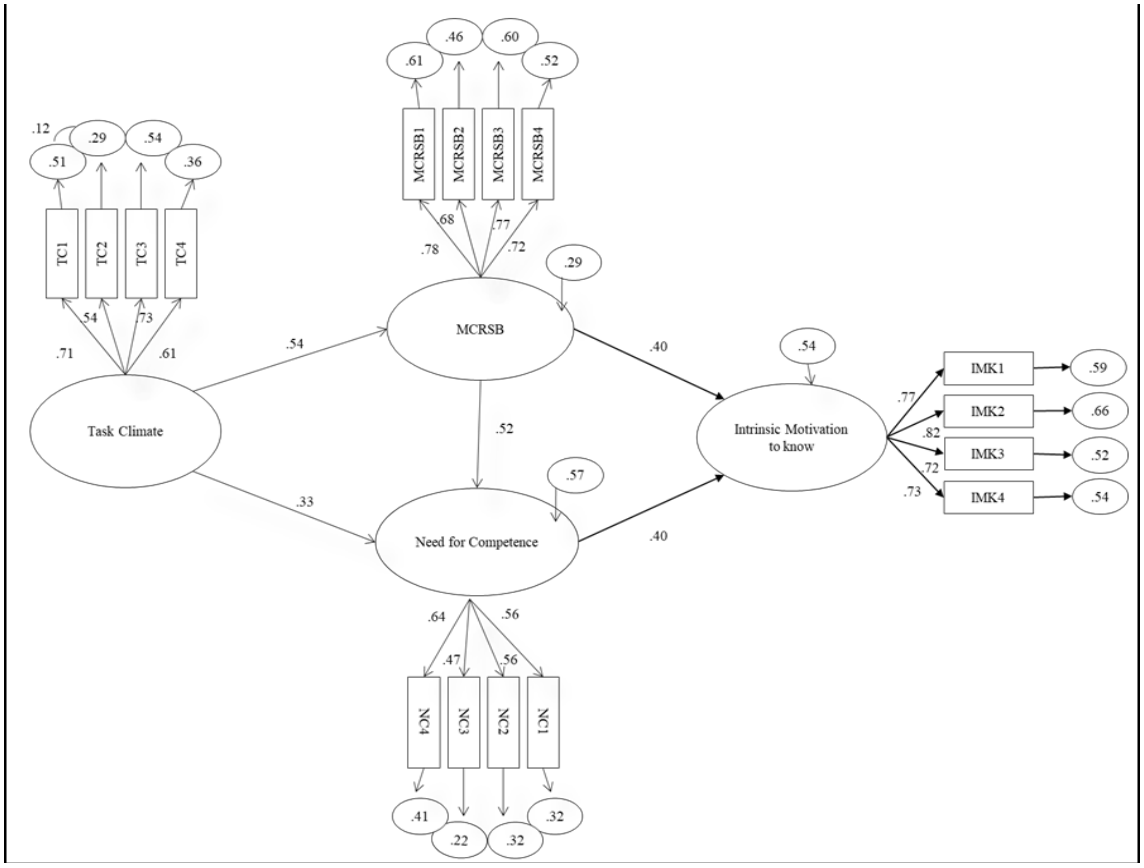

Figure 1. Model of Structural Equations Showing the Relationships among the Variables

The final mediation model (Figure 1) showed good levels of fit to the data, $\chi 2=293.99$, $p<0.001$, $\chi 2/d.f.=3.03$, CFI=0.97, IFI=0.97, GFI=0.96, RMSEA=0.04, SRMR=0.04.

As Figure 1 shows, the task climate positively predicted the MCRSB ($\beta=0.54$, $p<0.001$). At the same time, the need for competence was predicted by the task climate ($\beta=0.33$, $p<0.001$) and the MCRSB ($\beta=0.52$, $p<0.001$). Last, both the need for competence ($\beta=0.40$, $p<0.001$) and the MCRSB ($\beta=0.40$, $p<0.001$) predicted intrinsic motivation to know. Together, the analyzed variables explained 54% of the variance of intrinsic motivation to know.

The results obtained from the bivariate correlations and the descriptive statistics were aligned with self-determination theory (Deci & Ryan, 2000). This is because positive and significant relationships already existed among the dimensions of task climate, psychological need for competence, MCRSB, and intrinsic motivation to know.

The proposed causality model showed that the task climate predicted the motivational competence value of the science textbook, and both variables predicted satisfaction of the need for competence. In other words, the task climate predicted the need for competence, both directly and indirectly, mediated by the MCRSB. Finally, the need for competence and the MCRSB predicted the intrinsic motivation to know. For this reason, both the need for competence and the MCRSB behave as mediators between the task climate and intrinsic motivation to know.

In general, the data are consistent with previous studies that have shown that the learning-oriented climate is positively correlated with intrinsic motivation (Almagro et al., 2015; Romero et al., 2017). Likewise, Castillo et al. (2015) used the same line of inquiry that this study does in the scientific field to establish a series of relationships between motivational climates, psychological needs and motivation variables in the physical education field. These relationships were consistent with self-determination theory given that positive and significant correlations existed between more self-determined forms of motivation and the task-oriented motivational climate in the same manner as the results obtained by Gutiérrez & López (2012). In an environment such as the educational, the influence of the teacher, their attitudes, ways of doing and being in the classroom, the passion with which they transmit their knowledge, norms and values will determine the student's vision of their learning (Tabera et al., 2015). In other words, a teacher who can create a climate in which the focus is placed more on the process than on the results facilitates personal growth. Furthermore, in a climate where students' effort and progress are recognized, there will be greater possibilities for promoting more self-determined motivation (Baena-Extremera et al., 2013).

Regarding the satisfaction of the need for competence, diverse studies are consistent with our results, which confirm that it is imperative to satisfy basic psychological needs to encourage student motivation (Giménez et al., 2013; Moreno-Murcia et al., 2015). Likewise, results based upon an experience in the classroom support the notion that a task-oriented climate influences perceived competence and intrinsic motivation (Silveira & Moreno, 2015), thus creating a motivational climate that favours satisfaction of the need for competence, thus promoting more self-determined forms of motivation (González et al., 2011). This relationship could be based on the fact that people who are more task-oriented are those who are can better satisfy their psychological need for competence because they seek favourable valuations of competence through learning (Elliot, 1999). In such cases, the teacher continues to be an essential figure, given that the educational contexts that he/she creates that foster satisfaction of the need for competence will facilitate more effective functioning as well as the student's psychological health and well-being (Deci & Ryan, 2000).

The relationship between the MCRSB and the rest of the variables could be explained from different perspectives. First, and consistent with the results of the present study, are findings of Garrote Rojas et al. (2016), that indicating the value that a student assigns to his/her activities influences his/her motivation. When the student assigns a negative value to an activity, intrinsic motivation will be facilitated only with difficulty. Precisely, the MCRSB was positively predicted by the task climate, which explained 30% of its variability. In other words, from a motivational perspective, students consider their science book to be more relevant when they are learning in a climate that encourages them to work collaboratively, when they are encouraged to improve their skills and when their achievements are recognized. These results are found in many studies that focus on teachers. Thus, Pintrich et al. (1994) indicated that the value assigned to tasks is influenced by how the teacher approaches the subject matter and class management. In this sense, the study by Jiménez & Tapia (2011) shows that students situations are motivating when the teacher

favours tasks that they perceive as relevant. Likewise, it has been noted that students who feel that they are in a command-oriented climate prefer challenging tasks, use more appropriate strategies, and show a more positive attitude (Ames & Archer, 1988). For their part, González & Paoloni (2015) observed that task relevancy predicted involvement and performance. Students who perceived that they had been given a better explanation of the relevancy and usefulness of tasks were more involved in class, considered the class more important for their future, showed more interest in scientific content and ways of reasoning, and therefore performed better. At the same time, data has been obtained that underscores the fact that primary school students perceive long, dull or uninteresting activities as discouraging when it comes time to involve themselves in schoolwork (García et al., 2015).

Last, the study conducted by Vedder-Weiss & Fortus (2012), which combines several of the aspects analyzed in the present study, produced results that support our findings. This study reveals that in schools that cultivate a climate with more task-oriented characteristics, students are more motivated by internal goals related to the learning process, and their motivation does not appear to wane throughout primary and secondary school. On the other hand, in schools where these characteristics do not exist, students are more oriented toward external goals that are related to learning outcomes. Similarly, Fortus & Vedder-Weiss (2014) determined that students who attend the first of the two kinds of schools described above present a constant motivation toward the sciences beyond the academic context. However, in the latter type of school, this type of motivation decreases in extracurricular environments.

CONCLUSION

The results of the present study indicate that students' perceived motivational variables are consistent with self-determination theory and achievement goal theory. Specifically, the results suggest that task-oriented climate positively predicted satisfaction of the need for competence. Therefore, students feel more competent in a climate that supports personal growth through peer collaboration. Likewise, task-oriented climate positively predicted the MCRSB. In other words, when students perceive that the classroom climate promotes effort and self-improvement, their perception of the relevance of their science textbook is positive. For their part, the MCRSB positively predicted satisfaction of the need for competence and intrinsic motivation to know. In other words, when students perceive that they benefit from the school textbook from a motivational competence perspective, which leads them to value it, they feel that their need for competence is satisfied and their intrinsic motivation to know is fostered. At the same time, the satisfaction of the need for competence mediated the relationship between task climate and the MCRSB along with educational motivation. In other words, when students' need for competence is fostered, principally due to a task-oriented climate and a positive perception of the MCRSB, this favours more self-determined behaviour.

As a general conclusion, we highlight the importance of studying students' educational, motivational context to promote forms of intrinsic motivation in their learning process and consequently encourage the most self-determined behaviours. Specifically, it has been observed that teachers play an essential role in the creation of an adequate motivational climate and positively influence students' perception of the motivational competence relevance of school tasks linked to their textbooks, the degree of satisfaction of their need for competence, and therefore intrinsic motivation.

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