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Homework Motivation and Engagement throughout Compulsory Education

Bibiana Regueiro*, Natalia Suárez**, Antonio Valle*, José C. Núñez**, and Pedro Rosário***

*Grupo de Investigación en Psicoloxía Educativa (GIPED).
Departamento de Psicoloxía Evolutiva e da Educación. Universidade da Coruña.
**Departamento de Psicología. Universidad de Oviedo.
***Departamento de Psicología Aplicada. Universidad de Minho (Portugal)

Abstract

The present investigation examines changes in students' homework engagement and motivation as they advance to higher grade levels in Spanish compulsory education. The study takes into account the possible effect of prior academic achievement on students' homework engagement and motivation. Participants included 1,257 students (ranging in age from 9 to 16 years) from four regions in northern Spain. Results show that: (a) There are statistically significant differences in students' homework engagement and motivation as they advance to higher grade levels; and, (b) Students' prior academic achievement is related to their homework engagement and motivation.

Keywords: Homework, homework engagement, homework motivation, academic achievement, compulsory education.

Resumen

El presente estudio analiza los cambios en la implicación de los estudiantes en los deberes escolares y en la motivación hacia los mismos a lo largo de la escolaridad obligatoria, teniendo en cuenta el efecto que el rendimiento académico previo puede ejercer sobre la implicación y la motivación. Para ello, se ha contado con 1.257 participantes de cuatro provincias del norte de España de edades comprendidas entre los 9 y los 16 años. Los resultados obtenidos indican que: (a) existen diferencias estadísticamente significativas en función del curso en la motivación y la implicación en los deberes; y, (b) el rendimiento académico previo está relacionado con las variables motivacionales y de implicación en los deberes.

Palabras clave: Deberes escolares, implicación en los deberes escolares, motivación hacia los deberes, rendimiento académico, educación obligatoria.

Correspondence concerning this article should addressed to Antonio Valle. Departamento de Psicoloxía Evolutiva e da Educación, Facultade de Ciencias da Educación, Universidade da Coruña, Campus de Elviña, s/n. 15071 A Coruña. Spain. E-mail: vallar@udc.es

Introduction

Homework has been defined as "tasks assigned to the students by the teachers to be performed out of school" (Cooper, 2001a, p. 3) and they are one of the daily activities in students' lives.

Diverse studies show the enormous educational importance of homework (e.g., Cooper, Robinson, & Patall, 2006; Patall, Cooper, & Robinson, 2008; Walker, Hoover-Dempsey, Whetsel, & Green, 2004), stating that they are a tool to improve students' study habits and attitudes towards work (Corno, 2000; Trautwein, Lüdtke, Kastens, & Köller, 2006). Even the students themselves acknowledge the transcendence of homework to help them to learn (Cooper 1989a; Sharp, Keys, & Benefield, 2001). However, there are still some discordant opinions about student engagement and motivation towards homework, the changes this engagement undergoes as they advance to higher grades (Cooper, 2001b) and its relation with achievement (Cooper et al., 2006; Trautwein, Schnyder, Niggli, Neumann, & Lüdtke, 2009).

Grade, academic achievement and homework engagement

Whether or not students do all their homework can have a positive or negative impact on their academic achievement (Cooper, Jackson, Nye, & Lindsay, 2001; Núñez, Suárez et al., 2013; Trautwein, Köller, Schmitz, & Baumert, 2002; Trautwein & Lüdtke, 2009).

Not only the amount of homework has awakened interest, but also the time that students devote to homework has aroused curiosity and controversy. Thus, whereas some investigations have found a positive relationship between homework time and academic achievement (Cooper et al., 2006; Cooper & Valentine, 2001; Walberg, 1991), others have observed a weak relation, a negative one (De Jong, Westerhof, & Creemers, 2000; Trautwein & Lüdtke, 2009; Trautwein, Lüdtke, Schnyder, & Niggli, 2006), or even no relationship (Murillo & Martínez-Garrido, 2013). Although a priori, more homework time may seem an indicator of academic success, however as suggested by Xu (2007), devoting more time to homework does not necessarily mean that one is carrying out more efficient strategies. Perhaps the way that one engages in homework is more positively related to academic achievement. In this sense, dedicating more time and making the best of that time lead to a greater amount of homework carried out and to better achievement (Núñez, Suárez et al., 2013).

The fact that students engage more or less in homework should be related, at least in part, to the grade in which the student is enrolled. In fact, in Primary Education (PE), homework is usually assigned, among other reasons, so that students will learn to better ma-

nage their study time reviewing the material taught in class, whereas in Compulsory Secondary Education (CSE), homework is assigned in order to enrich and perfect the classwork (Muhlenbruck, Cooper, Nye, & Lindsay, 2000). Moreover, as students advance to higher grades, the amount of homework assigned increases (Gill & Schlossman, 2004; Zimmerman & Kitsantas, 2005) because the younger students have less effective study habits and are less capable of avoiding distractions (Cooper & Valentine, 2001).

However, the literature reflects positions that differ from this direction. Hong, Peng and Rowell (2009), for example, indicated that younger students engage more and are more persistent in their homework than older students. Other authors (Bryan & Nelson, 1994; Cooper, Lindsay, & Nye., 2000; Núñez, Suárez et al., 2013) have reported that the amount of homework done not only decreases as students advance to higher grades but homework time management also decreases (Núñez, Suárez et al., 2013; Regueiro et al., 2014). However, Gill and Schlossman (2004) note that, although the amount of homework students carry out increases considerably with age, the amount of homework time increases only slightly. Xu (2007, 2010) suggests that homework engagement is not related to students' grade, which seems to support the study of Wagner, Schobel and Spiel (2008), who found no effects of grade on homework time.

Although grade may be associated with homework engagement, students' prior academic achievement is considered a variable of great relevance in this type of relationship (Regueiro et al., 2014) because changes in homework engagement probably follow different paths depending, among other variables, on students' prior academic results.

According to Hong (2001), high-performing students state that they like to feel responsible for their homework, and they are more organized than their low-performing classmates. This is related to the study carried out by Wagner et al. (2008), indicating that low-performing students spend more time on homework because, due to their difficulties, they need more time to do their homework. Núñez, Suárez et al. (2013) have verified, in students between 10 16 years, that the correlation between homework time and achievement is negative, albeit non-significant. Pan et al. (2013) have corroborated that in PE, high, average, or low achievement does not lead to significant differences in the amount of homework time; however, the amount of homework carried out and homework time management increase when achievement is high.

These results differ from those found in a sample of CSE, in which the highest levels of academic achievement were positively rela-

ted to homework engagement (e.g., more homework carried out, better management of homework time, and even more homework time) (Regueiro et al., 2014).

Grade, academic achievement, and homework motivation

Motivation is considered an essential part of the process of doing homework (Corno, 2000; Xu & Corno, 1998) and, in turn, homework plays a critical role in the development of students' achievement motivation (Bempechat, 2004).

A large number of works relate the impact of motivational variables to achievement (Cleary & Chen, 2009; Miñano & Castejón, 2011; Rosário et al., 2012; Rosário, Núñez, Valle, González-Pienda, & Lourenço, 2013) but in spite of this, there is scarce research as a function of age. Some investigations suggest that motivation decreases as students advance to higher grades (Hong et al., 2009; Trautwein, Lüdtke, Kastens et al., 2006; Wigfield et al., 1997). When children begin school, they feel excited about the idea of homework, but after an extraordinarily short period of time, this interest and excitement decrease alarmingly (Coutts, 2004). In a study carried out by Bryan, Nelson and Mathur (1995), a significant proportion of students in their first years of CSE state that homework is boring. These results are in accordance with those obtained by Xu (2004) in a study carried out in higher grades. Likewise, in the investigation of Chen and Stevenson (1989), more than 60% of the students from the last courses of CSE considered homework as negative.

Although there is not much research on this topic, there are some indications that a large part of the students engage in homework not because of the interest and enthusiasm it awakens but for other reasons, such as a sense of duty, the desire to please, or even to avoid punishments (Walker et al., 2004). Likewise, when they are asked about homework, references to responsibility do not begin to emerge before the end of PE (Warton, 1997); thus, most of the smaller children do homework to avoid problems and to please their parents (Corno, 2000; Warton, 2001).

Like learning, doing homework also requires the students to be willing to participate and persist. This partially stems from their personal goals and their beliefs about the value, interest, and importance that the achievement of those goals has for them (Linnenbrink & Pintrich, 2002; Núñez, Rosário, Vallejo, & González-Pienda, 2013; Pintrich & De Groot, 1990; Valle et al., 2013; Zimmerman, 2001).

Likewise, various studies have identified other factors related to the link between doing homework and academic achievement (Cooper, 1989b; Keith & Benson, 1992; Muhlenbruck et al., 2000); one of the most important factors is prior

academic achievement (Regueiro et al., 2014). As indicated by Ormrod, "Students feel more sure of their success in a task when they have already been successful in that same task or in similar tasks in the past" (Ormrod, 2003, p. 347). Thus, students' beliefs in their capacities to achieve the established goals influence their motivation and efforts to learn and, therefore, their academic achievement (Schunk & Ertmer, 2000). Hong (2001) also showed that high-performing students are more self-motivated to do homework than low- performing students.

Summing up, the data provided by the prior studies reviewed, in general, suggest that the variables-both homework engagement and motivational variables-decrease as students progressively advance to higher grades. Nevertheless, this statement does not seem certain because the data proceed from multiple studies that investigated students of one or two grades, with different measurement instruments, and in very disparate educational contexts. Therefore, with the present investigation, we intend to contribute knowledge to this field by analyzing the changes produced throughout compulsory education in students' homework motivation and engagement, taking into account the possible effect that prior academic achievement may have on these variables. The greatest contribution of this study will be the obtainment of data of a broad sample of students from seven grades of PE and CSE. In accordance with some of the above-mentioned the studies, we expect that grade will be significantly related to the motivational variables and to homework engagement variables. Specifically, we expect that student motivation and engagement will decrease as they advance to progressively higher grades.

Method

Participants

In this study, participants were 1257 students (45.6% males) belonging to 18 schools, of which 15 are public centers and 3 are subsidized centers. Most of the schools are in urban areas, except for 6, which are either in rural or semi-urban areas. The schools and institutes have a student and family profile of medium socioeconomic level. Regarding age, the students were between 9 and 16 years old, 17.3% (n = 216) is studying 4th grade of PE, 14.9% (n = 188) is in 5th grade of PE, 10.4% (n = 131) is enrolled in 6th grade of PE, 15.4% is studying 1st grade of ESO (n = 194), 12.1% is in 2nd grade of CSE (n = 152), 14.5% is studying 3rd grade of CSE (n = 182), and 15.4% is in 4th grade of CSE (n = 194).

Instruments

To measure the variables related to homework motivation and enga-

gement, we used the *"Encuesta sobre los Deberes Escolares"* (EDE, in English, the Homework Survey) (e.g., Núñez, Suárez et al., 2013; Núñez et al., 2014; Pan et al., 2013; Rosário et al., 2009; Valle et al., in press). The students' motives, interests, attitudes and perceptions of homework included the following variables: (a) *intrinsic motivation towards homework,* (b) *interest in homework,* (c) *attitude towards homework, and,* (d) *perception of the utility of homework*. Intrinsic motivation towards homework (α = .85) was assessed by means of eight items (e.g., "Doing homework helps me to understand what is being taught in class"). Interest in homework (α = .75) was assessed by means of three items (e.g., "I think that doing homework increases my interest in the subjects"). Attitude towards homework (α = .77) was assessed by means of three items (e.g., "I feel good when I am doing homework"). The participants rated the items of these motivational variables on a Likert-type scale ranging from 1 (*completely false*) to 5 (*completely true*). Lastly, the perception of the utility of homework was assessed by means of an item asking the student's opinion of homework, using for this purpose a 5-point Likert-type scale ranging from 1 (*it's good for nothing*) to 5 (*it's very useful*). To determine the degree of homework engagement, we collected information of the following variables: (a) amount of homework the students habitually did, (b) homework time, and (c) homework time management. An item asking how much homework was performed habitually, rated on a 5-point Likert-type scale ranging from 1 (*none*) to 5 (*all of it*) was used to estimate the *amount of homework carried out* by the students. As for the *daily homework time* (α = .73), the students responded to three items (in general, during a typical week, on a typical weekend) with the general formulation "How much time do you usually spend doing homework?", with the following response options: 1 (*less than 30 minutes*), 2 (*30 minutes to 1 hour*), 3 (*1 hour to 1½ hours*), 4 (*1½ hours to 2 hours*), and 5 (*more than 2 hours*). Lastly, *homework time management* (α = .79) was appraised through students' responses to three items (in general, during a typical week, on a typical weekend) on which they were requested to indicate their regular level of homework time management on a 5-point Likert-type scale with the following options: 1 (*I don't manage it at all*), 2 (*I don't manage it as much as I should*), 3 (*regular*), 4 (*I manage pretty much*), 5 (*I manage it completely*).

Prior academic achievement was obtained by means of the students' academic grades in Spanish Language, English Language, and Mathematics. The final measure of this variable is the mean of the grades in these three subjects.

Procedure

The data were collected during the regular class hours by external personnel, after obtaining informed consent of the school board of directors and the teachers. The homework variables were obtained during the 2013-2014 school course, and prior academic achievement from the final assessment of the 2012-2013 course.

Data analysis

We conducted multivariate analysis of covariance (MANCOVA) with grade as factor (with seven levels) and introducing prior academic achievement as covariate (to statistically control for its effect). As dependent variables, we included intrinsic motivation towards homework, interest in homework, attitude towards homework, perception of the utility of homework, amount of homework carried out, homework time, and homework time management.

As a measure of the effect size, we used the partial eta-squared coefficient (η_p^2), as it is one of the procedures used most frequently in educational research (Sun, Pan, & Wang, 2010). To interpret the effect sizes, we used the criterion established in the classic work of Cohen (1988), according to which, an effect is small when $\eta_p^2 = .01$ ($d = .20$), medium when $\eta_p^2 = .059$ ($d = .50$), and large if $\eta_p^2 = .138$ ($d = .80$).

Results

Table 1 presents the correlation coefficients and the means, standard deviations, skewness, and kurtosis of the variables analyzed this work. According to the normality distribution criterion proposed by Finney and DiStefano (2006), with maximum values of 2 for skewness and of 7 for kurtosis, it can be concluded that the variables included in this work present normal distributions.

After controlling for the effect of prior academic achievement, Wilks' $\lambda = .850$, $F(7, 1243) = 31.33$, $p < .001$, $\eta_p^2 = .150$ (large effect size), the results revealed statistically significant differences as a function of grade in the motivational and homework engagement variables, Wilks' $\lambda = .551$, $F(42, 5834) = 18.81$, $p < .001$, $\eta_p^2 = .095$. According to the above-mentioned criteria, the effect size is medium.

Regarding the relevance of prior academic achievement in this design, we note that it is significantly related to the amount of homework carried out, $F(1, 1249) = 178.31$, $p < .001$, $\eta_p^2 = .125$, homework time, $F(1, 1249) = 16.76$, $p < .001$, $\eta_p^2 = .013$, homework time management, $F(1, 1249) = 53.36$, $p < .001$, $\eta_p^2 = .041$, intrinsic motivation towards homework, $F(1, 1249) = 49.04$, $p < .001$, $\eta_p^2 = .038$, interest in homework, $F(1, 1249) = 16.51$, $p < .001$, $\eta_p^2 = .013$, and the perception of the utility of homework, $F(1, 1249) = 22.54$,

Table 1

Means, Standard Deviations, Skewness, Kurtosis, and Correlation Matrix

	1	2	3	4	5	6	7	8	9
1. INTR_MOT	—								
2. INT-HW	.73**	—							
3. ATT_HW	.63**	.71**	—						
4. PER_UTIL_HW	.63**	.62**	.52**	—					
5. AM_HW	.45**	.40**	.34**	.39**	—				
6. HW_T	.05	.05	–.04	.06*	.21**	—			
7. HW_T_M	.47**	.47**	.42**	.41**	.45**	.02	—		
8. AA	.30**	.23**	.16**	.23**	.40**	.03	.29**	—	
9. GR	–.51**	–.50**	–.54**	–.43**	–.34**	.22**	–.39**	–.26**	—
M	3.85	3.17	2.59	3.88	4.31	2.83	3.61	3.12	6.97
SD	0.82	1.15	1.07	1.09	.96	1.20	1.07	1.27	2.09
Skewness	–0.66	–0.20	0.38	–0.80	–1.41	0.24	–0.55	–0.11	0.00
Kurtosis	–0.02	–0.88	–0.68	–0.07	1.15	–0.85	–0.26	–1.26	–1.34

Note. INTR_MOT = Intrinsic Motivation towards Homework; Int_HW = Interest in Homework; ATT_HW = Attitude towards Homework; PER_UTIL_HW = Perception of Utility of Homework; AM_HW = Amount of Homework carried out; HW_T = Homework Time; HW_T_M = Homework Time Management; AA = Academic Achievement; GR = Grade.

*$p < .05$. **$p < .01$.

Table 2

Descriptive Statistics (Mean, Standard Deviation) corresponding to the Variables Related to Homework Motivation and Engagement as a Function of Grade

	4th PE		5th PE		6th PE		1st CSE		2nd CSE		3rd CSE		4th CSE	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Motivational variables														
Intrinsic motivation towards homework	4.49	0.56	4.22	0.67	4.06	0.62	3.78	0.79	3.65	0.73	3.42	0.77	3.26	0.77
Interest in homework	4.07	0.89	3.67	0.99	3.42	0.96	3.05	1.09	2.85	1.04	2.65	1.02	2.39	1.01
Attitude towards homework	3.61	0.96	3.09	1.01	2.73	0.88	2.38	0.96	2.17	0.84	2.13	0.86	1.89	0.69
Perception of utility of homework	4.60	0.78	4.34	0.93	4.08	0.94	3.78	1.05	3.52	1.08	3.47	1.09	3.30	1.00
Homework engagement														
Amount of homework done	4.69	0.69	4.63	0.77	4.52	0.75	4.38	0.90	4.37	0.83	3.83	1.09	3.81	1.10
Homework Time	2.18	1.07	2.71	1.18	2.75	1.12	3.05	1.16	3.17	1.08	3.07	1.16	3.02	1.29
Homework Time Management	4.26	0.88	4.00	0.95	3.85	0.93	3.50	1.09	3.39	1.04	3.10	0.97	3.14	1.02

$p < .001$, $\eta_p^2 = .018$. Of all these variables, the one with the strongest relation to prior academic achievement is the amount of homework done (12.5% of explained variance).

However, even when controlling for the effect of prior academic achievement, an important amount of variance of each dependent variable remains associated with grade. Thus, there are significant differences as a function of grade in the amount of homework carried out, $F(6, 249) = 21.13$, $p < .001$, $\eta_p^2 = .092$, homework time, $F(6, 1249) = 20.11$, $p < .001$, $\eta_p^2 = .088$, and homework time management, $F(6, 1249) = 27.99$, $p < .001$, $\eta_p^2 = .119$. There are also significant differences as a function of grade in intrinsic motivation, $F(6, 1249) = 60.55$, $p < .001$, $\eta_p^2 = .225$, interest towards homework, $F(6, 1249) = 58.78$, $p < .001$, $\eta_p^2 = .220$, attitude towards homework, $F(6, 1249) = 84.41$, $p < .001$, $\eta_p^2 = .288$, and the perception of the utility of homework, $F(6, 1249) = 38.18$, $p < .001$, $\eta_p^2 = .155$. The effect sizes are large for all the variables related to motivation towards homework, and medium for the variables related to homework engagement.

Taking into account the means of all the variables (see Table 2), the results show a progressive decrease in all the variables related to motivation towards homework as the students advance to higher grades. This same pattern is also observed in the amount of homework done and in homework time management, although the latter is relatively constant in the last two grades of CSE. However, homework time increases progressively as students enter higher grades, although this pattern decreases in 3rd and 4th grades of CSE (see Table 2).

Discussion

This study makes various important contributions to research of homework. Firstly, we confirm statistically significant differences as a function of grade in students' homework motivation and engagement. In accordance with a large part of prior research, we find that students in the higher grades are less interested in homework, and their attitude towards homework becomes more negative as the years go by. A possible explanation of this may be the contextual factors that intervene in doing homework (i.e., Rogers & Hallam, 2006; Xu, 2006; Xu & Corno, 2006). Specifically, as younger students do their homework accompanied by an adult, they probably feel more motivated than older children who do their homework alone; this is consistent with the findings of Leone and Richards (1989), who indicate that adolescents' motivation towards homework differs depending on who their homework mates are. In a prior work with similar results, Shumow, Schmidt and Kackar (2008) found that adolescents show more positive affect when they do

their homework accompanied than when alone. Therefore, the results of this study should be considered with some caution as they did not include the variable of parental accompaniment in the analysis.

On the other hand, it can be observed that, as students advance to higher levels, they have less intrinsic motivation towards homework and they perceive it as less useful. The expectation-value theory (Eccles, Adler, & Meece, 1984; Eccles & Wigfield, 2002) is particularly appropriate to explain motivation towards homework (Trautwein & Köller, 2003), suggesting that students are more apt to engage in tasks they perceive as emotionally rewarding, valuable, and where effort is "worth the trouble" (Warton, 2001). The problem of CSE students may stem not so much from their lack of comprehending the benefits that homework can provide as in their perception that the immediate associated costs may be greater than the potential benefits (Coutts, 2004). This situation is worsened by the tendency of policies and practices that promote extrinsic motivation instead of intrinsic motivation through the types of activities that homework requires (Coutts, 2004). Therefore, homework should not simply be assigned as a rule or routinely or because we assume it is a good practice (Sallee & Rigler, 2008), but instead it should be designed to cultivate learning and development (Kohn, 2006). As in any other aspect of education, students must understand why they are learning something and how this will benefit them in the real world. Thus, if students understand how homework can affect their achievement, their attitude towards it will improve, as will their interest, perception of its utility, and their motivation.

The results of this study also suggest that homework engagement covaries with the student's grade. Specifically, the amount of homework done and time management decrease as students advance to higher grades, as shown by the results of other investigations (Cooper et al., 2000; Hong et al., 2009; Núñez, Suárez et al., 2013; Regueiro et al., 2014).

However, the tendency for homework time is different, as it increases as students go on to higher grades, although it is constant in the last two grades of CSE. This increase in time follows an inverse and apparently paradoxical course in comparison with the amount of homework carried out, which decreases in the higher grades. This may be due to the fact that homework time management also decreases when students advance to higher grades. Worse time management implies dedicating more time to homework (Núñez, Suárez et al., 2013) despite the fact that the amount of homework carried out decreases compared to lower grades, probably due to the lack of engagement and persistence in homework shown by older students (Hong et al., 2009).

Likewise, we used the variable prior academic achievement as a covariate to study its relation with the variables of interest, showing that, in accordance with our working hypothesis, prior academic achievement is significantly related to the variables of engagement and to three of the variables linked to motivation (intrinsic motivation, interest, and perception of utility). Especially, the variable amount of homework carried out receives more influence from prior academic achievement. As stated in other studies (Cooper et al., 2001; Núñez, Suárez et al., 2013; Trautwein et al., 2002; Trautwein & Lüdtke, 2009), a greater amount of homework carried out is a predictor of better academic achievement.

No doubt, the conclusions reached should be contemplated taking into account some of the limitations of this work. On the one hand, the results should be interpreted with caution due to the use of self-report data; in spite of being a useful procedure to understand participants' thoughts and the perceived behaviors, they have limitations (Blazer, 2009). On the other hand, we note the cross-sectional nature of the study, which is less efficient and less statistically powerful than longitudinal studies.

The results found are a symptom of the critical situation of our educational system, which, in this case, manifests in a progressive deterioration of the two important pillars of learning: students' homework motivation and engagement. Thus, this decrease in students' motivational variables as they advance to higher grades should help us to analyze what we are doing wrong in our educational practices. How to get students to approach homework with more motivation and, especially, how to keep that motivation alive throughout schooling may be one the main challenges of future works of research. Nevertheless, for this purpose, it would be necessary to first examine the determinants of this negative tendency: why are students increasingly less motivated towards homework? As students advance to higher grades, why do they perceive homework as less useful? Why is their attitude towards homework more negative? and so on. We think that these variables or factors can be found mainly in two contexts: the school context (e.g., the type of homework assigned, the type of feedback that teachers give about the homework they assign, and the contingencies-what instrumental value does homework have, what happens if students do all their homework well, what happens if they do not do all their homework or they do it poorly?); and family setting (e.g., the type of family involvement, the conditions in which the students do their homework, the amount of daily extracurricular activities, the availability of a space of their own in which to do homework, etc.).

Lastly, having confirmed that prior academic achievement is sig-

nificantly related to homework motivational and engagement variables, it would be interesting to attempt to clarify this relationship in future studies. Consistent with this, perhaps a question should be answered: does the decrease observed occur independently of the student's level of achievement or is there an interaction between prior achievement and the level of homework motivation and engagement? That is, we want to know whether the progressive decrease with advancing grades occurs independently of the students' level of achievement or whether, in contrast, the tendency varies as a function of their level of achievement.

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Bibiana Regueiro, scholarship-holder in the Department of Developmental and Educational Psychology in the University of A Coruña (Spain). She is a member of the Research Group of Educational Psychology (GIPED) of the University of A Coruña. Her lines of research focus on the study of homework motivation and engagement and their relations with learning and academic achievement.

Natalia Suárez, holder of a scholarship for Training Research Personnel (FPI) in the Department of Psychology of the University of Oviedo (Spain). Her main line of research focuses on the study of the relations between homework, family involvement, and academic achievement.

Antonio Valle is Full University Professor of Educational Psychology and Director of the Department of Developmental and Educational Psychology of the University of A Coruña (Spain). He is the coordinator of the Research Group in Educational Psychology (GIPED) of the University of A Coruña. His main lines of research are focused on academic motivation, homework, study strategies, and self-regulated learning. He is currently responsible for a research project of MINECO (Project Ref: EDU2013-44062-P) about the relation between homework and academic achievement.

José Carlos Núñez, Full Professor of Learning Difficulties at the University of Oviedo (Spain) and Director of the Department of Psychology. His main lines of research are: (a) psychological and educational dimensions of self-regulated learning in educational settings, (b) homework, and (c) academic learning difficulties and ADHD. He has participated in research projects of autonomic (University of Oviedo, regional Funds), national (CIDE, MCyT, MEC), and international (FONDECYT) summonses.

Pedro Rosário, Titled Professor of Educational Psychology at the University of Minho (Portugal). His main lines of research are: (a) psychological and educational dimensions of self-regulated learning and (b) processes of self-regulation in technological and electronic blackboard learning environments. He has numerous publications in his country and abroad in both lines of research. He is the main investigator of the GUIA group (www. guia-psiedu.com).

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