Psicothema

Time spent and time management in homework in elementary school students: A person-centered approach

Antonio Valle[1], Isabel Piñeiro[1], Susana Rodríguez[1], Bibiana Regueiro[1], Carlos Freire[1], and Pedro Rosário[2]

[1] Universidade da Coruña and [2] Universidade do Minho

Abstract

Background: Based on a person-centered approach, the aim of this study is to identify different profiles of students based on the time they spend on homework and the use they make of that time; as well as analyzing the differences between them in the amount of homework done and academic achievement. **Method:** With a sample of 968 students of Primary Education analysis of latent profiles (LPA) and ANOVA were carried out. Once the student profiles were identified, a MANOVA was conducted to analyze the differences between the motivational profiles in the amount of homework assignments done and in academic achievement. **Results:** We differentiated four profiles of students that differentially combine the time they dedicate to their homework and the use they make of that time. **Conclusions:** Of the profiles identified, two can be considered more effective (those that manage time better), and two can be classified as less effective (those that manage time worse). The two profiles that best manage the time spent on homework are also those that do the most homework, and have higher academic achievement. Likewise, the two profiles of students who manage time worst are those who do the least homework, and who have lower academic achievement.

Keywords: Homework, time spent, time management, academic achievement, Elementary Education.

Resumen

***Tiempo y gestión del tiempo dedicado a los deberes en Educación Primaria: un enfoque centrado en la persona.* Antecedentes:** partiendo de un enfoque centrado en la persona, el propósito de este trabajo es identificar diferentes perfiles de estudiantes en función del tiempo que dedican a los deberes escolares y de la gestión que hacen de ese tiempo; así como también analizar las diferencias entre ellos en la cantidad de deberes realizados y en el rendimiento académico. **Método:** con una muestra de 968 estudiantes de Educación Primaria, se llevaron a cabo análisis de perfiles latentes (LPA) y ANOVA. Una vez identificados los perfiles de estudiantes se realizó un MANOVA para analizar las diferencias entre los perfiles motivacionales en la cantidad de deberes realizados y en el rendimiento. **Resultados:** se han podido diferenciar cuatro perfiles de estudiantes que combinan de manera distinta el tiempo que dedican a los deberes y la gestión que hacen de ese tiempo. **Conclusiones:** de los perfiles identificados, dos pueden considerarse más eficaces (los que gestionan mejor el tiempo) y otros dos pueden catalogarse como menos eficaces (los que gestionan peor el tiempo). Los dos perfiles que gestionan mejor el tiempo son también los que realizan más cantidad de deberes y tienen un rendimiento académico más alto; y los dos que gestionan peor el tiempo son los que realizan menos cantidad de deberes y tienen un rendimiento académico más bajo.

Palabras clave: deberes escolares, tiempo dedicado, gestión del tiempo, rendimiento académico, Educación Primaria.

A large part of research on schoolwork has focused on analyzing the time spent on homework and the management of that time, as well as their possible effects on academic performance. Most of this research has been conducted from a variable-centered approach, where the focus is on individually analyzing the time spent on homework and on time management. However, there are few studies using a person-centered approach, which allows the evaluation of the complexity of associations between various variables and provides a broader explanation of the potential interaction between a range of variables (Lanza & Cooper, 2016).

The person-centered approach focuses on identifying natural combinations of variables at the individual level (Bergman, Magnusson, & El Khouri, 2003). The main advantages of this person-oriented approach, compared to the variable-centered approach, are (Bergman & Magnusson, 1991): (1) it identifies different groups of individuals according to their pattern with respect to certain variables; (2) it examines the proportion of the sample that has a particular profile; (3) if longitudinal data are available, it analyzes how the proportion of the sample representing a given profile changes over time; and finally (4) it determines the development trajectories of individuals in the identified profiles (Bergman et al., 2003).

Therefore, person-centered approaches emphasize the individual, facilitating the identification of homogeneous profiles of students who present similar patterns of characteristics in diverse variables (Hickendorff, Edelsbrunner, McMullen, Schneider, & Trezise, 2018).

The study of the relationship between the time spent on homework and academic results has been researched for years (Fan, Xu, Cai, He, & Fan, 2017). The first studies (Paschal, Weinstein, & Walberg, 1984) were based on the hypothesis that the time spent on homework was a reflection of the student's commitment and, as such, the relationship between time spent on homework and academic performance should be positive (Fernández-Alonso, Álvarez-Díaz, Suárez-Álvarez, & Muñiz, 2017).

The results obtained in some works Núñez, Suárez, Cerezo et al., 2015; Núñez, Suárez, Rosário, Vallejo, Cerezo et al., 2015) showed that the relationship between the time spent on homework and academic performance was negative (the more time spent on homework, the worse the achievement obtained). These results were interpreted alluding to the fact that perhaps the problem was in how effectively the students were managing the time spent on homework. It made sense to think that the worse the time management, the more time it would take to do a certain amount of homework.

In other studies (e.g., Rosário et al., 2015), it was also found that female students spent more time on homework than male students, which coincided with the results of previous studies (Núñez, Suárez, Cerezo et al., 2015; Trautwein, 2007).

Multilevel research found that individual variations in the time spent on homework had little effect on academic outcomes (Fernández-Alonso, Suárez-Álvarez, & Muñiz, 2014; Núñez, Vallejo, Rosário, Tuero, & Valle, 2014) and that, when statistically significant results were found, the effect was generally negative (Chang, Wall, Tare, Golonka, & Vatz, 2014; Trautwein, 2007). The reasons for this null or negative relationship may be the broad diversity of students who do homework, regarding both their motivational (intentions, motives, etc.) and their cognitive and behavioral commitment (cognitive skills, time management, etc.). Thus, some students may not need to spend a lot of time on homework because they learn quickly and they have good cognitive skills and/or prior knowledge (Trautwein, 2007), or they may not be very persistent in their work and do not usually finish the homework (Flunger et al., 2015). Similarly, other students may spend more time because they have difficulty learning and concentrating, because they have low expectations and low motivation, or because they need more direct help (Trautwein Lüdtke, Schnyder, & Niggli, 2006), or they may put in a considerable amount of effort and dedication (Flunger et al., 2015).

When referring to the time spent on homework, we must differentiate between the amount of time spent and the degree of quality of that time (time management). Usually, the time spent on homework is a merely quantitative aspect of the hours that students spend doing homework, but is this not necessarily a reflection of the effort and quality of their dedication. Trautwein et al. (2006) report that students who spend more time on homework are not necessarily better students, but instead, it may be due to their greater difficulties or problems with concentration and/or motivation. They also add that the effort students make doing homework is not necessarily related to the amount of time that they take to do it. Thus, rather than the time spent on homework, what is really important is the use or management that is made of that time (Núñez, Suárez, Cerezo et al., 2015).

Everything seems to indicate that the management of the time devoted to homework has a positive influence on academic success (Claessens, van Eerde, Rutte, & Roe, 2007) and, at the same time,

is positively related to the completion of homework (Xu, 2005) and to achievement (Eilam, 2001).

The results of some studies (e.g., see Núñez, Suárez, Cerezo et al., 2015) found that the time spent on homework and the management of that time positively predicted the amount of homework done, and this was positively associated with academic achievement. However, whereas time management positively and directly predicted academic performance, the amount of time spent predicted it negatively.

These findings coincide in part with those obtained by Xu (2010), where the perceived quality of time management in homework had a positive effect on students' performance and on academic achievement. Therefore, to increase the amount of homework done by students and also increase their academic achievement, it is necessary to prioritize time management more than the amount of time spent on homework.

The purpose of this work is to identify student profiles in a sample of the last three Primary Education grades, drawing on the possible combinations of two variables: (1) time spent on homework and (2) management of that time. Taking as a starting point the time students spend daily (Monday to Friday) on homework and the management of that time, we wished to establish possible groups of students that would be as similar as possible at the intragroup level in the combination of the two variables, but that would be as different as possible at the intergroup level in that combination. Once these profiles have been identified, the differences between them in the amount of homework done (of that assigned by the teachers) and academic performance will be analyzed.

Taking into account the results obtained in previous research (e.g., Flunger et al., 2015), we expected to find at least four student profiles with the following combinations of the two variables: (a) a profile defined by a large amount time spent on homework and good time management, (b) a profile defined by a large amount of time spent and poor time management, (c) a profile defined by little time spent and good time management, (d) a profile defined by little time spent and poor time management. Regarding the differences between profiles, we expected that students who manage the time spent on homework more efficiently will be those who do the most homework and those with the highest academic performance. Contrariwise, profiles that show inefficient homework time management will be those that do the least amount of homework and with the lowest academic achievement.

Method

Participants

Participants were 968 students of Primary Education (PE) from 11 schools of three provinces in the north of Spain, 9 public schools and 2 concerted schools. About 60% of the schools are located in urban areas, and 40% are located in rural or semi-urban areas. The majority of the students belong to families with average annual incomes ranging from 25000 to 30000 euros, which is within the average annual income (26730 euros) of Spanish households (National Statistics Institute [INE], 2016). Of the total participants (50.8% female and 49.2% male), 22.3% were in 4th grade of PE; 41.7% were in 5th grade of PE, and 36% in 6th grade of PE.

Concerning homework, 47.7% of the participants spend less than 60 minutes a day (Monday through Friday) doing schoolwork, and about 73.7% consider that they manage homework time well.

Regarding parent's help, 74.7% of participants' parents are willing to help their children with their homework, although only 33.4% of the participants request that help from their parents. On the other hand, according to the parents, 15.7% of the participants have difficulties doing their homework, and 16.6% of the participants receive some kind of external assistance to do homework (academy, private teacher, etc.).

Instruments

The variables time spent on homework and homework time management were measured using various items of the "Encuesta sobre los Deberes Escolares" (EDE [The homework survey]) (e.g., Núñez, Suárez, Rosário, Vallejo, Cerezo et al., 2015; Núñez, Suárez, Rosário, Vallejo, Valle et al., 2015; Regueiro et al., 2018; Valle, Pan, Núñez et al., 2015; Valle, Pan, Regueiro et al., 2015).

Time spent on homework. This variable was evaluated with two items (α = .84) (e.g., "How much time do you usually spend on your homework from Monday to Friday?". Response options were: 1 = *less than 30 minutes*, 2 = *from 30 minutes to an hour*, 3 = *from one hour to an hour and a half*, 4 = *from an hour and a half to two hours*, 5 = *more than two hours*.

Time management. This variable was assessed with two items (α = .76) in which students were asked how they used the time spent on homework. A five-point scale ranging from 1 (*I waste it completely*) to 5 (*I take full advantage of it*) was used.

Amount of homework done by students. This variable was measured through the responses to two items (α = .71) about the amount of homework routinely performed by students (of that assigned by their teachers), using a five-point Likert scale (1 = *none*, 2 = *some*, 3 = *one half*, 4 = *almost all*, 5 = *all*).

Academic performance. This variable was obtained through the average final academic grades obtained by students in the subjects of Spanish Language, English Language, Knowledge of the Environment, and Mathematics.

Procedure

The data were collected at a single moment by specialized personnel who collaborated in the research during school hours, with the consent of the management team and the students' teachers. Participants answered all the questionnaires individually and without time limit. The procedure used in this research followed the ethical standards of the Ethics Committee for Research and Teaching of the University of A Coruña and the Helsinki Declaration.

Data analysis

In order to identify the categorical latent variables that allow grouping the participants into classes (profiles) according to their characteristics of time spent on homework and time management, a latent profile analysis (LPA) (Lanza, Flaherty, & Collins, 2003) was carried out using the MPlus statistical program, version7.11 (Muthén & Muthén, 1998-2012). For this purpose, from a finite set of models, we determined which best fit the data, adding successive latent classes to the target model. The optimal number of classes was established according to the Akaike information criterion (AIC), Schwarz's Bayesian information criterion (BIC), sample-size adjusted BIC (SSA-BIC), Lo-Mendell-Rubin

maximum likelihood ratio test–LMRT– (Lo, Mendell, & Rubin, 2001), parametric bootstrap likelihood ratio test (PBLRT), sample size for each subgroup, and the multivariate skewness and kurtosis adjustment tests.

The AIC, BIC, and SSA-BIC indices are descriptive, with lower values indicating a better fit of the model. These criteria should complement the information provided by the LMRT and the PBLRT, but these latter tests allow a making a final decision. The p-value associated with the LMRT and PBLRT indicates whether the solution with more ($p < .05$) or fewer cases ($p > .05$) is the one that best fits the data. Also, classes that contain less than 5% of the sample are considered spurious, a condition that would reflect excessive profiling extraction (Hipp & Bauer, 2006). With respect to the skewness and multivariate kurtosis fit tests, high p-values ($p > .05$) associated with these parameters indicate a good fit of the model, whereas low p-values ($p < .05$) indicate a poor fit.

To determine the classification accuracy of the selected model, the a posteriori probabilities and the entropy statistic were calculated. The value of this statistic ranges from zero to one, with the values closer to one indicating higher classification accuracy. As the last parameter to evaluate the model's appropriateness, we performed an ANOVA through which the differences between classes in the criterion variables (time spent and time management) were analyzed.

Once student profiles were identified as a function of time spent and time management, a MANOVA was conducted to analyze the differences between the profiles in the amount of homework done and academic performance. 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 $\eta_p^2 = 0.01$ ($d = 0.20$), medium when $\eta_p^2 = 0.059$ ($d = 0.50$), and large when $\eta_p^2 = 0.138$ ($d = 0.80$).

Results

Identifying student profiles based on time spent on homework and time management

The fit of several latent profile models (models of two to five classes) was analyzed. The models were adjusted assuming that the variances between indicators within each group could differ, but we specified as a constraint that variances between the groups should be equal. In addition, independence between indicators, both within each group and between groups, was imposed as a restriction.

Table 1 shows the results of the fit of models. Model fit was halted in five classes for several reasons: (a) the statistical values AIC, BIC, and SSA-BIC were higher in the five-class model than in the four-class model; (b) the LRT and PBLRT of the five-class model were not statistically significant ($p > .05$), indicating that the model did not fit better than the four-class model; and (c) in the five-class model, a group of participants with a representation of less than 5% of the total sample was obtained, whereas in the four-class model, all the groups exceeded that percentage. Moreover, with the exception of entropy (slightly higher in the two-class model), all statistics shown in Table 1 indicated that the four-class model had a better fit than the models with fewer class.

Regarding the classification accuracy of the four-class model, as shown in Table 1, the entropy in this model shows an appropriate value (0.796). Table 2 also shows the classification accuracy of the

four-class model and the number of subjects that make up each class, both in absolute (*n*) and relative (%) terms. The coefficients associated with the groups to which the participants were assigned are shown on the main diagonal of the table, in boldface. It can be observed that all these coefficients are close to 100%, indicating high classification accuracy.

In addition, the results of the ANOVA yielded statistically significant differences between the four classes in the two criterion variables: time spent ($F(3, 964) = 681.218$; $p < .001$; $\eta_{p2} = .679$) and time management ($F(3, 964) = 435.253$; $p < .001$; $\eta_{p2} = .575$). The effect size was large in both cases.

Thus, taking into account as a whole the statistical data in relation to model fit, the results of the ANOVA analyzing the contribution of each of the variables that make up the profiles to the differentiation between classes and also taking into account their conceptual suitability, the four-class solution was chosen as the most appropriate.

Table 1
Statistics for the identification of the fit of latent class models and classification accuracy

	Models of profiles of time spent on homework and time management			
	Two classes	Three classes	Four classes	Five classes
AIC	5626.438	5600.855	5535.262	5541.262
BIC	5660.565	5649.607	5598.640	5619.266
SSA-BIC	5638.333	5617.847	5557.353	5568.450
Entropy	0.828	0.720	0.796	0.824
Number of groups with $n \le 5\%$	0	0	0	1
LMRT	153.708***	30.123**	68.282***	0.000
PBLRT	161.160***	31.583**	71.592***	0.000
Multivariate skewness fit test	0.030	0.220	0.390	0.420
Multivariate kurtosis fit test	0.140	0.380	0.180	0.140

Note: The models were adjusted assuming that the variances between indicators within each group could differ, but we specified as a constraint that variances between the groups should be equal. In addition, independence between indicators, both within each group and between groups, was imposed as a restriction.
AIC = Information Criterion of Akaike; BIC - Bayesian Information Criterion of Schwarz; SSA-BIC = BIC adjusted by sample size; LRT = Formal test of the maximum adjusted likelihood ratio of Lo, Mendell, & Rubin; PBLRT Parametric replacement plausibility ratio test.
* $p < .05$. **$p < .01$. ***$p < .0001$

Table 2
Description of latent profiles and classification accuracy of the individuals in each profile

	Latent profiles					
	1	2	3	4	n	%
1. BT/BA$_p$	**0.840**	0.037	0.001	0.122	55	5.68
2. BT/AA$_p$	0.013	**0.922**	0.056	0.010	666	68.8
3. AT/AA$_p$	0.000	0.077	**0.905**	0.018	163	16.84
4. AT/BA$_p$	0.015	0.023	0.160	**0.803**	84	8.68

Note: BT/BA$_p$: profile of little time spent on homework and poor time mismanagement; BT/AA$_p$: profile of little time spent on homework and moderately good time management; AT/AA$_p$: profile a lot of time spent on homework and good time management; AT/BA$_p$: profile a lot of time spent on homework and poor time management

Description of the profiles time spent on homework and time management

Table 3 shows the average scores of subjects belonging to the latent classes of the selected model. Based on these scores, we identified the existence of a first group of students (*n* = 55; 5.68%) characterized by little time spent on homework and inefficient time management (*profile BT/BA$_p$*). The second group was made up of a large group of students (*n* = 666; 68.8%) showing a low dedication of time to homework, although their homework time management was moderately efficient (*profile BT/AA$_p$*). The third group of students (*n* = 163; 16.84%) showed a high dedication of time to homework coupled with efficient homework time management (*profile AT/AA$_p$*)). The fourth group (n = 84; 8.68%) was made up

Table 3
Description of latent profiles (means, standard errors, and confidence intervals)

			Confidence intervals	
	M	SE	Lower 5%	Higher 5%
BT/BA$_p$ (n = 55)				
Time spent	2.17	0.15	1.93	2.42
Time management	1.79	0.16	1.53	2.05
BT/AA$_p$ (n = 666)				
Time spent	2.18	0.04	2.11	2.24
Time management	4.18	0.03	4.13	4.24
AT/AA$_p$ (n = 163)				
Time spent	4.11	0.08	3.97	4.24
Time management	4.38	0.07	4.27	4.49
AT/BA$_p$ (n = 84)				
Time spent	4.20	0.53	4.01	4.40
Time management	2.46	0.47	2.25	2.66

Note: BT/BA$_p$: profile of little time spent on homework and poor time management; BT/AA$_p$: profile of little time spent on homework and moderately good time management; AT/AA$_p$: profile a lot of time spent on homework and good time management; AT/BA$_p$: profile of a lot of time spent on homework and poor time management
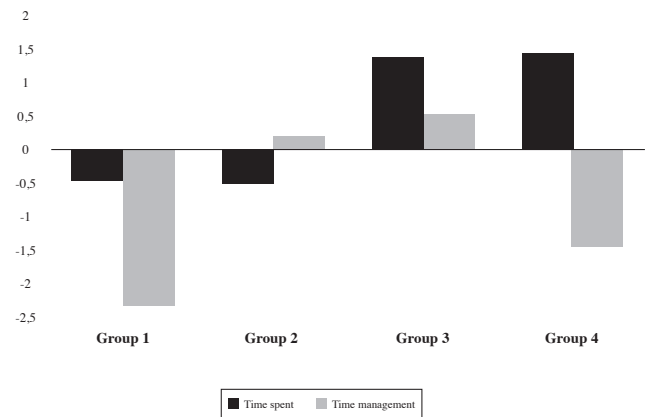

Figure 1. Graphic representation of profiles of time spent on homework and time management (z-scores)
Note: Group 1: BT/BA$_p$: profile of little time spent on homework and poor time management; Group 2: BT/AA$_p$: profile of little time spent on homework and moderately good time management; Group 3: AT/AA$_p$: profile a lot of time spent on homework and good time management; Group 4: AT/BA$_p$: profile of a lot of time spent on homework and poor time management

of students who, like those in the previous group, spend a lot of time doing homework. However, their management of that time is not efficient (*profile AT/BA$_p$*). The graphical representation of these profiles is shown in Figure 1.

Differences between profiles in amount of homework performed and academic performance

The results indicate that there were statistically significant differences in the two variables (amount of homework done and academic performance) based on the four profiles (λ_{Wilks} = .91; *F*(6, 1926) = 14.78, *p* < .001, η_p^2 = .044). The effect size was close to medium. Inspecting each variable individually, there were statistically significant differences between the profiles in the amount of homework done by students (*F*(3, 964) = 14.40, *p* < .001, η_p^2 = .043) and in academic performance (*F*(3, 964) = 16.99, *p* < .001, η_p^2 = .050). In both cases, the effect size was close to medium. The Scheffé test reported the following statistically significant differences between groups: amount of homework done (1-2, 1-3, 2-3, 3-4) and academic performance (1-2, 2-4, 3-4). Table 4 presents the descriptive statistics of the two variables for each of the profiles.

Discussion

One of the most novel contributions of this work is that it adopts a person-centered approach to analyze the possible combinations of two variables linked to the time students spend on homework, with the purpose of defining possible profiles of students characterized by the different combinations of the two variables. The profiles are formed with the greatest similarity within each group, while establishing as many differences between the profiles as possible (Lanza & Cooper, 2016). The identification of these profiles can be useful to characterize qualitative differences between participants, an aspect that is more difficult to establish with traditional analytical approaches (Hickendorff et al., 2018)

The results found in this study allow several conclusions to be drawn regarding the degree of relevance of the time spent by students doing homework. First, four profiles (groups) of students were identified that differentially combine the time they spend

on homework and the way they manage that time. Second, of the four profiles identified, two can be considered as more effective (those that manage time better) and two can be categorized as less effective (those that manage time poorly). Third, the most relevant variable when defining profiles as more or less effective is time management and not time spent on homework.

The majority profile of students (BT/AA$_p$: 68.8% of the total number of participants) is composed of those who spend little time on homework, but are efficient in homework time management. This profile is somewhat equivalent to the fast learner profile identified by Flunger et al. (2015). The second profile of students with a higher percentage of participants (AT/AA$_p$: 16.84% of the total number of participants) is made up of those who spend a lot of time on homework and also manage that time well. This profile is somewhat equivalent with to high-effort learner profile identified by Flunger et al. (2015). The third profile (AT/BA$_p$: 8.68% of the total participants) is made up of students who spend a lot of time on homework, but make inefficient use of the management of that time. This profile would correspond to the profile of struggling learners proposed by Flunger et al. (2015). The fourth profile, with the fewest participants (BT/BA$_p$: 5.68% of the total number of participants) is composed of students who spend little time on homework and, in addition, make inefficient use of the management of this time. This profile would be equivalent to the minimalists defined by Flunger et al. (2015).

Therefore, there is a majority group of students who manage the time they spend on homework efficiently. This group, probably due to the effective management of the time they spend on homework, does not need to spend much time doing homework. This group (BT/AA$_p$) can be referred to as the *efficient profile*. Surely, the fact that they spend less time may also be due to the fact that these students have the greatest abilities, more knowledge, and higher expectations of success (Trautwein, 2007). The second group, which also makes efficient use of time management, has to spend a lot of time on homework. This group (AT/AA$_p$) can be called the *high-effort profile*. There is a third group that spends a lot of time on homework, but makes inefficient use of time management. This group (AT/BA$_p$) can be referred to as a *profile with difficulties*. The fourth group, in addition to spending little time on homework, makes inefficient use of managing that time. This group (BT/BA$_p$) can be referred to as a *low-effort profile*.

The two student profiles that best manage the time spent on homework (*efficient profile* and *high-effort profile*) are the ones with the highest academic performance. In contrast, the two profiles of students who spend more time on homework show completely different academic results (high in the case of the *high-effort profile* and low in the case of the *profile with difficulties*), probably due to their differences in time management. On the other hand, the two profiles of students who manage time spent on homework the worst (*low-effort profile* and *profile with difficulties*) are those with the lowest academic performance.

With regard to the amount of homework done, the two profiles that best manage time (*efficient profile* and *high-effort profile*) are also the ones that do the most homework, although the *high-effort profile* does more homework than the *efficient profile*. As with academic performance, the two profiles of students who manage the time spent on homework the worst (*low-effort* profile and *profile with difficulties*) are the ones that do the least amount of homework.

Therefore, the results obtained in this study indicate the need to work on time management strategies, both from the perspective

Table 4
Descriptive statistics of the amount of homework done and academic achievement for each of the four profiles

	Amount of homework done		Academic achievement	
	M	SD	M	SD
BT/BA$_p$ *(n = 55)*	4.27	1.11	1.90	1.04
BT/AA$_p$ *(n = 666)*	4.66	0.66	2.72	1.42
AT/AA$_p$ *(n = 163)*	4.89	0.33	2.47	1.44
AT/BA$_p$ *(n = 84)*	4.49	0.83	1.75	1.13

Note: BT/BA$_p$: profile of little time spent on homework and poor time management; BT/AA$_p$: profile of little time spent on homework and moderately good time management; AT/AA$_p$: profile of a lot of time spent on homework and good time management; AT/BA$_p$: profile of a lot of time spent on homework and poor time management.
The variable Amount of homework is measured on a scale ranging from 1 (*none*) to 5 (*all*). The variable Academic Performance is measured on scale ranging from 1 (*failed*) to 5 (*outstanding*)

of the student and the parents. This would also help to avoid procrastination or delaying more complex activities in favor of more immediate or pleasurable ones, which also has an impact on doing less stressful or more productive homework (Misra & McKean, 2000). In addition to time management, it is necessary to work on academic self-regulation as a whole. In fact, time management is an important aspect of self-regulated behavior, aimed at planning, monitoring, and regulating the use that is made of time spent on homework (Xu, 2010).

With regard to the limitations of this research, it should be noted that the relationship between the profiles and academic performance might have been different if performance had been measured with a single subject (e.g., mathematics), rather than with the average of several subjects. In this sense, the relevance and type of requirements in terms of time and time management in mathematics may or may not differ from that of other subjects (e.g., foreign language), In any case, it is an unknown variable, which would be interesting to continue to investigate in future research.

Acknowledgments

References

Bergman, L. R., & Magnusson, D. (1991). Stability and change in patterns of extrinsic adjustment problems. In D. Magnusson, L. R. Bergman, G. Rudinger, & B. Torestad (Eds.), *Problems and methods in longitudinal research: Stability and change* (pp. 323–346). Cambridge, UK: Cambridge University Press.

Bergman, L. R., Magnusson, D., & El Khouri, B. (2003). *Studying individual development in an interindividual context: A person-oriented approach*. Mahwah, NJ: Lawrence Erlbaum Associates.

Chang C. B., Wall D., Tare M., Golonka E., & Vatz K. (2014). Relations of attitudes toward homework and time spent on homework to course outcomes: The case of foreign language learning. *Journal of Educational Psychology, 106*, 1049-1065. doi: 10.1037/a0036497

Claessens, B. J. C., van Eerde, W., Rutte, C. G., & Roe, R. A. (2007). A review of the time management literature. *Personnel Review, 36*, 255–276. doi: 10.1108/00483480710726136

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences*. Hillsdale, NJ: Lawrence Erlbaum.

Eilam, B. (2001). Primary strategies for promoting homework performance. *American Educational Research Journal, 38*, 691–725. doi: 10.3102/00028312038003691

INE (2016). *Encuesta de condiciones de vida 2016* [Survey of living conditions 2016]. Madrid: Instituto Nacional de Estadística.

Fan, H., Xu, J., Cai, Z., He, J., & Fan, X. (2017). Homework and students' achievement in math and science: A 30-year meta-analysis, 1986-2015. *Educational Research and Reviews, 20,* 35–54. doi: 10.12691/education-5-4-5.

Fernández-Alonso, R., Suárez-Álvarez, J., & Muñiz, J. (2014). Tareas escolares en el hogar y rendimiento en matemáticas: una aproximación multinivel con estudiantes de enseñanza primaria. [Homework and academic performance in mathematics: A multilevel approach with primary school students]. *Revista de Psicología y Educación, 9,* 15–29.

Fernández-Alonso, R., Álvarez-Díaz, M., Suárez-Álvarez, J., & Muñiz, J. (2017). Students' achievement and homework assignment strategies. *Frontiers in Psychology*, *8*, 286. doi: 10.3389/fpsyg.2017.00286

Flunger, B., Trautwein, U., Nagengast, B., Lüdtke, O., Niggli A., & Schnyder, I. (2015). The Janus-faced nature of time spent on homework: Using latent profile analyses to predict academic achievement over a school year. *Learning and Instruction, 39,* 97-106. doi: 10.1016/j.learninstruc.2015.05.008

Hickendorff, M., Edelsbrunner, P. A., McMullen, J., Schneider, M., & Trezise, K. (2018). Informative tools for characterizing individual differences in learning: Latent class, latent profile, and latent transition analysis. *Learning and Individual Differences, 66,* 4-15. doi: 10.1016/j.lindif.2017.11.001

Hipp, J. R., & Bauer, D. J. (2006). Local solutions in the estimation of growth mixture models. *Psychological Methods, 11*(1), 36–53. doi: 10.1037/1082-989X.11.1.36

Lanza, S. T., & Cooper, B. R. (2016). Latent class analysis for developmental research. *Child Development Perspectives, 10,* 59–64. doi: 10.1111/cdep.12163

Lanza, S. T., Flaherty, B. P., & Collins, L. M. (2003). Latent class and latent transition analysis. In J. A. Schinka & W. F. Velicer (Eds.), *Handbook of Psychology: Research methods in psychology* (Vol. 2, pp. 663-685). Hoboken, NJ: John Wiley & Sons.

Lo, Y., Mendell, N. R., & Rubin, D. B. (2001). Testing the number of components in a normal mixture. *Biometrika, 88*(3), 767-778. doi: 10.1093/biomet/88.3.767

Misra, R., & McKean, M. (2000). College students' academic stress and its relation to their anxiety, time management, and leisure satisfaction. *American Journal of Health Studies*, *16*(1), 41. doi: 10.4236/ce.2015.61007

Muthén, L. K., & Muthén, B. O. (1998–2012). *Mplus user's guide* (6th ed.). Los Angeles, CA: Muthén & Muthén.

Núñez, J. C., Suárez, N., Cerezo, R., González-Pienda, J. A., Rosário, P., Mourão, R., & Valle, A. (2015). Homework and academic achievement across Spanish Compulsory Education. *Educational Psychology, 35*(6), 726-746. doi: 10.1080/01443410.2013.817537

Núñez, J. C., Suárez, N., Rosário, P., Vallejo, G., Cerezo, R., & Valle, A. (2015). Teachers' feedback on homework, homework-related behaviors and academic achievement. *The Journal of Educational Research*, *108*(3), 204-216. doi: 10.1080/00220671.2013.878298

Núñez, J. C., Suárez, N., Rosário, P., Vallejo, G., Valle, A., & Epstein, J. L. (2015). Relationships between parental involvement in homework, student homework behaviors, and academic achievement: Differences among elementary, junior high, and high school students. *Metacognition and Learning*, *10*, 375-406. doi:

Núñez, J. C., Vallejo, G., Rosário, P., Tuero, E., & Valle, A. (2014). Student, teacher, and school context variables predicting academic achievement in biology: Analysis from a multilevel perspective. *Revista de Psicodidáctica, 19*, 145–171. doi: 10.12691/education-5-4-5

Paschal, R. A., Weinstein, T., & Walberg, H. J. (1984). The effects of homework on learning: A quantitative synthesis. *The Journal of Educational Research, 78,* 97–104. doi: 10.1080/00220671.1984.10885581

Regueiro, B., Suárez, N., Estévez, I., Rodríguez, S., Piñeiro, I., & Valle, A. (2018). Homework and academic achievement: a comparative study between immigrant and native students. *Revista de Psicología y Educación, 13*, 92–98. doi: 10.23923/rpye2018.01.160

Rosário, P. Mourão, R., Trigo, L., Suárez, N., Fernández, E., & Tuero-Herrero, E. (2011). English as a foreign language (EFL) homework diaries: Evaluating gains and constraints for self-regulated learning and achievement. *Psicothema, 23*(4), 881-887.

Rosário, P., Núñez, J. C., Vallejo, G., Cunha, J., Nunes, T., Suárez, N., Fuentes. S., & Moreira, T. (2015). The effects of teachers' homework follow-up practices on students' EFL performance: A randomized-group design. *Frontiers in Psychology, 6*, 1528. doi:10.3389/fpsyg.2015.01528

Trautwein, U. (2007). The homework-achievement relation reconsidered: Differentiating homework time, homework frequency, and homework effort. *Learning and Instruction, 17,* 372–388. doi: 10.1016/j.learninstruc.2007.02.009

Trautwein, U., Lüdtke, O., Schnyder, I., & Niggli, A. (2006). Predicting homework effort: Support for a domain-specific, multilevel homework model. *Journal of Educational Psychology, 98*, 438-456. doi: 10.1037/0022-0663.98.2.438

Valle, A., Pan, I., Núñez, J. C., Rosário, P., Rodríguez, S., & Regueiro, B. (2015). Homework and academic achievement in Primary Education. *Anales de Psicología*, *31*(2), 562-569. doi: 10.6018/analesps.31.2.171131

Valle, A., Pan, I., Regueiro, B., Suárez, N., Tuero, E., & Nunes, A. R. (2015). Predicting approach to homework in Primary School students. *Psicothema, 27*(4), 334-340. doi: 10.7334/psicothema2015.118

Xu, J. (2005). Purposes for doing homework reported by middle and high school students. *Journal of Educational Research, 99,* 46-55. doi: 10.3200/JOER.99.1.46-55

Xu, J. (2010). Predicting homework time management at the secondary school level: A multilevel analysis. *Learning and Individual Differences, 20*(1), 34-39. doi: 10.1016/j.lindif.2009.11.001