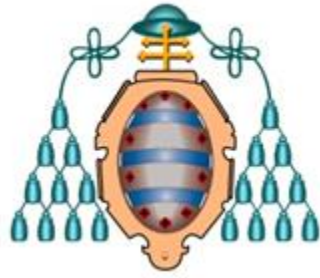


Universidad de Oviedo



Departamento de Psicología

TESIS DOCTORAL

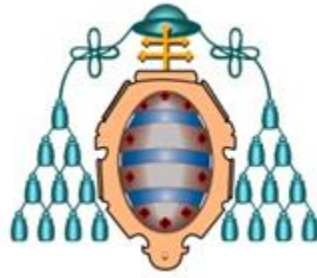
**Deberes escolares y rendimiento académico en
estudiantes de educación obligatoria**

**Homework and academic achievement in compulsory
education**

Natalia Suárez Fernández

2015

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**Homework and academic achievement in compulsory
education**

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Guillermo Vallejo Seco

2015



RESUMEN DEL CONTENIDO DE TESIS DOCTORAL

1.- Título de la Tesis	
Español/Otro Idioma: Deberes escolares y rendimiento académico en estudiantes de educación obligatoria	Inglés: Homework and academic achievement in compulsory education
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RESUMEN (en español)

El objetivo general de esta Tesis Doctoral ha sido profundizar en la relación entre los deberes escolares y el rendimiento académico tomando en consideración a los tres agentes implicados en este proceso (estudiantes, profesores y padres) y dos etapas educativas (Primaria y Secundaria). Para el abordaje de este objetivo se han diseñado y llevado a cabo cuatro estudios empíricos (dos correlacionales, uno experimental y uno fenomenográfico), los cuales han dado lugar a cuatro publicaciones en revistas incluidas en el *Journal of Citation Reports* y a un trabajo complementario que se encuentra en revisión para su publicación.

En el primer trabajo, publicado online en 2013 en *Educational Psychology* (Homework and academic achievement across Spanish Compulsory Education), se obtuvo que la cantidad de deberes realizados y el aprovechamiento del tiempo empleado en su realización disminuyen con el paso de los cursos y que el tiempo dedicado a los deberes, junto con el aprovechamiento del tiempo, explican cómo el rendimiento académico está mediado por la cantidad de deberes realizados.

El segundo estudio ha sido publicado online en 2014 en *Journal of Educational Research* (Teachers' feedback on homework, homework-related behaviors and academic achievement). Los resultados de este trabajo mostraron que: a) en los cursos más altos existe menor percepción de feedback por parte de los profesores, b) que cuanto mayor sea el feedback percibido por los alumnos mayor es también la cantidad de deberes realizados y el aprovechamiento del tiempo, y c) mayor el rendimiento académico.

El tercer trabajo se encuentra en revisión en la revista *Journal of Educational Research* (Is homework feedback worth the teachers' effort? Homework feedback and academic performance). Probado que el feedback del profesor juega un rol importante en la implicación y rendimiento del estudiante, en este tercer trabajo, con base en un diseño experimental, se aportaron datos del efecto diferencial de cinco tipos diferentes de feedback. Los resultados obtenidos mostraron que corregir oralmente, corregir en la pizarra y recoger las tareas y devolverlas corregidas fueron los tres tipos de feedback que mayor efecto tuvieron en el rendimiento (principalmente recoger, corregir y



devolver los deberes individualmente a cada alumno).

El cuarto estudio se encuentra en prensa en la revista *Psicothema* (Parents' conceptions about their homework involvement in elementary school). Desde una perspectiva fenomenográfica se profundizó en *qué* entienden los padres de niños de Primaria por implicación parental en los deberes y *cómo* lo hacen. Los resultados mostraron que las concepciones de los padres de implicación en los deberes tienen un significado positivo y se centran especialmente en la mejora del rendimiento académico, fomentando la autonomía de los alumnos y proporcionándoles apoyo emocional.

El quinto estudio ha sido publicado online en la revista *Metacognition and Learning* (Relationships between parental involvement in homework, student homework behaviors, and academic achievement: Differences among elementary, junior high, and high school students). Se ha profundizado en el estudio de la relación entre la percepción de implicación parental en los deberes y la implicación de los estudiantes y el rendimiento académico. Los resultados mostraron que la implicación de los alumnos en los deberes, la percepción de implicación parental y el rendimiento académico están positivamente relacionados. Sin embargo, los resultados varían dependiendo del nivel escolar de los alumnos: en primer y segundo ciclo de secundaria la percepción de implicación parental está relacionada con la implicación de los estudiantes, pero no en primaria. Aunque la implicación de los estudiantes está relacionada con el rendimiento académico en todos los niveles, la dirección y la magnitud de la relación varía (es más fuerte en primer y segundo ciclo de secundaria que en primaria).

El desarrollo de los estudios que componen esta Tesis Doctoral nos han permitido extraer las siguientes conclusiones: 1) hacer deberes es mejor que no hacerlos; 2) dedicar más tiempo a los deberes no siempre es mejor; 3) la clave está en aprovechar bien el tiempo; 4) la relación entre el curso académico y el aprovechamiento del tiempo es inversa; 5) si se prescriben deberes hay que dar feedback, sino mejor no prescribirlos; 6) aunque no todo tipo de feedback es igualmente efectivo; y 7) una mayor implicación parental conduce a una mayor implicación del estudiante en los deberes y a un mayor rendimiento, si bien esta relación depende del tipo de implicación y de la edad de los estudiantes.

RESUMEN (en Inglés)

The main objective of this Doctoral Thesis has been to investigate the relationship between homework and academic achievement across compulsory education considering the three agents involved in homework (students, teachers and parents) in different grade levels (elementary, junior high and high school). Five studies were run. Four were published in the Journal of Citation Reports and another one is in revision.

The first paper has been published online in 2013 on the Journal Educational Psychology (Homework and its relationship to academic achievement over the compulsory school) and its results showed that the amount of HW completed decreased



with increased schooling, as students' perceived quality of HW time management. Data provided evidence that time spent on HW conjointly with perceived quality of HW time management explained how academic achievement is mediated by the amount of HW completed.

The second study was published online in 2014 on Journal of Educational Research (Teachers' feedback on homework, homework-related behaviors and academic achievement). The results showed that: a) for higher grade levels, there is a lower perceived amount of teachers' HW feedback; b) teachers' homework feedback as perceived by students is positively and significantly related to the amount of HW completed and to the perceived quality of HW time management but not to the amount of time spent on homework; and finally c) the amount of homework completed and the perceived quality of homework time management positively and significantly predicts academic achievement.

The third study is in revision on Journal of Educational Research (Is homework feedback worth the teachers' effort? Homework feedback and academic performance) and analyzed the effects of five types of homework follow-up practices (i.e., controlling homework completion; clarifying homework doubts; correcting homework orally; correcting homework on the blackboard; and collecting and grading homework) used in class by teachers of English as a Foreign Language (EFL). The results showed that three types of homework follow-up practices (i.e., correcting homework orally; correcting homework on the blackboard; and collecting and grading homework) impacted positively on students' performance.

The fourth paper is accepted for publication on the journal *Psicothema* (Parents' conceptions about their homework involvement in elementary school). Assuming a phenomenographic perspective, this study examined 4th graders parents' conceptions about parents' involvement in homework (what and how). The results showed that parents' conceptions of homework involvement have a positive meaning, and focus primarily on the role played on the promotion of academic learning by fostering their children's autonomy, and providing them emotional encouragement.

The fifth study has been accepted to be published on *Metacognition & Learning* (Relationships between parental involvement in homework, student homework behaviors, and academic achievement: Differences among elementary, junior high, and high school students). Findings allow a deeper understanding of the relationship between perceived parental homework involvement (i.e., parental homework control and parental homework support), student homework behaviors (i.e., time spend on homework completion, time management, and amount of homework completed), and student academic achievement. The data showed that student homework behaviors, perceived parental homework involvement, and academic achievement are significantly related. However, results vary depending on the students' grade level: (a) in junior high and high school, perceived parental homework involvement is related to students' homework behaviors, but not in elementary school; and (b) although students' homework behaviors are related to academic achievement at each school level, the



direction and magnitude of the relationship vary. Specifically, the relationship is stronger in junior high and high school than in elementary school.

According to the results obtained in these studies, we can conclude some aspects about homework: 1) doing homework is better than not doing it; 2) spending more time on homework not always is better; 3) the main aspect is the effective homework time management; 4) the relationship between grade and homework time management is reverse; 5) if teachers assign homework, they should give feedback to students; 6) but not any kind of feedback is equally effective; 7) parental involvement is positively related to students' homework involvement and academic achievement but it depends on the kind of involvement and students age.

SR. DIRECTOR DE DEPARTAMENTO DE Psicología

SR. PRESIDENTE DE LA COMISIÓN ACADÉMICA DEL PROGRAMA DE DOCTORADO EN PSICOLOGÍA

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MINISTERIO
DE ECONOMÍA
Y COMPETITIVIDAD

A mis padres, culpables de todas mis virtudes.

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Muchas son las personas que directa o indirectamente me han ayudado a llevar adelante mi trabajo durante estos años. A todas ellas les debo miles de gracias.

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Resumen

El objetivo general de esta Tesis Doctoral ha sido profundizar en la relación entre los deberes escolares y el rendimiento académico tomando en consideración a los tres agentes implicados en este proceso (estudiantes, profesores y padres) y dos etapas educativas (Primaria y Secundaria). Para el abordaje de este objetivo se han diseñado y llevado a cabo cuatro estudios empíricos (dos correlacionales, uno experimental y uno fenomenográfico), los cuales han dado lugar a cuatro publicaciones en revistas incluidas en el *Journal of Citation Reports* y a un quinto trabajo que se encuentra en revisión.

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El tercer trabajo se encuentra en revisión en la revista *Journal of Educational Research* (Is homework feedback worth the teachers' effort? Homework feedback and academic performance). Probado que el feedback del profesor juega un rol importante en la implicación y rendimiento del estudiante, en este tercer trabajo, con base en un diseño experimental, se aportaron datos del efecto diferencial de cinco tipos diferentes de feedback. Los resultados obtenidos mostraron que corregir oralmente, corregir en la pizarra y recoger las tareas y devolverlas corregidas fueron los tres tipos de feedback que mayor efecto tuvieron en el rendimiento (principalmente recoger, corregir y devolver los deberes individualmente a cada alumno).

El cuarto estudio se encuentra en prensa en la revista *Psicothema* (Parents' conceptions about their homework involvement in elementary school). Desde una perspectiva fenomenográfica se profundizó en *qué* entienden los padres de niños de Primaria por implicación parental en los deberes y *cómo* lo hacen. Los resultados mostraron que las concepciones de los padres de implicación en los deberes tienen un significado positivo y se centran especialmente en la mejora del rendimiento académico, fomentando la autonomía de los alumnos y proporcionándoles apoyo emocional.

El quinto estudio ha sido publicado online en la revista *Metacognition and Learning* (Relationships between parental involvement in homework, student homework behaviors, and academic achievement: Differences among elementary, junior high, and high school students). Se ha profundizado en el estudio de la relación entre la percepción de implicación parental en los deberes y la implicación de los estudiantes y

el rendimiento académico. Los resultados mostraron que la implicación de los alumnos en los deberes, la percepción de implicación parental y el rendimiento académico están positivamente relacionados. Sin embargo, los resultados varían dependiendo del nivel escolar de los alumnos: en primer y segundo ciclo de Secundaria la percepción de implicación parental está relacionada con la implicación de los estudiantes, pero no en Primaria. Aunque la implicación de los estudiantes está relacionada con el rendimiento académico en todos los niveles, la dirección y la magnitud de la relación varía (es más fuerte en primer y segundo ciclo de Secundaria que en Primaria).

El desarrollo de los estudios que componen esta Tesis Doctoral nos han permitido extraer las siguientes conclusiones: 1) hacer deberes es mejor que no hacerlos; 2) dedicar más tiempo a los deberes no siempre es mejor; 3) la clave está en aprovechar bien el tiempo; 4) la relación entre el curso académico y el aprovechamiento del tiempo es inversa; 5) si se prescriben deberes hay que dar feedback, sino mejor no prescribirlos; 6) aunque no todo tipo de feedback es igualmente efectivo; y 7) una mayor implicación parental conduce a una mayor implicación del estudiante en los deberes y a un mayor rendimiento, si bien esta relación depende del tipo de implicación y de la edad de los estudiantes.

Abstract

The main objective of this Doctoral Thesis has been to investigate the relationship between homework and academic achievement across compulsory education considering the three agents involved in homework (students, teachers and parents) in different grade levels (elementary, junior high and high school). To accomplish this objective four studies were run (two correlational, one experimental and another one phenomenographic). Results from these studies were published in five papers from the Journal of Citation Reports.

The first paper has been published online in 2013 on the journal Educational Psychology (Homework and its relationship to academic achievement over the compulsory school) and its results showed that the amount of HW completed decreased with increased schooling, as students' perceived quality of HW time management. Data provided evidence that time spent on HW conjointly with perceived quality of HW time management explained how academic achievement is mediated by the amount of HW completed.

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The fourth paper is accepted for publication on the journal Psicothema (Parents' conceptions about their homework involvement in elementary school). Assuming a phenomenographic perspective, this study examined 4th graders parents' conceptions about parents' involvement in homework (what and how). The results showed that parents' conceptions of homework involvement have a positive meaning, and focus

primarily on the role played on the promotion of academic learning by fostering their children's autonomy, and providing them emotional encouragement.

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According to the results obtained in these studies, we can conclude some aspects about homework: 1) doing homework is better than not doing it; 2) spending more time on homework not always is better; 3) the main aspect is the effective homework time management; 4) the relationship between grade and homework time management is reverse; 5) if teachers assign homework, they should give feedback to students; 6) but not any kind of feedback is equally effective; 7) parental involvement is positively related to students' homework involvement and academic achievement but it depends on the kind of involvement and students age.

I. Introducción

El presente trabajo de Tesis Doctoral tiene como objetivo el análisis de la relación entre los deberes escolares y el rendimiento académico en diferentes etapas de la enseñanza obligatoria. Aunque se trata de un tema que no es novedoso, sí está de plena actualidad y tiene una gran relevancia, tanto a nivel académico como desde una perspectiva social. A nivel académico, la mayor parte de los expertos consideran que los deberes deberían servir para asentar conocimientos, mejorar habilidades (Bempechat, 2004) y obtener un mejor rendimiento (Fredricks, Blumenfeld, & Paris, 2004), aunque no faltan quienes dudan de tales beneficios. A nivel social, los más críticos con los deberes afirman que provocan ansiedad y estrés tanto en alumnos (Conner et al., 2009; Galloway, Conner & Pope, 2013), como en padres y profesores, aunque también hay estudios que muestran que los padres valoran los deberes positivamente, incluso por delante de las actividades extraescolares (Kiewra et al., 2009). Por último, los datos de algunos estudios han mostrado ambas caras de la moneda: ciertos beneficios a nivel académico a la vez que problemas psicológicos y somáticos (Cheung & Leung-Ngai, 1992; Pope, 2001), además de conflictos entre familia y escuela (Kralovec & Buell, 2000). En resumen, en este asunto, parece que no siempre más es mejor (Epstein & Van Voorhis, 2001). La cuestión no parece estar tanto en la cantidad de deberes asignados, o en el tiempo invertido en realizarlos, sino en la calidad de los mismos y su pertinencia (Trautwein, 2007); es decir, los deberes no deberían ser asignados simplemente por norma, como rutina, o porque asumimos, sin más, que son prácticas intrínsecamente buenas (Sallee & Rigler, 2008).

Como se deduce de lo anterior, el asunto de los deberes escolares genera un indudable interés en todos los agentes implicados. Conscientes de la tremenda complejidad del tema, en la presente investigación se abordó el análisis de la relación entre deberes escolares y rendimiento académico tomando en consideración los tres agentes implicados en este proceso: estudiantes, profesores y padres. Desde esta amplia perspectiva, para la elaboración de esta Tesis Doctoral, se han diseñado una serie de estudios, tanto cuantitativos como cualitativos, que han dado lugar a los cinco artículos que constituyen este trabajo (cuatro aceptados para publicación y uno en revisión).

Desde el comienzo de la Tesis Doctoral se ha visto la imposibilidad de abordar de manera exhaustiva toda la complejidad que gira en torno a los deberes escolares. Por ello, nos hemos centrado únicamente en algunos aspectos que nos resultaron de especial interés. En relación con los estudiantes, ha merecido nuestra especial atención el estudio de la implicación del estudiante en la realización de los deberes y su relación con el rendimiento académico en diferentes niveles educativos. De entre las posibles variables elegibles, dada su especial relevancia, tres fueron incluidas en el modelo de análisis: la cantidad de deberes realizados de los que prescriben los profesores, el tiempo dedicado a la realización de los mismos, y el aprovechamiento de ese tiempo. El modelo fue analizado teniendo en cuenta el género y la edad de los estudiantes, y los resultados ya han sido publicados en la revista *Educational Psychology*.

Tomando como base el modelo establecido en el estudio anterior, se incluyó en éste una dimensión más: la implicación del profesor en los deberes. Quizás porque se da por hecho que los profesores son expertos en la elaboración, selección y asignación de deberes, se ha investigado muy poco sobre cómo la conducta del profesor, en relación con los deberes, puede llevar a la implicación del estudiante y a un buen rendimiento o, por el contrario, al estrés, ansiedad y desinterés (e incluso a un bajo rendimiento). El diseño y prescripción de deberes, por una parte, y el feedback respecto de los mismos, por otra, son los dos recursos más significativos con los que el profesor puede influir en la cantidad y la calidad de la implicación de los estudiantes en los deberes. En la presente investigación nos hemos centrado en el segundo. En relación con esto, se han diseñado y desarrollado dos estudios en los que se pretendió, primero, conocer cómo y en qué magnitud el feedback aportado por el profesor en clase en relación con los deberes afecta a la implicación del estudiante en los mismos y, finalmente, a su rendimiento académico. Una vez realizado este estudio, y comprobado el valor del feedback del profesor, hemos realizado otro estudio para comprobar si cualquier tipo de feedback es igualmente relevante o, como se intuía, diferentes tipos de feedback conllevan niveles de implicación en los deberes y rendimiento académico distintos. Ambos trabajos fueron enviados para su publicación a la revista *Journal of Educational Research*; mientras que el primero ya está aceptado, el segundo se encuentra en revisión.

Por último, se añadió al modelo de los estudios previos el tercer componente: la implicación parental en los deberes. Como se desprende de los múltiples estudios realizados respecto de la relación familia-escuela, la mayoría de los datos concluyen que la implicación de los padres en la educación de los hijos en edad escolar es fundamental para el desarrollo de una actitud positiva hacia los aprendizajes escolares y el progreso académico y personal (Bempechat & Shernoff, 2012; Epstein, 1995; Reschly & Christenson, 2009). En este contexto, los deberes escolares constituyen uno de los elementos por excelencia para el desarrollo de la implicación parental en la educación de los hijos (Else-Quest, Hyde, & Hejmadi, 2008; Shernoff & Vandell, 2007). Y es precisamente en este campo, el de los deberes escolares, donde los datos son variables, y en ocasiones contradictorios, principalmente en Educación Primaria (Chen, 2008), dependiendo de la edad de los estudiantes (Epstein & Van Voorhis, 2012). Por otra parte, se observó también que diferentes formas de implicación parental presentan distintas relaciones con la implicación de los estudiantes en los deberes, y con el progreso académico (Dumont, Trautwein, Nagy, & Nagengast, 2013; Hoover-Dempsey et al., 2001). Estudios como los de Pomerantz, Grolnick and Price (2005) sugieren que cuando la implicación parental se centra principalmente en diferentes formas de control tiene un efecto nulo o negativo en la motivación, implicación y rendimiento de los estudiantes, mientras que la implicación parental que se dirige al aporte de ayuda y fomento de la autonomía de los estudiantes en la realización de los deberes es la más efectiva. Sin embargo, este patrón de asociaciones es consistente en edades avanzadas de la enseñanza obligatoria pero es más confusa en estudiantes de Educación Primaria (Patall, Cooper, & Robinson, 2008). Por ello, se llevó a cabo un estudio de corte

fenomenográfico en el que se investigaron las concepciones de padres de niños de Educación Primaria sobre el *qué* (concepto) y el *cómo* (estrategia) de su implicación en el área de los deberes escolares. Los resultados de esta investigación constituyen el cuarto estudio en esta Tesis Doctoral, el cual fue aceptado para su publicación en la revista *Psicothema*. Finalmente, tomando en consideración los resultados aportados por este estudio, se realizó una última investigación en base a una amplia muestra de estudiantes desde 5º de Educación Primaria hasta 4º de Educación Secundaria Obligatoria (ESO). Al modelo estructural utilizado en los primeros estudios se añadió, ahora, la implicación parental. El objetivo era analizar no solo si la implicación parental incide significativamente en la implicación de los estudiantes en los deberes, y sobre el rendimiento académico, sino también cómo varía dicha relación en función del tipo de implicación parental (se tuvieron en cuenta los dos tipos de implicación más comunes en las edades consideradas: control y apoyo) y de la edad de los estudiantes (primaria, primer ciclo de ESO, segundo ciclo de ESO). Los datos de este quinto estudio han sido publicados en la revista *Metacognition and Learning*.

La Memoria de Investigación de esta Tesis Doctoral está estructurada en varias partes. Consta de cinco estudios. Cuatro de ellos son publicaciones en revistas con Índice de Impacto y uno de ellos constituye un trabajo complementario puesto que se encuentra en proceso de revisión. En primer lugar, aunque en los cinco estudios realizados ya se establece el marco concreto que justifica cada uno de ellos, se elaboró un breve marco teórico general con el objeto de que sirviera como contexto-justificación tanto de la relevancia del tema tratado como de la pertinencia de los estudios diseñados y llevados a cabo. En este marco teórico se incluye información sobre los deberes dentro del contexto educativo español, los pros y contras de realizar deberes, modelos teóricos sobre las variables y el proceso de realización de deberes, así como la fundamentación científica de cada uno de los objetivos de la Tesis Doctoral. En segundo lugar, se adjuntan los cinco estudios de que consta la presente investigación. En tercer lugar, puesto que en cierta medida los cinco estudios se encuentran anidados, se elaboró un apartado, denominado “Discusión de resultados”, en el que se trató de discutir, en su conjunto, los resultados obtenidos en los cinco estudios. Finalmente, de los resultados de los estudios realizados, y en relación con los datos de la investigación previa, se extrajeron un conjunto de conclusiones con consecuencias tanto a nivel de la práctica educativa como para el campo de la investigación futura.

II. Contexto y justificación

2.1. Los deberes escolares dentro del contexto educativo español

La educación es un pilar fundamental de la sociedad que no ha recibido, ni recibe, la consideración que merece desde todas las esferas sociales. Se trata de un derecho fundamental para poder ejercitar los demás derechos. Es sinónimo de libertad, de desarrollo, de autonomía, de cultura. Es la llave que abre las puertas del mundo a las personas que lo habitan. Sin embargo, decir que la educación es muy importante y que es el mejor legado que los padres pueden dejar a los hijos no es suficiente. Para creer en ella y considerarla un eje fundamental en el desarrollo de la sociedad se necesita investigar, conocer la realidad educativa y promover cambios acertados desde dentro del proceso educativo.

Un elemento importante del diagnóstico de la salud y la eficacia de nuestro sistema educativo lo aportan los Informes PISA (Programme for International Student Assessment) que cada tres años son publicados por la OCDE (Organización para la Cooperación y el Desarrollo Económico). El Informe PISA correspondiente al año 2012 señala que el rendimiento educativo en España en matemáticas, lectura y ciencias permanece por debajo de la media de la OCDE, a pesar de haberse incrementado el gasto en educación en un 35% desde 2003 y de los numerosos esfuerzos de reforma a nivel regional y estatal (OCDE, 2010). Este hecho ha llevado a profundas discusiones y continuas reformas de las leyes de educación. En ocasiones se ha querido ver en la falta de autoridad del profesor la clave de estos malos resultados. También se adujo que el problema radica en la falta de implicación de los padres, quienes argumentan que la escuela es la responsable fundamental de la educación de los estudiantes (principalmente en lo relativo a lo académico).

Aunque tímidamente, la prescripción o no de deberes también se sumó al debate. Lo mismo que algunos entienden que prescribir deberes favorece la implicación de los estudiantes en sus aprendizajes, ayuda al desarrollo de buenos hábitos de estudio y estrategias de aprendizaje y fortalece el vínculo emocional con la escuela (Bempechat, 2004; Fredricks, Blumenfeld, & Paris, 2004; Trautwein, 2007), otros argumentan todo lo contrario, manifestando que la excesiva cantidad de deberes y su escasa calidad, conducen al alumno al rechazo de los mismos, a una progresiva ausencia de implicación escolar y a un progresivo incremento de problemas de salud psicológica (e.g., estrés, ansiedad) y física (e.g., problemas de sueño) (Fuligni & Hardway, 2006; Galloway, Conner, & Pope, 2013).

Desde los primeros años en la escuela, los estudiantes aprenden que su proceso de aprendizaje y su trabajo académico no finalizan al cruzar la puerta del colegio rumbo a casa. Los deberes escolares, también denominados tareas para casa (TPC) y comúnmente llamados simplemente “deberes”, les acompañan desde los primeros años

de escolarización y les adelantan que a lo largo de la vida estarán sometidos a un aprendizaje constante que no tiene por qué ocurrir solo en el aula (Trautwein, 2007).

Los deberes escolares han sido definidos por Cooper (2001a) como tareas asignadas a los estudiantes por los profesores para ser realizadas en horas no escolares y se asume que su finalidad es proporcionar a los estudiantes una oportunidad de trabajo adicional sobre los contenidos adquiridos en el aula (Mourão, 2009). Sin embargo, aunque forman parte de la realidad cotidiana de los alumnos, y a pesar de que su finalidad persigue siempre la mejoría académica, la realización de los deberes representa uno de los aspectos más controvertidos de la vida escolar, no solo para los estudiantes sino también en ocasiones para los padres y los profesores (Cooper, 2001a; Larson & Richards, 1991). Es por todos sabido que realizar los deberes no supone un momento de ocio para los jóvenes (Suárez, 2010), los cuales prefieren dedicarse a otras actividades cuando finalizan sus tareas en la escuela o instituto. No obstante, su jornada como estudiantes no concluye hasta que se han realizado los deberes, y eso supone esfuerzo y trabajo, no sólo por parte de ellos mismos, sino también de los profesores que los asignan y de los padres, quienes se encuentran presentes en el contexto en el que los deberes se realizan.

Puesto que los deberes forman parte del proceso educativo al igual que las tareas que se realizan dentro del centro escolar, merecen igualmente consideración, no solo porque se espere de ellos una contribución positiva al rendimiento académico, sino porque se trata de una actividad en la que están implicados los tres agentes que tienen cabida en el proceso educativo: alumnos, profesores y padres. No obstante, a lo largo de las décadas ha habido opiniones de todo tipo, tanto a favor como en contra de los deberes escolares. Con todo, los deberes fueron habitualmente prescritos, y lo siguen siendo en la actualidad, posiblemente bajo el supuesto de que su prescripción es positiva, pues ayuda a promover la responsabilidad y un fuerte sentido del trabajo, de modo que cuando los estudiantes tienen muchos deberes es un signo de un currículo riguroso y un buen profesor (Vatterott, 2007). Sin embargo, existen dudas razonables de que prescribir muchos deberes sea esencial para un currículo de calidad, un buen profesor o una efectiva forma de desarrollar una buena ética de trabajo o responsabilidad en nuestros jóvenes (Homework white paper - Challenge Success, 2012).

El debate sobre la pertinencia o no de prescribir deberes aparece y desaparece cíclicamente en la sociedad. Con frecuencia, es la cantidad de deberes prescritos o el tiempo que los estudiantes tienen que dedicarles lo que más controversia genera. Sin embargo, más allá de la cantidad de deberes o el tiempo empleado en realizarlos, otras cuestiones podrían tener tanto, o más, interés en este debate. Así, por ejemplo, los deberes prescritos ¿son de calidad y están ajustados a las necesidades particulares de los jóvenes?, ¿son significativos y tienen valor para los alumnos?, ¿sirven para implicar más al estudiante en el proceso de aprendizaje?, ¿sirven para vincular a las familias con la escuela?

2.2. Debate sobre los deberes escolares: Pros y contras

Entre quienes defienden la pertinencia de los deberes, Trautwein (2007) ha señalado que mejoran las habilidades de estudio de los alumnos, sus actitudes hacia el trabajo y les enseñan que el aprendizaje no sólo se produce dentro de las paredes del colegio. La mayoría de los profesores asignan deberes. Lo hacen porque consideran que constituyen un suplemento importante a las actividades realizadas en el colegio (Henderson, 1996) y porque existe evidencia de que son un indicador de escuelas y alumnos exitosos (Epstein & Van Voorhis, 2001). También se ha señalado que la realización de los deberes mejora las calificaciones y desarrolla la autonomía personal de los alumnos, que son estimulados a regular sus comportamientos de estudio de modo autónomo y responsable (Cooper, Robinson, & Patall, 2006; Cooper & Valentine, 2001). En estudios realizados a nivel internacional como el Informe PISA 2000 y 2006 se afirma que los países que asignan más deberes son los que obtienen mejores resultados académicos (Rosário, Mourão, Núñez, González-Pienda, & Solano, 2006). Asimismo, los resultados del informe PISA también han señalado que el pequeño porcentaje de alumnos europeos que no realizan deberes en la asignatura de matemáticas, obtienen peor rendimiento en esta asignatura que los que sí los realizan y que los alumnos con mejor rendimiento en la totalidad de las asignaturas, hacen más deberes que sus compañeros (OCDE, 2010). Por contra, algunos de los supuestos inconvenientes de los deberes son entre otros, que pueden crear saciedad en los alumnos, que les impiden divertirse y participar en otras actividades sociales y que la implicación de los padres en los mismos puede suponer una interferencia con respecto a las explicaciones del profesor (Cooper, 1989).

Aunque los deberes escolares son y han sido objeto de estudio a lo largo de la historia más reciente, lo han sido más a nivel internacional que dentro de nuestras fronteras. Por ejemplo, en Estados Unidos, se llevan estudiando hace más de 70 años y, a pesar de ello, la opinión acerca de estas tareas ha sido bastante cambiante. Antes del comienzo del siglo XX, las teorías educacionales en boga apostaban por los deberes como una buena manera de disciplinar a los estudiantes. Sin embargo, a partir de los años 40 el aprendizaje mediante entrenamiento y el ejercicio sistemático y repetitivo es cuestionado, y por tanto los deberes, dándose por aquel entonces prioridad a la capacidad de resolución de problemas. Años más tarde, durante la Guerra Fría, y ante la preocupación por enfrentarse a los desafíos tecnológicos y la competición contra sus adversarios, los deberes son vistos como una forma de adquisición de conocimientos, aunque en los años 60 son de nuevo cuestionados pues se plantea que pueden producir sobrecarga en los alumnos (Mourão, 2009). La década de los 80 supone un nuevo cambio de parecer que se traduce nuevamente en un interés por los deberes ante la preocupación de los norteamericanos por su falta de competitividad en el mercado mundial (Cooper, Jackson, Nye, & Lindsay, 2001; Cooper et al., 2006).

Pero no todo desde entonces han sido alabanzas a los deberes. En el año 2006, una madre norteamericana publicó un libro titulado *The case against homework*, una lucha contra las tareas para casa en Primaria que hace alusión a los escasos beneficios

que según algunas investigaciones poseen de cara al rendimiento académico, apoyándose en el rechazo a la realización de excesiva cantidad de deberes cada tarde. El libro recoge alguna afirmación un tanto impactante, como que los deberes son una de las causas de obesidad infantil, puesto que el tiempo que los alumnos dedican a su realización les impide jugar y practicar ejercicio (Bennett & Kalish, 2006). Este ha sido uno de los primeros signos de rechazo hacia los deberes por parte de los padres.

No solo Estados Unidos se ha manifestado contra los deberes en los últimos años. En Europa, a partir del año 2012, se ha despertado un cierto caos que podría considerarse como una particular revolución, entre el colectivo de padres de alumnos. Todo comenzó el 26 de marzo de 2012 cuando la Federación de Consejos de Padres de Alumnos de Francia convocó una huelga de dos semanas sin deberes para protestar contra los trabajos forzados de sus hijos fuera del horario lectivo. Estos padres argumentaron que los deberes no sirven para nada, causan tensiones en la familia, pues obligan a los padres a ejercer de profesores e impiden a los niños dedicar tiempo a la lectura y a otras actividades de ocio (Mora & Aunión, 2012). Los padres galos se apoyaron también en su particular cruzada en la prohibición que existe desde 1956 en Francia, y también en España, de poner tareas para casa a los alumnos entre 6 y 11 años, la cual no se está cumpliendo. Sin embargo, tal y como señala una docente de Lengua y Literatura de un instituto madrileño, ¿cómo pretendemos que los alumnos comiencen a realizar deberes a los 12 años sin haber adquirido previamente las destrezas necesarias y la rutina en cursos inferiores? (Ibáñez, 2012).

A raíz de la polémica generada en Francia, la Confederación de Asociaciones de Padres y Madres de Alumnos de España, CEAPA, y la Confederación Católica Nacional de Padres de Familia y Padres de Alumnos, CONCAPA, han tomado la palabra pero manteniendo posturas bastante discordantes. Los primeros consideran que los alumnos están sobrecargados y que debe disminuirse la cantidad de tareas que tienen que hacer cada tarde y modificarlas para que sean motivadoras y estén relacionadas con la lectura, la investigación y las TIC. Por otro lado, el presidente de CONCAPA entiende que los deberes son un apoyo para el alumno siempre que sean moderados en cantidad y equilibrados y coordinados entre profesores. Señala que contribuyen a crear alumnos responsables y que fomentan el afán de superación. Respecto al papel de los padres en estas tareas, opina que deben estar pendientes de los deberes de los hijos especialmente cuando más pequeños son. El director de CEAPA, por su parte, opina que en muchas ocasiones los padres salen tarde de trabajar, no disponen de tiempo y la situación de los deberes los desborda (Vila, 2012). Frente a estas dos posturas, los docentes señalan que los deberes son la responsabilidad del alumno, deben hacerlos solos a partir de la práctica diaria en el aula y que es precisamente esa formación en clase la que está encaminada a anular las posibles desigualdades que puedan existir entre estudiantes (Ibáñez, 2012).

Parece que la huelga francesa anti deberes de 2012 ha sido como destapar la caja de los truenos y desde ese momento se han sucedido los titulares de prensa de acuerdo

con la opinión parental de descontento con la idea de que sus hijos se enfrenten diariamente a la realización de tareas académicas después del colegio.

Frente a esta oleada de críticas durante los últimos años, quienes consideran que los deberes son necesarios han aludido a nuestro envidiado ejemplo a seguir, Finlandia. Este país nórdico, el cual carece de rival en los resultados de la OCDE, defiende que los padres son los primeros responsables de la educación de sus hijos y después la escuela. Es cierto que en Finlandia las jornadas laborales de los padres son más flexibles y esto les permite acompañar a sus hijos durante la realización de los deberes, pero allí nadie cuestiona su utilidad y, en efecto, los niños finlandeses hacen deberes diariamente, no suponen una excesiva cantidad durante la Educación Primaria pero es impensable acudir a clase sin haberlos hecho (Arrizabalaga, 2013).

Durante esta pequeña revolución ocasionada por la prescripción, o no, de deberes, a nivel nacional las opiniones de padres, profesores y especialistas de la educación a favor y en contra de los deberes podrían resumirse del modo en que se hace en la Revista electrónica de la Mutualidad General de Funcionarios Civiles del Estado (Muface) en su sección dedicada a la educación (Vila, 2012) (ver Tabla 1).

Tabla 1. Pros y contras de asignar deberes escolares

Argumentos a favor de prescribir deberes

- Los deberes diarios ayudan a crear hábitos de trabajo, de superación y de esfuerzo personal. Una encuesta realizada el pasado año por el sindicato CSIF en Andalucía mostraba cómo el 95% de los profesores asegura que los deberes fomentan el esfuerzo.
 - Algunos expertos opinan que aportan a los niños un valor pedagógico “incuestionable”, les enseñan a “ser responsables” y desarrollan su disciplina.
 - Conectan a los padres con la educación de sus hijos: la familia debe implicarse en ellos, estimulando el aprendizaje junto con el colegio.
 - Refuerzan y contextualizan lo aprendido en el aula, estimulando la capacidad de razonamiento y la memoria en los niños.
 - Favorecen la formación complementaria y la relación con el entorno, fuera de la escuela, por medio de la visita a museos y bibliotecas, o el fomento de la investigación.
 - Ayudan a mejorar la lectura como base fundamental para todos los aprendizajes.
 - Estimulan el manejo complementario de las tecnologías de la información, cada vez más presentes en las aulas.
 - Fomentan la autonomía y posibilitan que el alumno aprenda a trabajar solo y que, por tanto, desarrolle la capacidad de planificar y buscar información por sí mismo.
 - Promueven, además, la creatividad, así como la interacción y la posibilidad de ayuda entre alumnos a través del móvil, Internet, reuniones...
-

Argumentos en contra de prescribir deberes

- Los deberes crean tensiones entre padres e hijos, complican mucho la vida de las familias y son generadores de conflictos y castigos. La falta de tiempo libre para dedicar a sus hijos y la formación necesaria de los padres tienen muchas veces la culpa.
- El abuso de estas tareas y su acumulación en las diferentes asignaturas provoca que muchos escolares se desmotiven y crea una fatiga añadida al cansancio acumulado a lo largo de la jornada.
- Según algunos especialistas, vienen a demostrar un fracaso del sistema educativo, concebido para sobrecargar a los niños de tareas que deberían haber realizado en la escuela.
- Otras opiniones señalan que los alumnos ven en ellos una prolongación de una enseñanza que no les motiva, poco práctica, fundamentada en el libro de texto y en el aprendizaje memorístico y alejada de la cultura audiovisual en la que se desenvuelven.
- Provocan desigualdades sociales al poner en evidencia el nivel socioeconómico y cultural de la familia y de su entorno. Mientras unos intentan ayudar a sus hijos, otros recurren a clases particulares o academias y otros muchos no tienen ni el nivel educativo ni el dinero para poder pagar esos apoyos. CEAPA entiende que cuantas más familias sientan la necesidad de recurrir a las clases y profesores particulares para completar la educación de sus hijos, más estará fracasando el sistema educativo reglado y la igualdad de oportunidades.
- Restringen el tiempo para la familia, las tareas domésticas y el ocio: los menores necesitan tiempo para realizar actividades deportivas, culturales –por ejemplo, la lectura de libros al margen del aula– o de esparcimiento, que también contribuyen a su desarrollo personal.

2.3. Variables implicadas en la realización de los deberes

Según se refleja en la Tabla 1, existen razones de peso para creer tanto en los beneficios como en los inconvenientes de prescribir deberes escolares. Sin embargo, tanto los argumentos a favor como en contra de dicha prescripción deben ser contemplados desde una lente crítica por varias razones. En primer lugar, partiendo de la investigación pasada es muy difícil aislar y estimar el efecto específico que la realización de deberes tiene sobre el desarrollo de conocimientos, competencias, vínculos emocionales o desajustes psicológicos y somáticos. Por ejemplo, es complicado distinguir si los resultados positivos de los alumnos se deben a la prescripción de deberes o, simplemente, a la existencia de buenas prácticas instruccionales (Trautwein & Koller, 2003). En segundo lugar, no estamos en disposición de asegurar si el beneficio de realizar deberes se debe a éstos o a las diferentes prácticas de implicación parental, las cuales desconocemos en detalle (Hoover-Dempsey et al., 2001). En tercer lugar, tampoco sabemos en qué medida los estudiantes se implican profundamente o superficialmente en su realización. Finalmente, con frecuencia los estudiantes se reúnen

para realizar los deberes; entonces, ¿cuánto es del grupo y cuánto del individuo? En la investigación pasada no se ha tomado en consideración este asunto. Por tanto, en base a la investigación previa ¿Qué podemos concluir de los deberes desde las diferentes perspectivas: padres, profesores y alumnos? ¿Qué debemos pedir a la investigación futura?

Para concretar en qué dirección debe continuar una investigación, necesitamos contar con un modelo guía que contemple las variables objeto de estudio y análisis. El tema de los deberes no ha sido una excepción en este sentido y se han planteado a lo largo de los años distintos modelos explicativos a medida que se ha ido investigando en este campo.

Uno de los primeros de los que se tiene conocimiento, el modelo procesual de Cooper (2001b), ha considerado que la competencia, la motivación y el curso de los alumnos, así como las diferencias individuales y la materia de los deberes son factores exógenos que influyen en el efecto de esos deberes, además de los factores endógenos referidos a la tarea, el hogar y la comunidad. Posteriormente, surgieron otros modelos como el de Xu y Corno (2003, 2006), de carácter autorregulatorio, que pone el énfasis en la preparación, la gestión y la monitorización de las emociones durante el proceso de realización de los deberes; y el de Walker, Hoover-Dempsey, Whetsel & Green (2004) que contempla varios aspectos de interacción padres-hijos, dando especial importancia a la implicación parental en el proceso de realización de los deberes escolares. Actualmente, la investigación toma como referente el modelo recientemente propuesto por Trautwein y sus colaboradores (Trautwein & Köller, 2003; Trautwein, Lüdtke, Schnyder, & Niggli, 2006), y que es un modelo que pretende integrar lo más significativo de los anteriormente mencionados.

Estos autores proponen un modelo complejo y a la vez parsimonioso (Trautwein & Köller, 2003). Se caracteriza porque tiene en cuenta a los tres agentes protagonistas en el proceso de realización de los deberes (estudiantes, profesores y padres), dando cabida a las variables más importantes propias de dicho proceso. El modelo se basa en teorías motivacionales como la teoría expectativa-valor (Eccles et al., 1983; Pintrich & de Groot, 1990), la teoría de la autodeterminación (Deci & Ryan, 2002), así como en teorías del aprendizaje e instrucción (Boekaerts, 1999).

Se trata de un modelo (ver Figura 1) en el que se identifican tres bloques de variables: rendimiento académico, implicación de los estudiantes en los deberes e influencia del entorno. En el bloque *rendimiento académico* se incluyen las calificaciones académicas de los alumnos y su resultado en pruebas de rendimiento. La *implicación de los estudiantes en los deberes* tiene que ver tanto con el componente motivacional, que incentiva, dirige y mantiene la conducta de trabajo sobre los deberes escolares, como con el componente cognitivo-conductual, en términos de las estrategias cognitivas y metacognitivas utilizadas, el esfuerzo realizado, el tiempo dedicado y la cantidad de deberes realizados. La *influencia del entorno* da cabida a los otros dos

agentes implicados en el proceso de los deberes: implicación parental e implicación de los profesores en los deberes prescritos.

Además de una estructura, este modelo se caracteriza por unos presupuestos de funcionalidad. En este sentido, se hipotetiza que el rendimiento de los alumnos se encuentra explicado tanto por las mencionadas variables del alumno (motivacionales y de implicación) como por las del contexto (familiares y escolares). Y lo hacen de modo interactivo. Por una parte, se establece que el rendimiento académico se encuentra en parte explicado, de modo directo, por la magnitud y la calidad de la implicación del estudiante en los deberes escolares (e.g., cognitiva y conductual). Por otra parte, se asume que este rendimiento es explicado tanto por la implicación parental (e.g., expectativas de competencia, comunicación padres-hijos en relación a la escuela, calidad y cantidad de ayuda con los deberes) como por la implicación de los profesores (e.g., cantidad de deberes que se prescriben, características de los deberes, características del ambiente de aprendizaje). Asimismo, en el modelo también se plantea que algunas variables del alumno (e.g., género, habilidades cognitivas, curso) y la percepción que ellos tengan de los deberes (e.g., calidad, control, utilidad) influyen en el efecto que el resto de variables mencionadas puedan tener sobre la cantidad y calidad de la realización de los deberes, así como sobre el rendimiento académico. Finalmente, señalar que el modelo propuesto por estos autores no es estático. De hecho, propone diferentes mecanismos de feedback. Asume que el esfuerzo elevado en los deberes incrementará el rendimiento de los estudiantes. Esto a su vez puede afectar a la ayuda parental con los deberes, a la cantidad y calidad de deberes que los profesores prescriben, a la percepción de esa calidad por parte de los alumnos y a su motivación hacia los mismos.

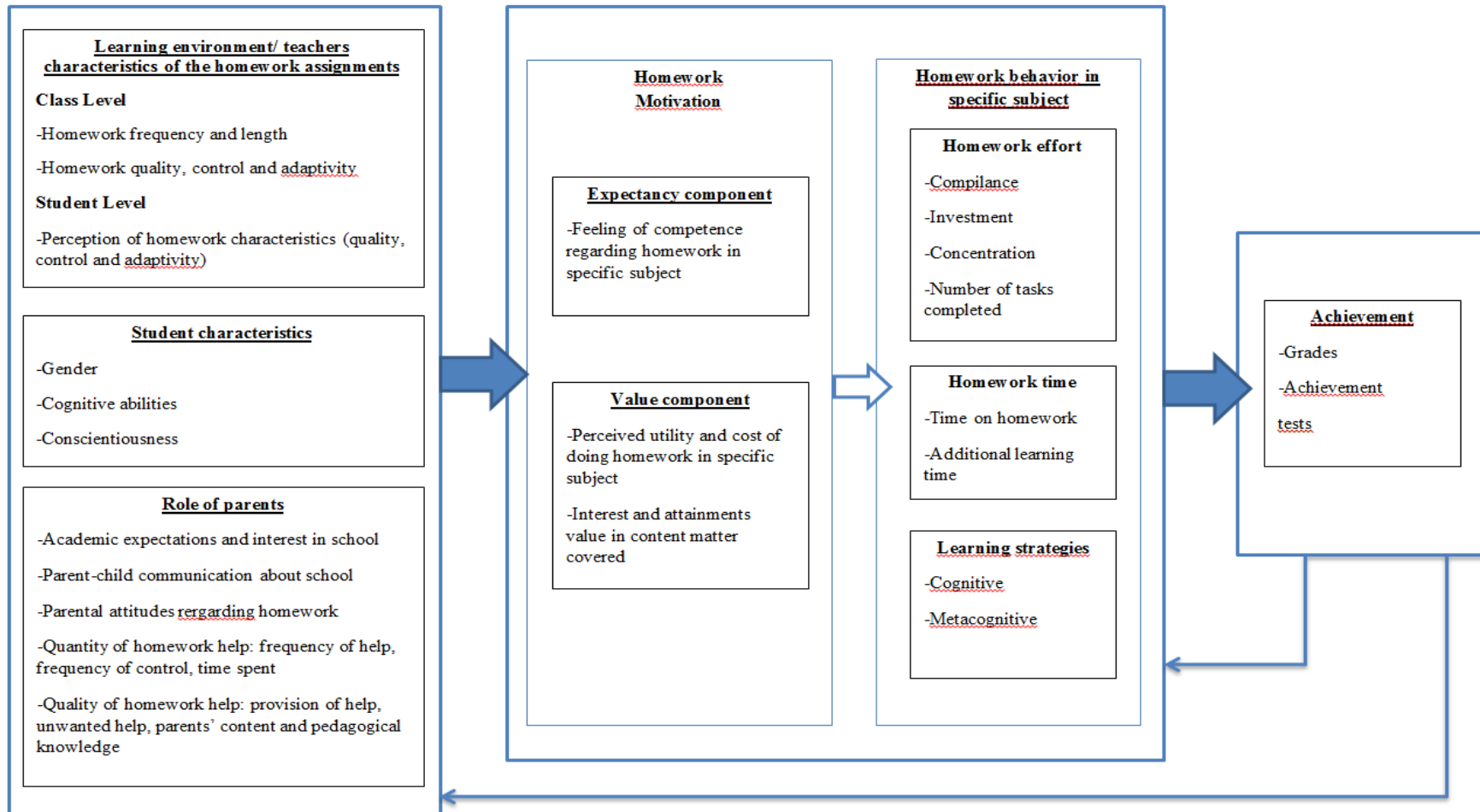


Figura 1. Modelo multinivel de deberes escolares (modificado de Trautwein, Lüdtke, Schnyder, et al., 2006, p. 440)

III. Objetivos de la investigación

El objetivo general de este trabajo de investigación consiste en profundizar en la relación entre la realización de deberes escolares y el rendimiento académico de estudiantes de Educación Primaria y Educación Secundaria Obligatoria. Para ello, en los estudios diseñados se han contemplado tanto variables del estudiante como de los contextos familiar y escolar. En los tres casos, las variables consideradas están directamente relacionadas con la realización de los deberes escolares.

Tomando el modelo de Trautwein y colaboradores como marco general de partida, y una vez revisada la investigación existente sobre los diferentes componentes del mismo, se observó que había algunos aspectos que estaban poco claros o que resultaban algo confusos (e.g., resultados contradictorios, escasez de datos, relaciones entre componentes sin esclarecer, etc.) y que merecía la pena continuar investigando. En este sentido, no todas las relaciones incluidas en el modelo están suficientemente claras: mientras que en algunos casos los datos aportados por la investigación pasada son poco concluyentes, en otros, simplemente dicha relación se encuentra mínimamente explorada. Los objetivos de esta investigación, por tanto, girarán en torno a una serie de variables, las cuales pueden agruparse en dos grandes bloques: variables del alumno y variables del contexto. En base a tal estructura, se fundamentarán y describirán los *cinco grandes objetivos* de la presente investigación, que se corresponden con los cinco estudios empíricos que constituyen esta Tesis Doctoral (cuatro aceptados y uno complementario en proceso de revisión):

1. Analizar la relación entre la *implicación del estudiante* en la realización de los deberes escolares (cantidad de deberes realizados, tiempo dedicado a la realización de los deberes y aprovechamiento del tiempo dedicado) y el rendimiento académico, según la edad (Primaria, primer ciclo de ESO y segundo ciclo de ESO) y el género de los estudiantes.
2. Analizar el papel del *feedback percibido del profesor* en la implicación del estudiante en la realización de los deberes escolares (cantidad de deberes realizados, tiempo dedicado y aprovechamiento del tiempo) y en el rendimiento académico, según la edad (Primaria, primer ciclo de ESO, segundo ciclo de ESO) y el género de los estudiantes.
3. Estudiar el efecto diferencial de los *tipos de feedback* (controlar la realización de los deberes, resolver dudas, corregir los deberes oralmente, corregirlos en la pizarra, recoger y calificar los deberes) que dispensa el profesor en el aula respecto de los deberes escolares realizados (o no realizados).
4. Estudiar, desde una perspectiva fenomenográfica, las concepciones de *implicación parental* en los deberes, de padres de niños de Educación Primaria (4º).
5. Analizar el efecto de diferentes *tipos de implicación parental* (control y apoyo) sobre la implicación de los estudiantes en los deberes escolares

(cantidad de deberes realizados, tiempo dedicado a los deberes y aprovechamiento del tiempo) y sobre el rendimiento académico, según el curso (Primaria, primer ciclo de ESO, segundo ciclo de ESO) y el género de los estudiantes.

Con el propósito de ser operativos, y a sabiendas de que en el modelo teórico de partida las variables se encuentran en continua interacción, de cara al análisis de la investigación pasada y la justificación de los objetivos específicos de la Tesis Doctoral, se establecerán tres sub-apartados: implicación del alumno en los deberes, implicación del profesor en los deberes e implicación parental en los deberes.

3.1. Implicación del alumno en los deberes

Como se ha comentado anteriormente, en el modelo de Trautwein y colaboradores, las variables propias del alumno se encuentran divididas en dos bloques: aquellas que hacen referencia a la *motivación* del estudiante con respecto de la realización de los deberes, y aquellas otras que se refieren a la *implicación cognitiva y conductual* del alumno en el momento concreto en el que trabaja sobre los deberes escolares. Estos dos conjuntos de variables, motivacionales y de implicación, se entienden a partir de dos marcos o teorías suficientemente consolidadas. Por una parte, las variables motivacionales pueden ser explicadas en base al modelo teórico de expectativa-valor, elaborado por Eccles et al (1983), mientras que las relativas a la implicación son consideradas dentro de la perspectiva de *school engagement* (e.g., Fredricks, Blumenfeld, & Paris, 2004). Como señalan Eccles y Wang (2012), ambos modelos teóricos necesariamente se solapan, entre otros motivos, porque las propias variables están íntimamente relacionadas y afectadas.

La *motivación* es considerada una parte esencial en el proceso de realización de los deberes (Corno, 2000; Xu & Corno, 1998). La relación que la motivación tiene con la conducta hacia los deberes ha sido abordada en numerosos trabajos. En alguno de ellos se concluye que la actitud afectiva hacia los deberes está positivamente relacionada con la gestión de los mismos, tanto a nivel de alumno como de clase. También parece ser positiva la relación con el interés hacia los deberes, pero solo a nivel de alumno, siendo negativa a nivel de clase (Xu & Wu, 2013). Trautwein et al (2006) han señalado que los componentes de expectativa y valor influyen poderosamente en el grado de esfuerzo que los estudiantes empleen en la realización de los deberes escolares. La motivación está considerada como una parte esencial en el proceso de los deberes escolares (Corno, 2000; Xu & Corno, 1998) y, a su vez, los deberes escolares juegan un papel crítico en el desarrollo de la motivación de logro del alumnado (Bempechat, 2004). Existen datos de que gran parte de los estudiantes se implican en los deberes no por el interés o entusiasmo que le producen, sino por otras razones como el sentido del deber, el deseo de agradar o, incluso, por la evitación de

castigos (Walker et al., 2004). La realización de los deberes, al igual que el aprendizaje, también requiere que los estudiantes tengan la voluntad de participar y persistir. Esto emana, en parte, de sus metas personales y de sus creencias sobre el valor, el interés y la importancia que tiene para ellos el logro de esas metas (Linnenbrink & Pintrich, 2002; Pintrich, & De Groot, 1990; Valle et al., 2013; Zimmerman, 2001). Por otra parte, diferentes estudios han constatado que tanto el tipo de motivación hacia los deberes, como su intensidad cambian a medida que los alumnos avanzan de curso (e.g., Hong, Peng, & Rowell, 2009; Regueiro, Suárez, Valle, Núñez, & Rosário, 2015; Trautwein, Lüdtke, Kastens, & Köller, 2006; Wigfield et al., 1997; Xu, 2006; Xu & Corno, 2006). Cuando los estudiantes se inician en la escuela sienten una gran emoción por la idea de hacer deberes, pero al cabo de un período extraordinariamente corto de tiempo, este interés y emoción decrece de modo alarmante (Coutts, 2004). En un estudio realizado por Bryan, Nelson, & Mathur (1995), un porcentaje significativo del alumnado en los primeros años de Middle School indican que los deberes escolares son aburridos, resultados que también están en consonancia con los obtenidos por Xu (2004) en un estudio llevado a cabo en High School. De la misma forma, en la investigación de Chen & Stevenson (1989), más del 60% de los estudiantes de los últimos cursos de Secundaria considera los deberes escolares negativos.

De este modo, la variabilidad en la relación entre la implicación en la realización de deberes escolares y el logro académico está claramente relacionada con el tipo y la magnitud de la motivación que los estudiantes desarrollan y mantienen hacia los deberes (Trautwein, Lüdtke, Kastens, & Köller, 2006), ya que ésta se relaciona directamente con la calidad de la implicación del estudiante (Dettmers, Lüdtke, Trautwein, Kunter & Baumert, 2010; Ryan & Deci, 2000; Trautwein, Lüdtke, Schnyder, & Niggli, 2006). En este sentido, existen datos que sugieren que la motivación de los estudiantes (e.g., entendida desde el la Teoría Motivacional de Expectativa-Valor) se encuentra asociada positivamente con el tiempo dedicado a los deberes (Dettmers et al., 2010), la cantidad de deberes realizados (Bembenuddy & White, 2013), la gestión del tiempo empleado (Xu & Wu, 2013), el esfuerzo sostenido (Dettmers et al., 2010), así como las estrategias cognitivas y los procesos de autorregulación utilizados en la realización de esas tareas (Hong, Peng, & Rowell, 2009).

En cuanto a las variables relacionadas con la *implicación del alumno* en los deberes escolares, los resultados de la mayoría de la investigación realizada indican que cuanto mayor es la implicación del estudiante mayor es también el rendimiento académico obtenido (Cooper et al., 2006; Cooper & Valentine, 2001; Epstein & Van Voorhis, 2001). Como se puede apreciar en el modelo elaborado por Trautwein y colaboradores (Figura 1), bajo este constructo se incluyen conductas que tienen que ver con la cantidad de deberes realizados, el tiempo dedicado a los mismos, la gestión de ese tiempo (concentración) o las estrategias utilizadas para abordar las tareas que implican los deberes. En la presente investigación se considerarán las tres primeras, pues son las que han generado mayores debates y controversia en los últimos años. En el caso de las estrategias utilizadas en la realización de los deberes, los resultados de

investigaciones recientes muestran claramente que cuando las estrategias utilizadas son propias de un aprendizaje profundo, el aprovechamiento es mayor que cuando los deberes son realizados de modo superficial o con escasas posibilidades de obtener aprendizajes significativos. En este sentido, en relación a la cantidad de deberes realizados, el cómo es más importante que el cuánto (Fernández-Alonso, Suárez-Álvarez, & Muñiz, 2014).

Los datos aportados por algunas investigaciones parecen sugerir una correlación fuerte y positiva entre *cantidad* de deberes realizados y rendimiento académico (Cooper, 1989; Cooper et al., 2006; Cooper & Valentine, 2001; Epstein & Van Voorhis, 2001; Trautwein et al., 2002). En otras, se obtuvo que la importancia de completar los deberes se incrementa a medida que los estudiantes avanzan de curso (Cooper, Jackson, Nye, & Lindsay, 2001; Zimmerman & Kitsantas, 2005). Una de las razones por las cuales la relación entre deberes y rendimiento es más débil en Primaria que en Secundaria puede estar en que la asignación de deberes que hacen los profesores en los primeros cursos suele tener como objetivo prioritario que los alumnos aprendan a gestionar mejor su tiempo de estudio mediante una mera revisión del material de clase, mientras que el profesorado de Secundaria asigna esos deberes para enriquecer y perfeccionar los conocimientos impartidos en clase (Muhlenbruck, Cooper, Nye, & Lindsay, 2000). Puede que por esto, no sólo los estudiantes de Secundaria que hacen los deberes mejoran su rendimiento académico, sino que también esto suele ir acompañado de mejoras en su autoeficacia (Zimmerman & Kitsantas, 2005), sobre todo si el profesorado realiza los ajustes y adaptaciones necesarias para aquellos estudiantes con peores y con mejores niveles de rendimiento académico. En conclusión, la relación entre cantidad de deberes y rendimiento académico parece depender, entre otros factores, de la edad o curso de los estudiantes, de la calidad de los deberes prescritos o de cómo el rendimiento es medido (notas versus pruebas estandarizadas). Es posible que un porcentaje considerable de estudiantes obtenga un buen rendimiento académico habiendo realizado siempre sus deberes y no necesariamente aprenda más (Kohn, 2006).

Otra de las variables abordadas en el modelo es el *tiempo* dedicado a los deberes. Se trata de una variable en torno a la cual existe gran discrepancia con respecto a su relación con el rendimiento académico. Algunos estudios han encontrado que esta relación es positiva (Cooper, 1989; Cooper et al., 2001; Cooper et al., 2006; Trautwein et al., 2002; Trautwein & Lüdtke, 2009; Walberg, 1991) y otros que es débil o incluso negativa (De Jong, Westerhof, & Creemers, 2000; Tam, 2009; Trautwein, 2007; Trautwein et al., 2002; Trautwein, Lüdtke, Schnyder, et al., 2006; Trautwein, Schnyder, Niggli, Neumann, & Lüdtke, 2009). Dettmers, Trautwein y Lüdtke (2009) realizaron un estudio con los países participantes en el Informe PISA 2003. Sus resultados respecto del número de horas dedicadas a la semana a hacer los deberes y su relación con el rendimiento académico en matemáticas han mostrado que los estudiantes de aquellos países que habían obtenido altas puntuaciones en el rendimiento académico en matemáticas dedicaban menos horas a la semana a realizar los deberes que los estudiantes de países con peores resultados académicos en matemáticas. A nivel del

estudiante, este trabajo mostró una relación negativa entre el tiempo dedicado a los deberes y el rendimiento en matemáticas en 12 de 40 países. Quizá pueda deberse a que los profesores asignan más deberes o tareas más largas a los alumnos con rendimiento más bajo para intentar que alcancen el rendimiento de sus compañeros más exitosos. Por otra parte, se observó una relación positiva entre ambas variables en 11 de los 40 países. También hay quien afirma que dedicar demasiado tiempo a los deberes puede deberse a una mala autorregulación del aprendizaje que, finalmente, lleve a la desmotivación y a la falta de implicación (Rosário, Costa, et al., 2009; Rosário, Núñez, Valle, Paiva, & Polydoro, 2013; Trautwein, Schnyder, et al., 2009).

La relación entre la cantidad de deberes realizados, el tiempo dedicado a los mismos y el rendimiento obtenido podría estar mediatizada por el *aprovechamiento del tiempo empleado* por el estudiante. En el modelo de Trautwein y colaboradores se identifica como concentración, mientras que en otros trabajos se habla de gestión del tiempo. Xu (2007) ha sido uno de los pioneros en el estudio del aprovechamiento del tiempo dedicado a los deberes. Sus resultados mostraron que no existe relación entre ambas variables y que dedicar más tiempo a los deberes no significa emplear estrategias eficientes de gestión de los mismos. Posteriormente, Xu (2010c) con una muestra de alumnos de Secundaria halló una asociación positiva entre el curso de los alumnos y el ambiente organizado con el aprovechamiento del tiempo dedicado a los deberes.

Finalmente, indicar que la implicación en los deberes probablemente varíe según la *edad* o *curso* de los estudiantes. Sin embargo, la mayoría de las investigaciones existentes consideran solo dos o tres cursos (Hong, Peng, & Rowell, 2009; Xu, 2007, 2008, 2010b, 2010c) sin centrarse en las diferencias que puede haber en la implicación a medida que los alumnos cursan niveles más altos de la escolaridad obligatoria. Por otra parte, la implicación del estudiante en los deberes también se encuentra relacionada con la variable *género*. Diversos trabajos han mostrado una mayor implicación por parte de las chicas, las cuales parecen ser más trabajadoras, de una forma más planificada y mostrando mayor esfuerzo y resiliencia (Younger & Warrington, 1996). Xu (2007) ha señalado que las chicas utilizan más frecuentemente que los chicos estrategias en la realización de los deberes. Otros estudios también señalan una mayor dedicación a la realización de los deberes por parte de las chicas (Trautwein, 2007; Wagner, Schober, & Spiel, 2007). Además, resulta menos probable que las chicas asistan a clase con los deberes sin hacer que los chicos (Xu, 2006).

Teniendo en cuenta lo dicho, el *primer objetivo* de este trabajo de investigación ha sido *analizar la relación entre la implicación del estudiante en los deberes escolares y el rendimiento académico*. Los resultados de la investigación previa no dejan claro cuánto y cómo influyen la cantidad de deberes realizados de los prescritos, el tiempo que se les dedica y el aprovechamiento de ese tiempo en el rendimiento y qué papel juegan el curso y el género de los alumnos en este entramado de relaciones. Para abordar esta cuestión se ha trabajado con una muestra de 454 estudiantes desde 5º de Educación Primaria hasta 4º de ESO (10 a 16 años), pertenecientes a tres colegios del

norte de España. Este estudio ha dado lugar al primer trabajo empírico que configura esta Tesis Doctoral, el cual ha sido publicado on-line en 2013 en la revista *Educational Psychology* (DOI: 10.1080/01443410.2013.817537).

3.2. Implicación del profesor en los deberes

La mayoría de los profesores asignan deberes a los alumnos. Fundamentalmente lo hacen porque consideran que hacer deberes ayuda a mejorar el rendimiento académico (Cooper, 1989), pero también porque perciben que incrementan la motivación y la capacidad de autorregulación de los estudiantes (Hoover-Dempsey et al., 2001; Rosário, Mourao, et al., 2009; Warton, 2001) y ayudan a establecer una relación positiva entre el hogar y la escuela (Epstein & Van Voorhis, 2001; Hill & Taylor, 2004; Trautwein, Niggli, Schnyder, & Lüdtke, 2009).

Aunque escasos, algunos estudios han investigado el papel que juegan los profesores en la eficacia de los deberes escolares, tanto antes como después de la realización de los mismos. Dettmers y sus colegas (2010) se centraron en la importancia de la planificación de la cantidad y calidad de los deberes de matemáticas, tarea en la que indudablemente la figura del profesor tiene todo el protagonismo. Sus resultados mostraron que una alta percepción de calidad en los deberes está asociada con actitudes más positivas hacia los deberes y mejor rendimiento académico en matemáticas. Y en cuanto al papel del profesor una vez realizados los deberes, parece que goza de importancia, pues se ha comprobado que los beneficios de realizar las tareas para casa aumentan cuando éstas son corregidas en clase (Dettmers et al., 2010; Paschal et al., 1984; Walberg, 1991) y que los estudiantes se esfuerzan más en la realización de los deberes cuando perciben control por parte de los profesores (Trautwein, Niggli, et al., 2009) pudiendo ser incluso contraproducente su realización si los alumnos no perciben sus errores para intentar mejorar en el futuro (Murillo & Martínez-Garrido, 2013). Por otra parte, el feedback proporcionado por los profesores con respecto a los deberes no es igual en todos los niveles de la escolaridad (Katz, Kaplan, & Gueta, 2010; Xu & Wu, 2013). En efecto, los alumnos de octavo grado perciben menos apoyo por parte de los profesores en relación con los deberes que sus compañeros de cuarto grado (Katz et al., 2010), apoyo que ha mostrado afectar significativamente a la motivación de los alumnos hacia los deberes.

No obstante, muy poco se conoce de cómo el feedback aportado por los profesores sobre los deberes afecta a la implicación de los estudiantes en los aprendizajes, en general, y a la realización de los deberes, en particular. Por ello, el *segundo objetivo* de esta Tesis Doctoral fue proporcionar información sobre la *percepción que tienen los estudiantes del feedback aportado por los profesores ante los deberes según el curso y género de los estudiantes, y cómo este feedback afecta a la*

implicación de los alumnos en la realización de los deberes (cantidad de deberes realizados, tiempo dedicado y aprovechamiento del tiempo) y *con el rendimiento académico*. En base a los datos aportados por la muestra de estudiantes utilizada también para el primer estudio, junto con las respuestas relativas a su percepción de feedback por parte de sus profesores respecto de los deberes, se elaboró un modelo de relaciones causales (modelo de ecuaciones estructurales), cuyos resultados constituyen el segundo estudio de la presente Tesis Doctoral, el cual ha sido publicado on-line en 2014 en la revista *Journal of Educational Research* (DOI:10.1080/00220671.2013.878298).

Al igual que en otros trabajos (e.g., Corno & Xu, 2004; Katz, Kaplan, & Gueta, 2010; Trautwein & Lüdtke, 2009; Trautwein, et al, 2009 ; Xu, 2008, 2011; Xu y Wu, 2013), los resultados del estudio anteriormente mencionado (segundo objetivo en la presente Tesis Doctoral), indicaron que la percepción de feedback aportado por los profesores, se mostró positiva y significativamente relacionada con la cantidad de deberes realizados, así como con el aprovechamiento del tiempo dedicado a los deberes, pero no se observó relación con el tiempo dedicado a los mismos. No obstante, la relación observada es moderada (o menor de la esperada). Al mismo tiempo, también se obtuvo que a medida que se asciende de curso descendiendo progresivamente la percepción por parte de los alumnos de feedback de los profesores ante los deberes.

En base a los resultados comentados, nos pareció que no solo resultaba interesante conocer si el feedback proporcionado por los profesores tiene efectos sobre la implicación de los alumnos en los deberes escolares, sino que también podría merecer la pena profundizar en el estudio de cómo diferentes tipos de feedback, o de seguimiento de los deberes, pueden tener efectos distintos, o de diferentes magnitudes, sobre la implicación del estudiante y el rendimiento académico. Además, se trata de una cuestión en torno a la cual la investigación ha mostrado resultados inconsistentes. Por tanto, la cuestión a responder sería ¿modos diferentes de respuesta del profesor ante los deberes llevan a una cantidad y calidad diferentes de implicación de los alumnos en esas tareas?

Para abordar esta cuestión, se contó con la colaboración de varias personas que forman el equipo de investigación dirigido por el Dr. Pedro Rosário, de la Universidad de Minho, Portugal. Conjuntamente, se diseñó un estudio empírico, en base a un diseño cuasi-experimental, para responder a la cuestión *¿cualquier tipo de feedback es igualmente efectivo?*, y que tiene que ver con el **tercer objetivo** de la presente Tesis Doctoral. Se analizó el efecto de cinco tipos de feedback del profesor (*controlar la realización de los deberes, resolver dudas; corregir los deberes oralmente; corregir los deberes en la pizarra; recoger y calificar los deberes*) proporcionados por 45 profesores de Inglés como Lengua Extranjera (EFL). El manuscrito de este estudio constituye el trabajo complementario de esta Tesis Doctoral y se encuentra en proceso de revisión (segunda revisión) en la revista *Journal of Educational Research*.

3.3. Implicación parental en los deberes

Los deberes escolares son, sin duda, la actividad por excelencia que relaciona a los padres con los hijos en la tarea de la educación y progreso académico (Katz, Kaplan, & Buzukashvily, 2011; Wilder, 2013), y una de las formas más comunes de implicación parental (Cooper, 1989; Epstein, 1988). La implicación parental ha sido definida como las interacciones de los padres con los colegios y con sus hijos para promover el éxito académico (Epstein, 1995; Hill et al., 2004). Los padres pueden tener diferentes intenciones y utilizar diferentes estrategias de acción, pero generalmente la mayoría de los padres consideran que ayudar a los hijos con los deberes es su responsabilidad (Epstein & Van Voorhis, 2001; Hoover-Dempsey, Bassler, & Burow, 1995). Sin embargo, los resultados de la investigación acerca del efecto de la implicación parental en los deberes distan mucho de ser unánimes. Los resultados varían según diferentes factores como el diseño de investigación empleado (Patall, Cooper, & Robinson, 2008), el tipo de contenido (Epstein & Van Voorhis, 2012; Van Voorhis, 2011), los instrumentos de medida y las diferentes dimensiones del constructo (Dumont, Trautwein, Nagy, & Nagengast, 2013; Karbach, Gottschling, Spengler, Hegewald, & Spinath, 2013) y el curso de los alumnos (Cooper & Valentine, 2001).

De acuerdo con el tipo de diseño, en el meta-análisis realizado por Patall et al. (2008) se observaron efectos positivos de la implicación parental en la actitud de los alumnos ante los deberes y en su rendimiento académico. En tres estudios longitudinales, Van Voorhis (2011) encontró relación positiva entre la implicación parental guiada por una intervención sistemática y el rendimiento académico de los estudiantes en matemáticas, ciencias y lenguaje. Aunque algunos estudios empleando modelos de ecuaciones estructurales (SEM) también mostraron una relación positiva entre implicación parental y rendimiento (Cooper et al., 2001; Pomerantz & Eaton, 2001), otros hallaron una relación negativa (Schultz, 1999), y algunos incluso resultados mixtos (Dumont et al., 2012). Por otra parte, teniendo en cuenta el tipo de contenido, Epstein y colaboradores (2009) señalaron que la fuerza de la relación entre la implicación parental en los deberes y el rendimiento académico de los alumnos dependía de si los padres estaban implicados en actividades vinculadas a metas o actividades específicas de las asignaturas.

Una de las variables que explican fuertemente la variabilidad de los resultados encontrados por la investigación pasada es la dimensión considerada respecto de la implicación parental. Desde este punto de vista multidimensional, los trabajos que han analizado la calidad de la implicación parental han obtenido resultados poco concluyentes. Por ejemplo, Dumont et al (2012) hallaron relaciones tanto positivas como negativas dependiendo de la calidad de la implicación parental y de las diferentes medidas del resultado educativo (rendimiento, autoconcepto, actitudes). Encontraron una relación positiva más fuerte con la motivación de los estudiantes que con su

rendimiento. La relación también era diferente dependiendo del tipo de implicación parental. En concreto, el conflicto entre padres e hijos con motivo de los deberes estaba negativamente asociado con el rendimiento, mientras que la percepción de apoyo y competencia parental estaban positivamente asociadas con el resultado académico. Resultados negativos en relación con el exceso de control y presión parental también fueron obtenidos por Karbach et al (2013). En síntesis, en el estudio de la relación entre implicación parental, la implicación de los hijos en los deberes escolares y el rendimiento académico es necesario distinguir entre diferentes dimensiones de implicación parental.

En relación a la dimensionalidad de este constructo, Pomerantz y sus colegas (2007) informan de cuatro dimensiones cualitativamente diferentes, aunque relacionadas de implicación parental en los deberes: a) autonomía vs control, b) interés en el proceso vs interés en el resultado, c) afecto positivo vs afecto negativo, y d) creencias positivas vs creencias negativas (acerca del potencial del alumno). Por otra parte, Lorenz y Wild (2007) propusieron las siguientes dimensiones: a) prácticas de apoyo a la autonomía, b) control, c) estructura e d) implicación emocional. Hay que indicar que estos tipos de implicación parental se derivan principalmente de estudios que han trabajado con estudiantes de Secundaria. Por tanto, es posible que uno de los factores que pudieran explicar la inconsistencia de los datos aportados en alumnos de Primaria respecto del efecto de la implicación parental en la relación del estudiante con los deberes y el rendimiento académico sea que la calidad de la implicación parental en edades tan tempranas no se corresponda totalmente con los tipos y estrategias de implicación comúnmente utilizados en Secundaria. El estudio de las concepciones de los padres acerca de su implicación en los deberes de los hijos puede llevar a entender las conductas que llevan a cabo cuando ayudan a los hijos con los deberes. Desde nuestro punto de vista, la investigación en ocasiones olvida la perspectiva de los padres (Fan, 2013; Kaplan, 2005), de hecho el análisis de las concepciones parentales sobre la naturaleza e importancia de su implicación en los deberes es limitado (Pomerantz & Grolnick, 2009), especialmente en padres de alumnos de Primaria. Por ello, la literatura indica la necesidad de investigación cualitativa focalizada en la implicación parental en los deberes (e.g., Dumont et al., 2012; Patall, et al., 2008).

De acuerdo con lo anterior, el *cuarto objetivo* de la presente Tesis Doctoral consistió en *analizar el modo en que los padres de estudiantes de Primaria entienden su implicación en los deberes escolares de sus hijos y cómo la llevan a cabo*. El estudio se desarrolló mediante un diseño fenomenográfico (McMillan & Schumacher, 2001) para analizar las concepciones de los padres de su implicación en los deberes de sus hijos. La investigación adopta una perspectiva de segundo orden puesto que los datos son examinados desde la perspectiva de los participantes y no del investigador (Marton, 1986; Harris, 2011b). Marton (1981, 1986) explica que una concepción se refiere a las experiencias actuales y refleja el modo en que los individuos ven o entienden esas experiencias. Marton y Pong (2005) indicaron que una concepción presenta dos aspectos: el referencial (revela el significado global del objeto conceptualizado), y el

estructural (describe la combinación de características que se pretenden distinguir y se centra en el concepto). El último está compuesto por los aspectos *qué* y *cómo* (Harris, 2011b; Rosário et al., 2013). En el presente estudio los aspectos *qué* y *cómo* (Harris, 2011a, b; Rosário et al., 2013) se utilizaron para examinar las concepciones de implicación de los padres en los deberes. En los discursos de los padres, el aspecto *qué* está relacionado con cómo entienden ellos ese fenómeno (percepciones parentales sobre la implicación en los deberes), y el aspecto *cómo* se refiere a las concepciones sobre los comportamientos que facilitan su implicación en los deberes. Los resultados de este trabajo dieron lugar a un manuscrito que ha sido publicado online en la revista *Psicothema* (DOI: 10.7334/psicothema2014.210).

Teniendo en cuenta los resultados obtenidos en el estudio anteriormente descrito, y una vez comparados con los datos aportados por otras investigaciones, se pudo observar la existencia de dos dimensiones de implicación parental altamente coincidentes en las tres etapas educativas consideradas en los estudios de la presente Tesis Doctoral (Primaria, primer ciclo de ESO y segundo ciclo de ESO): a) ayuda parental para resolver dudas y promover el aprendizaje y el desarrollo de habilidades y, por otra parte, b) conductas parentales cuyo objetivo es el mero control de la conducta del hijo a la hora de realizar los deberes. Siendo esto así, como objetivo final de este trabajo de investigación se diseñó un estudio en base a una amplia muestra de estudiantes de los tres niveles educativos mencionados y contemplando los dos tipos de implicación parental comentados.

Por tanto, con el **quinto objetivo** de esta Tesis Doctoral *se pretendió conocer la relación entre la percepción de implicación parental en los deberes, la implicación de los alumnos en los mismos y su rendimiento académico*. Se ha querido estudiar si la percepción de apoyo o de control parental tiene efectos diferentes sobre la implicación de los estudiantes y sobre su rendimiento académico, teniendo en cuenta la etapa educativa a la que pertenecen los alumnos. Para ello se ha contado con una muestra de 1683 alumnos, agrupados en tres niveles diferentes de la escolaridad (Primaria, primer ciclo de ESO y segundo ciclo de ESO), que asistían a 94 clases diferentes de 10 colegios públicos del norte de España. En este trabajo se pretendía responder a las siguientes cuatro cuestiones: 1) ¿Predice la implicación parental percibida por los alumnos la implicación de éstos en los deberes?, 2) ¿Predice la implicación de los alumnos en los deberes el rendimiento académico?, 3) ¿Predice la implicación parental percibida por los alumnos el rendimiento académico?, 4) ¿Media la implicación de los alumnos en los deberes en la relación entre la percepción de implicación parental y el rendimiento? Los datos aportados por este estudio fueron admitidos para su publicación en la revista *Metacognition and Learning* (DOI: 10.1007/s11409-015-9135-5).

IV. Estudios Empíricos

4.1. Publicaciones

- I. Núñez, J.C., Suárez, N., Cerezo, R., González-Pienda, J.A., Rosário, P., Mourao, R., & Valle, A. (2013). Homework and academic achievement across Spanish Compulsory Education. *Educational Psychology*, DOI: 10.1080/01443410.2013.817537
En JCR: FI=0.913, en *Psychology, Educational* (Q3: 34/53)
- II. Núñez, J.C., Suárez, N., Rosário, P., Vallejo, G., Cerezo, R., & Valle, A. (2014). Teachers' feedback on homework, homework-related behaviors and academic achievement. *Journal of Educational Research*, DOI:10.1080/00220671.2013.878298
En JCR: FI=0.847, en *Education & Educational Research* (Q2: 88/219)
- III. Cunha, J., Rosário, P., Macedo, L., Nunes, A.R., Fuentes, S., Pinto, R., & Suárez, N. (2015). Parents' conceptions about their homework involvement in elementary school. *Psicothema*, DOI: 10.7334/psicothema2014.210
En JCR: FI=1.083, en *Psychology, Multidisciplinary* (Q2: 58/129)
- IV. Núñez, J.C., Suárez, N., Rosário, P., Vallejo, G., Valle, A., & Epstein, J.L. (2015). Relationships between perceived parental involvement in homework, student homework behaviors and academic achievement: differences among elementary, junior high and high school students. *Metacognition and Learning*, DOI: 10.1007/s11409-015-9135-5
En JCR: FI=1.357, en *Education & Educational Research* (Q1: 38/219)

4.1.1. Publicación I

Núñez, J.C., Suárez, N., Cerezo, R., González-Pienda, J.A., Rosário, P., Mourao, R., & Valle, A. (2013). Homework and academic achievement across Spanish Compulsory Education. *Educational Psychology* (DOI: 10.1080/01443410.2013.817537)

Homework (HW) is one of the most common school-related activities among parents, students and teachers. However, the need to assign HW to students has been extensively debated. The present investigation examines the relationship between specific HW variables (i.e. amount of HW completed, time spent on HW and perceived quality of HW time management) and academic achievement, while controlling for students' gender and grade level. Participants included 454 students (ranging from 10 to 16 years of age) from three schools in northern Spain. A multivariate analyses of variance and path analyses showed that the amount of HW completed decreased with increased schooling, as did students' perceived quality of HW time management. Data from hierarchical regression analyses completed by path analyses provided evidence that time spent on HW conjointly with perceived quality of HW time management explains how academic achievement is mediated by the amount of HW completed. These findings deepen the understanding of the complex impact of time spent on HW and on academic achievement.

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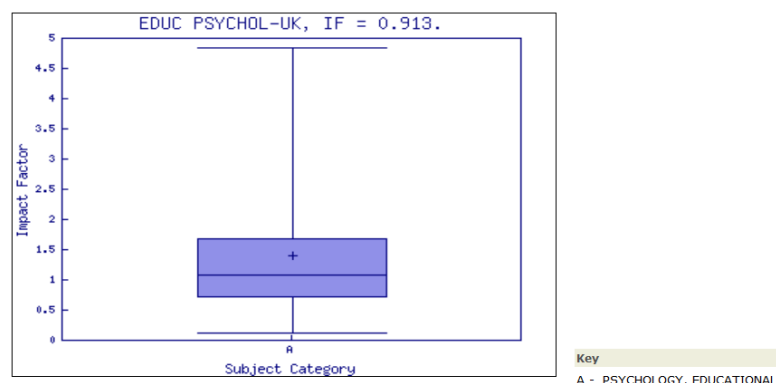
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Category Name	Total Journals in Category	Journal Rank in Category	Quartile in Category
PSYCHOLOGY, EDUCATIONAL	53	34	Q3

Category Box Plot ⓘ

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Homework and academic achievement across Spanish Compulsory Education

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Homework (HW) is one of the most common school-related activities among parents, students and teachers. However, the need to assign HW to students has been extensively debated. The present investigation examines the relationship between specific HW variables (i.e. amount of HW completed, time spent on HW and perceived quality of HW time management) and academic achievement, while controlling for students' gender and grade level. Participants included 454 students (ranging from 10 to 16 years of age) from three schools in northern Spain. A multivariate analyses of variance and path analyses showed that the amount of HW completed decreased with increased schooling, as did students' perceived quality of HW time management. Data from hierarchical regression analyses completed by path analyses provided evidence that time spent on HW conjointly with perceived quality of HW time management explains how academic achievement is mediated by the amount of HW completed. These findings deepen the understanding of the complex impact of time spent on HW and on academic achievement.

Keywords: homework; time spent on homework; perceived quality of HW time management; academic achievement; middle school

Homework (HW) is one of the most common school activities among parents, students and teachers. However, the need to assign HW to students has been extensively debated. Although there exist arguments against the use of HW in academic settings, such as when *Time* magazine, in 1999, warned that HW could disturb students and their families routines, opinions towards HW are primarily favourable; the use of HW is supported by numerous authors and is acknowledged as an indicator of successful schools and students (Epstein & Van Voorhis, 2001). Doing HW is aimed at improving students' study skills and their attitudes towards future work, as well as teaching students that learning takes place both inside and outside of the school setting (Corno, 2000; Trautwein, Lüdtke, Kastens, & Köller, 2006). Moreover, those who favour assigning of HW argue that doing HW improves students' academic achievement and fosters their autonomy once they are stimulated to self-regulate their study behaviour responsibly (Cooper, Robinson, & Patall, 2006; Cooper & Valentine, 2001).

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Therefore, according to the literature, completing a reasonable amount of HW daily can help to develop study habits that facilitate learning and, ultimately, improve academic achievement (Cooper et al., 2006; Corno, 1994; Epstein & Van Voorhis, 2001; Henderson, 1996; Rosário, Mourão, et al., 2009; Warton, 2001; Xu & Corno, 2006; Xu & Yuan, 2003). Nevertheless, despite a long history of research on HW, the strength of the relationship between HW and academic achievement is not yet clear (e.g. Cooper, 1989; Dettmers, Trautwein, & Ludtke, 2009; Farrow, Tymms, & Henderson, 1999; Paschal, Weinstein, & Walberg, 1984; Ronning, 2011; Trautwein & Köller, 2003; Trautwein, Köller, Schmitz, & Baumert, 2002). The explanation could be due to the variety of used research designs (Cooper et al., 2006), or different data analysis strategies (Trautwein, Schnyder, Niggli, Neuman, & Lüdtkke, 2009) which do not allow data comparison. The present study aims to provide improved complementary information on the relationship between HW variables (i.e. amount of time spent on HW, the amount of HW completed and HW time management) and academic achievement, while controlling for the variables of gender and grade level (from fifth- to tenth-grade students).

HW completion and academic achievement

The Programme for International Student Assessment (PISA) is an international assessment system developed by the Organisation for Economic Cooperation and Development (OECD). PISA is administered every three years to assess 15-year-old students' competence in reading, mathematics and science. In 2007, the OECD report concluded that countries with educational policies of engaging students in school work show better academic outcomes. For example, focusing on science literacy, the OECD report (2007) states a positive relationship between completing HW and school achievement. Fifteen-year-old students with one extra hour of science HW per week scored 3.1 points higher than their colleagues at PISA score in science.

By means of multilevel modelling, Trautwein (2007) corroborated these same findings after re-analysing the data from the German extension of the PISA 2000 study, which included a large additional sample from nine graders. In fact, the amount of HW that students completed had already been found to be positively related to their academic achievement (Cooper, Jackson, Nye, & Lindsay, 2001; Cooper, Lindsay, Nye, & Greathouse, 1998). Particularly for secondary school students, HW is more strongly associated with academic achievement than for elementary students (Cooper et al., 2006; Cooper & Valentine, 2001).

Although teachers can be confronted with students who perform the minimum necessary amount of HW tasks, or with students who responsibly complete all the assigned HW, little attention has been paid in the literature regarding the relationship between the amount of HW completed by students and academic achievement (cf. Trautwein et al., 2006; Xu, 2010c).

Time spent on HW, HW time management and academic achievement

At the moment, findings show significant discrepancies regarding the relationship between time spent on HW and academic achievement. While some reviews of previous works (e.g. meta-analyses, such as Cooper, 1989; Cooper et al., 2006; Cooper & Valentine, 2001; Walberg, 1991) report a positive relationship between

time spent on HW and achievement, others report that this relationship is either weak or even negative (e.g. De Jong, Westerhof, & Creemers, 2000; Tam, 2009; Trautwein, 2007; Trautwein et al., 2002; Trautwein, Lüdtke, Schnyder, & Niggli, 2006; Trautwein et al., 2009). Whenever a negative relationship is found, researchers try to explain it with different approaches (Dettmers et al., 2009).

This negative association is said to be justified by problems with reliability and validity of the measures used for the time spent on HW (e.g. reported by the student vs. reported by their teacher), and also by the fact that spending a lot of time on HW can be a sign of self-regulatory learning dysfunction which results in an inefficient and unmotivated way of doing HW (Rosário, Costa, et al., 2009; Rosário, Núñez, Valle, Paiva, & Polydoro, 2013; Trautwein et al., 2009).

Xu (2007) was one of the first authors to study the relationship between time spent on HW and the use of HW management strategies. He found no relationship between these two variables and suggested it to be due to the fact that spending more time doing the tasks does not necessarily enable students to use HW management strategies efficiently. These same findings were corroborated by Xu (2010c) in a multilevel study with a sample of secondary students. Results revealed that most of the variance in HW time management occurred at the student level rather than at the class level; students' grade level and arranged environment, for instance, proved to be positively associated with HW time management. Plus, HW time management explained a significant amount of variance of HW completion. At the secondary school level, Xu (2011) reported data showing the central role of HW time management on HW completion. Such findings stress the importance of using self-regulated learning strategies while managing HW time; but, further research is needed to deepen and highlight the linkage between HW time management, HW completion and academic achievement among young students (Xu, 2010c).

Grade level, HW and academic achievement

HW is more closely related to achievement in high school than in middle school and more closely related to achievement in middle school than in elementary school (Cooper & Valentine, 2001). Cooper and Valentine note that this may be because younger students display less-effective study habits and are less capable of avoiding distractions. Xu (2005) also noted that middle and high school students may be intrinsically – rather than extrinsically – motivated to do HW, which implies more interest in the intrinsic value of the HW in question; consequently, greater academic improvement due to good HW habits can be expected.

However, the previous research is not entirely consistent. For example, Xu (2007, 2010b) suggests that HW management is not related to students' grade level.

On the other hand, Hong, Peng, and Rowell (2009) analysed Chinese students' (seventh and eleventh graders) reported behaviour during HW completion and concluded that older students were less engaged, persisted less and enjoyed doing HW less than their younger colleagues. This pattern of devaluing school work and displaying less effort and persistence when completing HW is in line with the literature (Hong & Milgram, 2000; Wigfield et al., 1997).

Considering the inconsistency of the available findings about the way grade level can moderate the effect of different variables, such as the amount of HW completed or the time spent on HW, on academic achievement (Trautwein et al., 2009), it is important to study the impact of these variables on school success.

HW and students' gender

With some rare exceptions (e.g. Hong et al., 2009), nearly all the research on HW performance rates and attitudes towards HW acknowledges gender differences. For example, Harris, Nixon, and Rudduck (1993) examined students' perception of HW and found that girls seem more prepared to organise their time with regard to HW. In addition, Younger and Warrington (1996) indicated that girls and boys have different approaches to HW: girls work more constantly and consistently, producing cleaner, more detailed and coherently planned work, and displaying more effort and resilience. Relative to boys, girls report more frequently using strategies to do HW (Xu, 2007); report spending more time doing HW than their male classmates (Trautwein, 2007; Wagner, Schober, & Spiel, 2007); display more positive attitudes towards HW (Rosário, Mourão, Núñez, González-Pienda, & Valle, 2006); and put more effort into doing HW than their male counterparts. Thus, girls are less likely to attend class without having completed their HW and seem to consider HW less boring than boys do (Xu, 2006).

Recent research suggests that girls work harder to manage their work space, direct their motivational process and control the negative emotions that emerge while doing HW compared with their male classmates (Xu, 2010a). However, as in the case of grade level, there is no information on how gender may mediate the strength of the relationship between academic achievement and certain important HW variables (e.g. amount of HW completed and time spent on HW).

Goals of the study

The present study intends to highlight the relationship between HW and students' academic achievement. In fact, it is not yet clear whether HW completion or the amount of time spent on HW influence academic achievement, or what role students' gender and grade level can play in academic performance.

According to Trautwein (2007) and Trautwein et al. (2002), recent studies have been adding relevant empirical evidence questioning the gains associated with time spent on HW; in consequence, attention is now being paid to the level of efficacy students show when managing HW time and how the quality of this management impacts the amount of HW completed (Xu, 2005, 2006, 2010c; Xu & Corno, 2006) and HW accuracy (Eliam, 2001).

The current paper aims at analysing whether students' academic achievement can be explained by the amount of HW completed, as mediated by an adequate management of HW time. To study the relationship between HW and academic achievement, we have included the variable of time spent on HW and two other closely related variables (i.e. the amount of HW completed and the perceived quality of HW time management).

Students' grade level was controlled by including students from two different school levels, namely the last two grade years of elementary education (EE; fifth and sixth grade, or 10 and 11 years old) and all the four grade years of Spanish Compulsory Secondary Education (CSE; 12–15 years old). Furthermore, gender was also considered because, as previously noted, it is closely related to HW attitudes and skill. Compared with previous investigations in which only two or three school grade years were considered (e.g. Hong et al., 2009; Xu, 2007, 2008, 2010b, 2010c), the present study includes six different school grade years. To account for the predictive effect (global and specific) of the three HW variables on academic

achievement, after controlling for grade level and gender, hierarchical linear regression was used. Finally, path analyses were conducted to provide information about the existing interrelations among the variables measured in the study.

Although previous research is somewhat inconsistent, we expect that:

- (1) The three HW variables, such as students' grade level, gender and academic achievement will be significantly related;
- (2) Both, grade level and gender will be able to significantly predict the three HW variables and the academic achievement;
- (3) The three HW variables will significantly predict academic achievement after controlling for grade level and gender;
- (4) Perceived quality of HW time management will be positively and significantly associated with the amount of HW completed and with the reduced amount of time spent on HW completion; and
- (5) Moreover, perceived quality of HW time management and the amount of time spent on HW are predicted to have a positive association with the amount of HW completed.

Methods

Participants

Four hundred and fifty-four students from three schools in northern Spain participated in this study. Their ages ranged between 10 and 16 years. Of these students, 48.5% were boys (220) and 51.5% were girls (234). The sample comprised 145 students from the last cycle of EE (fifth grade: $n=70$, 40 boys and 30 girls; sixth grade: $n=75$, 37 boys and 38 girls) and 309 students from the four grade years in CSE (first grade: $n=81$, 39 boys and 42 girls; second grade: $n=83$, 38 boys and 45 girls; third grade: $n=79$, 34 boys and 45 girls, and fourth grade: $n=66$, 32 boys and 34 girls). In each of the six grade years, students from three classes (a total of 18 classes) were assessed, one for each one of the schools that participated in the study. The classes were randomly selected from each school. Three classes of curricular diversification (one in each school) were eliminated because they included students with severe learning disabilities who followed an alternative curriculum that allowed them to complete compulsory education. Because their curriculum is substantially different from traditional instruction, the HW assigned to those students is unique and can differ in frequency, type length or difficulty of the tasks assigned. In addition, due to their cognitive deficiencies and severe learning disabilities, the measurements of amount of time spent on HW and the perceived quality of HW time management are not comparable to those of students following a regular curriculum.

Variables and measurement instruments

HW variables

The *amount of HW completed* by students from the total tasks assigned was assessed from their responses to three items: 'Some students complete all their HW, and others only complete some of it. And you? How much of your homework do you do...? (usually/in a typical week/on a typical weekend)'. The students provided an answer from a 5-point Likert-type scale ranging from 1 (*I didn't do any of my*

homework) to 5 (*I did all my homework*). Because there were only three items, the reliability of the measure is acceptable ($\alpha = .72$).

For *time spent on HW*, the students responded to three items: ‘How much time do you (usually/in a typical week/on a typical weekend) spend doing homework daily?’, with response options ranging from 1 (less than 30 min) to 5 (more than 2 h). As in the previous case, although the coefficient α of this measure is modest ($\alpha = .69$), the reliability is acceptable and useful if the measure has a reasonable unidimensionality (see Schmitt, 1996), as it is in this case.

Perceived quality of HW time management was assessed through students’ responses to three items:

Students often spend a lot of time doing homework, although most of the times they don’t use that time properly as they waste it (e.g. talking on the phone, being distracted by intrusive thoughts, procrastinating). And you, how do you manage the time you spend on doing your homework (usually/in a typical week/on a typical weekend)?

On which they were requested to indicate their level of perceived quality of HW time management on a 5-point Likert-type scale ranging from 1 (I don’t optimise it at all: ‘I am continually distracted by everything’) to 5 (I optimise it completely: ‘I concentrate, and until I finish doing homework, I don’t think about anything else’). Again, in this case, the reliability was acceptable ($\alpha = .78$).

Academic achievement

Academic achievement was assessed with students’ final academic grades collected from the secretariat of the schools at the end of the school year. In the case of the EE students, their mean grade was calculated from their grades in the subjects of Spanish Language, English as a Foreign Language, Mathematics and Sciences. In the CSE, achievement corresponded to students’ mean grade calculated from their grades in the subjects of Spanish Language, English as a Foreign Language, Mathematics, Social Sciences and Natural Sciences.

Procedure

All of the students volunteered and presented authorisations from their parents. The surveys were administered to the students during a regular class. Researchers signed a written agreement with the school boards to develop workshops to inform teachers and parents about the results of the research and discuss the potential educational implications.

Data analysis

In the school system, students are nested in classes and students in the same class are more likely to share educational commonalities with each other (e.g. the same teachers, similar systems of learning assessment and similar amount of assigned HW). Nested data structures suggest multilevel analysis (Dettmers, Trautwein, Ludtke, Kunter, & Baumert, 2010; Trautwein et al., 2009; Xu, 2011), since ignoring such structures can significantly affect the obtained statistics (Dorman, 2008). However, this data analysis strategy is appropriate only when certain conditions are met (Gelman & Hill, 2006; Goldstein, 2003). One of those requirements is the

sample size regarding each of the levels of the hierarchical structure (Maas & Hox, 2005). What constitutes a sufficient sample size for accurate estimation? These same authors indicated that high intra-class correlations and a sufficient number of classes (at least 50) would recommend a multilevel analysis (two-level in our study). Since in the present study the number of units at class-level is considerably lower than 50 (there are 18 classes in the total sample), the analysis of relationship between HW variables, grade level, gender and academic achievement was examined only at individual level.

To address the proposed goals, the data were analysed in four steps. First, we examine the intercorrelations between the HW variables, grade level, gender and academic achievement. Second, we carried out multivariate analyses of variance (MANOVAs) using students' gender and grade level as factors; dependent variables included the amount of HW completed, the amount of time spent on HW completion and students' perceived quality of HW time management. We analysed both the multivariate contrast, the effect of the two factors (i.e. gender and grade level) and their interaction on each one of the three dependent variables (i.e. amount of HW completed; amount of time spent on HW; and perceived quality of HW time management). Thirdly, we carried out hierarchical linear regression analyses to determine the predictive power of the HW variables on academic achievement, controlling for the effect of the variables gender and grade level. Finally, path analyses were conducted to test the association among the three HW variables and their relationship with grade level, gender and academic achievement.

The hypotheses of the path model were analysed using AMOS.18 (Arbuckle, 2009). A series of statistics and indices were used to assess the model-data fit. In addition to a χ^2 analysis and its associated probability (p), we used: (a) two absolute indices, the goodness-of-fit-index (GFI) and the adjusted goodness-of-fit-index (AGFI); (b) a relative index, the comparative fit index (CFI) (Bentler, 1990); and (c) a close-fit parsimony-based index, the root mean square error of approximation (RMSEA), including 90% confidence intervals (Hu & Bentler, 1999). According to these authors, the model fits well when GFI and AGFI > .90, CFI > .95 and RMSEA \leq .05.

One of the important assumptions of this methodology is that the considered variables must follow a normal distribution. As maximum likelihood (ML) can

Table 1. Intercorrelations among all variables in the study.

	1	2	3	4	5	6
1. Academic achievement	–					
2. Grade level ^a	–.302**	–				
3. Gender ^b	.161**	.063	–			
4. Amount of HW completed	.369**	–.313**	.124*	–		
5. Time spent on HW	–.020	.071	.225**	.296**	–	
6. Perceived quality of HW time management	.330**	–.198**	.010	.369**	.045	–
Mean	6.605	3.493	1.515	4.403	3.343	3.599
Standard deviation	1.798	1.652	.500	.738	1.129	.804
Skewness	–.284	–.012	–.062	–1.292	–.142	–.757
Kurtosis	–.781	–1.191	–1.996	1.665	–.889	.626

Notes: ^aGrade (1 = 5th grade PE, 2 = 6th grade PE, 3 = 1st grade CSE, 4 = 2nd grade CSE, 5 = 3rd grade CSE, 6 = 4th grade CSE). ^bGender (1 = male, 2 = female).

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

produce biases when this assumption is violated (West, Finch, & Curran, 1995), we examined the distribution of all the variables (i.e. kurtosis and skewness). Taking the criterion of Finney and DiStefano (2006), for whom 2 and 7 are the maximum allowable values for skewness and kurtosis (in which case, ML should not be used), we observed that all the variables respected those criteria (see Table 1). Therefore, with normality conditions met, we have fitted the model using ML.

Results

Relationship between HW variables, grade level, gender and academic achievement

The descriptive data (means, standard deviations, skewness and kurtosis) and Pearson bivariate correlation coefficients of the variables included in this analysis are presented in Table 1.

Academic achievement was significantly and positively related to three variables: perceived quality of HW time management ($r = .330, p < .001$, indicating that the higher the perceived quality of HW time management, the better the academic achievement), self-reported amount of HW completed ($r = .369, p < .001$, indicating that the more self-reported amount of HW completed, the better the academic achievement) and gender ($r = .161, p < .001$, indicating that girls attain higher academic achievement than boys do). In contrast, as students advanced through grades, their academic achievement decreased ($r = -.302, p < .001$). The correlation between the self-reported amount of time spent on HW completion and academic achievement was negative but not statistically significant.

We observe that as students advance through compulsory education, they self-report doing less HW from the total assigned HW set ($r = -.313, p < .001$) and their perceived quality of HW time management also decreases ($r = -.198, p < .001$), although no statistically significant relationship was found with the amount of time spent on HW completion. With regard to gender, girls self-report completing a greater amount of HW from the total assigned HW set ($r = .124, p < .001$) and dedicating more time to HW completion ($r = -.225, p < .001$); no statistically significant relationship between gender and the perceived quality of HW time management was found.

Effect of grade level and gender on the HW variables

To analyse in more detail the relationship between gender, grade level and the HW variables, a MANOVA with two independent variables and three dependent variables was conducted. The MANOVA yields the effect of gender, grade level and the interaction of the two factors conjointly and independently for each variable. Table 2 shows the means and standard deviations of the subgroups for the three dependent variables.

At the multivariate level (considering the three dependent variables conjointly), the results indicated that both the effects of *grade level* ($\lambda_{\text{Wilks}} = .837, F_{(15, 1215)} = 5.377, p < .001; \eta_p^2 = .057$) and *gender* ($\lambda_{\text{Wilks}} = .945, F_{(3, 440)} = 8.593, p < .001, \eta_p^2 = .055$) were statistically significant, although the effect size was very small in both cases (5.7 and 5.5% of explained variance, respectively). The *gender x grade level* interaction was not statistically significant ($\lambda_{\text{Wilks}} = .946, F_{(15, 1215)} = 1.652, p = .055, \eta_p^2 = .018$).

Table 2. Descriptive statistics (mean, standard deviation) corresponding to the variables *amount of HW, time dedicated to HW, and perceived quality of HW time management* as a function of grade and gender.

	Amount of HW completed		Time spent on HW		Perceived quality of HW time management	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
<i>5th grade of PE</i>						
Males	3.275	1.037	3.275	1.037	4.000	.599
Females	3.400	1.101	3.400	1.101	3.566	.897
Total	3.328	1.059	3.328	1.059	3.814	.766
<i>6th grade of PE</i>						
Males	4.405	.956	2.783	1.108	3.675	.851
Females	4.710	.515	3.289	1.010	3.894	.605
Total	4.560	.775	3.040	1.083	3.786	.740
<i>1st grade of CSE</i>						
Males	4.435	.598	2.923	.956	3.692	.613
Females	4.547	.550	3.785	1.000	3.642	.692
Total	4.493	.572	3.370	1.065	3.666	.651
<i>2nd grade of CSE</i>						
Males	4.368	.819	3.289	1.206	3.447	.978
Females	4.466	.547	3.533	.919	3.622	.649
Total	4.421	.682	3.421	1.060	3.542	.816
<i>3rd grade of CSE</i>						
Males	3.794	.729	3.088	1.264	3.147	.892
Females	4.355	.645	3.911	1.040	3.511	.869
Total	4.113	.733	3.557	1.206	3.354	.892
<i>4th grade of CSE</i>						
Males	4.062	.913	3.125	1.313	3.500	.879
Females	4.058	.814	3.500	1.237	3.382	.853
Total	4.060	.857	3.318	1.278	3.439	.861
<i>Total sample</i>						
Males	4.309	.830	3.081	1.147	3.590	.841
Females	4.491	.630	3.589	1.057	3.606	.769
Total	4.403	.738	3.343	1.129	3.599	.804

Notes: PE (Primary Education), CSE (Compulsory Secondary Education).

However, with regard to the effect of *gender*, the univariate analyses yielded statistically significant differences between boys and girls both in the self-reported amount of HW completed ($F_{(1, 442)}=10.323, p<.001, \eta_p^2=.023$) and the self-reported time spent on HW ($F_{(1,442)}=22.293, p<.001, \eta_p^2=.048$), but no differences were found in the perceived quality of HW time management ($F_{(1, 442)}=.125, p=.724, \eta_p^2=.000$). Taking into account the means of both groups (see Table 2), the girls reported doing a greater amount of HW from the total assigned HW set and spending more time on HW completion relative to boys. Nevertheless, the effect size was small for both variables.

With regard to the variable *grade level*, the results of the univariate analyses yielded differences between the school grades in the self-reported amount of HW completed ($F_{(5, 442)}=11.552, p<.001, \eta_p^2=.116$) and perceived quality of HW time management ($F_{(5, 442)}=4.182, p<.001, \eta_p^2=.045$), but no statistically significant differences were found in the self-reported amount of time spent on HW completion ($F_{(5, 442)}=1.550, p=.173, \eta_p^2=.017$). As students advanced through grade levels,

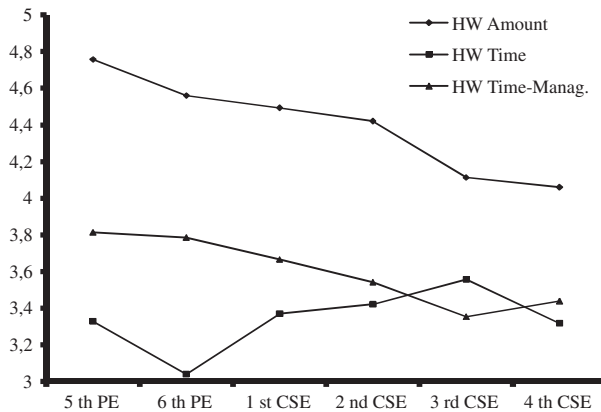


Figure 1. Graphic representation of the levels of the HW variables, amount of HW completed (HW Amount), time spent on HW completion (HW Time), and perceived quality of HW time management (HW Time-Manag.), as a function of grade level (5th and 6th grade of Primary Education (PE); 1st, 2nd, 3rd, and 4th grades of CSE).

they indicated that they gradually did smaller amount of HW from the total assigned HW set, and they also reported lower perceived quality of HW time management, although the effect size was small (see Table 2 and Figure 1).

Lastly, there was no statistically significant difference in *gender x grade level* interaction in either the self-reported amount of HW completed ($F_{(5, 442)}=1.568$, $p=.168$, $\eta_p^2=.017$) or the self-reported time spent on HW ($F_{(5, 442)}=1.450$, $p=.205$, $\eta_p^2=.016$); however, there was an interaction with regard to students' perceived quality of HW time management ($F_{(5, 442)}=2.407$, $p<.05$, $\eta_p^2=.027$), although the effect size was small (2.7% of explained variance).

Prediction of academic achievement

To address the role of the three HW variables in the prediction of academic achievement, we performed a hierarchical regression analysis. As gender and grade level were significantly related to the HW variables, they were entered jointly in the first stage of the regression analysis to estimate how much of the variance of achievement could be explained, and thus determine the relevance of the HW variables in the prediction of academic achievement. In the second stage of the analysis, HW variables were included in the model. The study was performed by stepwise method in order to analyse the amount of variance of each of the three HW variables to the prediction of achievement. This procedure made it possible for us to obtain information about the predictive power of the HW variables as a block, and about the relevance of each separately. Table 3 shows the data corresponding to the regression analyses.

The results show that the HW variables, conjointly with grade level and gender, explain 24.6% of the total variance of academic achievement, an amount that is statistically significant, $F_{(5, 448)}=29.275$, $p<.001$. Nevertheless, the main goal of this study was to determine the relevance of the HW variables after controlling for the effects of the variables gender and grade level.

In the first stage, we included the variables grade level and gender in the analysis (Model 1) and found that, conjointly, they explained 12.4% of the variance

Table 3. Explained variance (R^2) and change (ΔR^2), regression coefficients (β) and statistic and associated significance ($t_{(p<)}$) in the prediction of academic achievement.

	Criterion variable: Academic achievement		
	$R^2/\Delta R^2$	β	$t_{(p<)}$
FIRST STAGE: Model 1			
Grade level		-.324	-7.101**
Gender		.181	4.092**
R^2 Model 1	.124		
SECOND STAGE			
Step one: Model 2			
Grade level		-.258	-5.983**
Gender		.174	4.123**
Perceived quality of HW time management		.277	6.440**
ΔR^2	.074		
R^2 Model 2	.198		
Step two: Model 3			
Grade level		-.204	-4.642**
Gender		.146	3.480**
Perceived quality of HW time management		.211	4.728**
Amount of HW completed		.209	4.474**
ΔR^2	.034		
R^2 Model 3	.232		
Step three: Model 4			
Grade level		-.184	-4.160**
Gender		.168	3.980**
Perceived quality of HW time management		.205	4.607**
Amount of HW completed		.253	5.195**
Time spent on HW		-.129	-2.909*
ΔR^2	.014		
R^2 Model 4	.246		

* $p < .01$; ** $p < .001$.

of academic achievement (which constitutes 50% of the variance conjointly explained by the five variables). This amount of explained variance is statistically significant ($F_{(2, 451)} = 31.883$, $p < .001$), and the β regression coefficients show that the predictive power of grade level ($\beta = -.324$, $p < .001$) was higher than that of gender ($\beta = .181$, $p < .001$). Likewise, whereas higher grade level had a negative association with academic achievement (advancing to a higher grade level predicts poorer achievement), gender had a positive impact (being female is associated with better achievement).

In the second stage of the analysis, retaining the variables gender and grade level in the regression equation, the three HW variables were entered by stepwise method. The order of entry into the regression equation was determined by the magnitude of the partial correlation coefficient (c_p) of each variable outside the regression equation. Thus, four models were obtained to predict academic performance.

The first HW variable to be entered in the equation, (Model 2), was the perceived quality of HW time management ($c_p = .290$), and its share in the explanation of academic achievement was significant ($F_{(3, 450)} = 36.988$, $p < .001$), explaining a further 7.4% of the variance in addition to the 12.4% explained by the variables

entered in the first stage of the analysis (gender and grade level). Table 3 shows that the magnitude and significance of the beta coefficient corresponding to this variable in this first step are important ($\beta = .277, p < .001$) and, in fact, higher than those contributed by gender and grade level. In a second step (Model 3), the variable amount of HW completed was entered ($c_p = .207$), contributing an additional 3.4% to the explanation of the variability of academic achievement ($F_{(4, 449)} = 33.916, p < .001$), also with a significant coefficient ($\beta = .209, p < .001$). Lastly, (Model 4), time spent on HW completion was also entered in the regression equation ($c_p = -.136$), explaining 1.4% of additional variance with a negative coefficient ($\beta = -.129, p < .01$). Finally, we found that the three HW variables conjointly explained 12.2% of the variability of academic achievement.

Path analyses

The previously reported data stress the relevance of the HW variables on the prediction of academic achievement. To highlight the relationship among the three HW variables, supplemental analyses have been conducted. Thus, a path analysis to test the hypothesised baseline model (see Figure 2(a)) was performed, with the expected results being that: (a) grade level and gender would predict the HW variables and (b) the HW variables would predict academic achievement. In

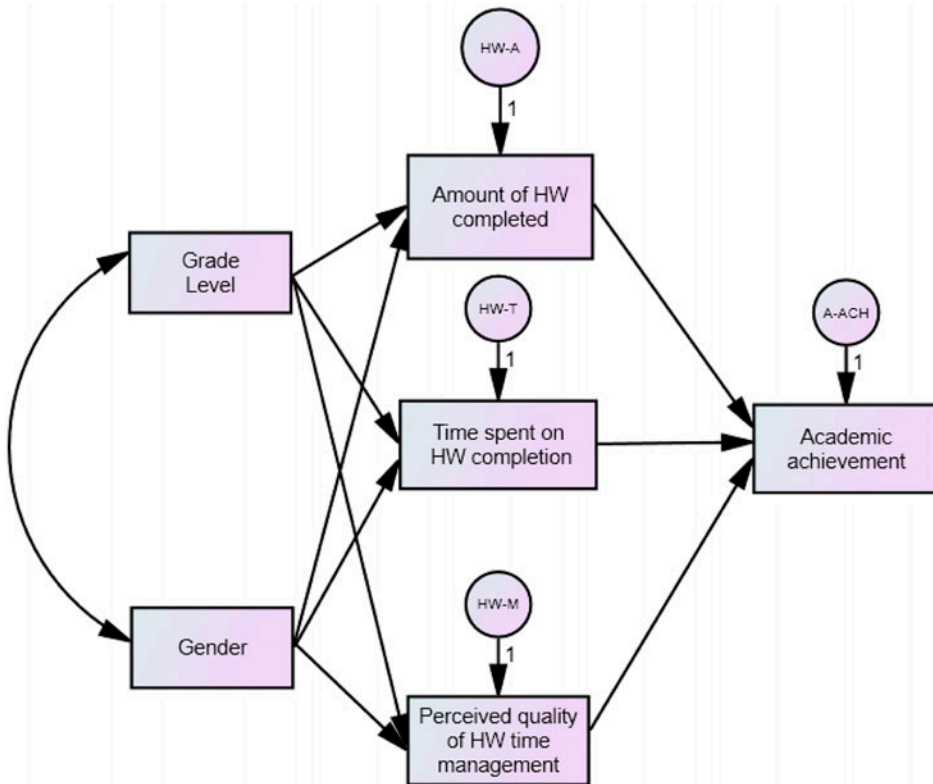


Figure 2(a). Baseline path model of relationship of the HW variables with academic achievement and grade level and gender.

contrast, a second path model has been posited, adding to the baseline model the hypothesis that there is a statistically significant relationship between the three HW variables. At an exploratory level, it can be hypothesised that: (i) greater perceived quality of HW time management would be correlated with a higher percentage of self-reported amount of HW completed and better academic achievement; (ii) the relationship between perceived quality of HW time management and self-reported amount of time spent on HW completion would be negative or non-existent; and (iii) self-reported time spent on HW completion is likely to positively predict the self-reported amount of HW completed. Figure 2(b) shows the results from the alternative model fit.

As expected, the baseline path model fit was insufficient, $\chi^2_{(5)}=130.94$, $\chi^2/df=26.19$, $p<.000$, GFI=.915, AGFI=.644, CFI=.602, RMSEA=.236 (CI: .202, .272), $p=.000$, which indicates that our hypothesised baseline model is not well specified. The modification indexes (MIs) and the expected parameter changes (EPCs) stress that the inadequacy of the goodness of fit of the baseline model results from the existing relationships among the three HW variables. Acknowledging the values of the MIs and the EPCs, in addition to the hypotheses previously formulated, we fit a final path model (see Figure 2(b)), $\chi^2_{(4)}=6.53$, $\chi^2/df=1.63$, $p<.163$, GFI=.995, AGFI=.975, CFI=.992, RMSEA=.037 (CI: .000, .087), $p=.592$.

The results of the path analyses (Figure 2(b)) showed that: (i) perceived quality of HW time management positively predicts the self-reported amount of HW completed ($\beta=.30$), which in turn has a positive association with academic

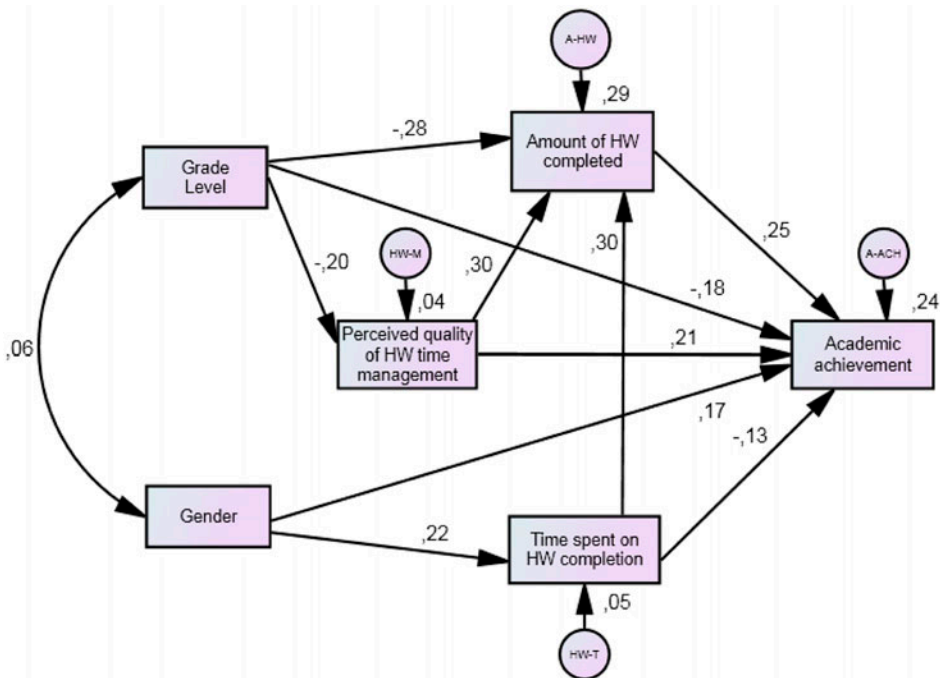


Figure 2(b). Final model of relationship of the HW variables with academic achievement and grade level and gender. All effects in the model are statistically significant ($p<.001$) except the relationship between grade level and gender.

achievement ($\beta = .25$); (ii) perceived quality of HW time management positively and directly predicts academic achievement ($\beta = .21$), but (iii) it has no relationship with the self-reported amount of time spent on HW completion; (iv) self-reported time spent on HW completion positively predicts the self-reported amount of HW completed ($\beta = .30$), but it negatively predicts academic achievement ($\beta = -.13$). The model fit also shows that (v) grade level is negatively associated with perceived quality of HW time management ($\beta = -.20$), the self-reported amount of HW completed ($\beta = -.28$) and with academic achievement ($\beta = -.18$). Finally, (vi) gender is also significantly associated with the self-reported amount of time spent on HW completion ($\beta = .22$) and with academic achievement ($\beta = .17$).

Moreover, since we could not verify the fit of the final model (Figure 2(b)) in another sample, we started questioning if the model estimated in the original sample (and its parameters) can be cross-validated in future samples. To answer this question, we employed two model evaluation criteria, the Akaike information criterion (AIC) and expected cross-validation index (ECVI). The AIC reflects the extent to which parameter estimates from the original sample can cross-validate in future samples (Bandalos, 1993) and the ECVI assesses the likelihood of the model to cross-validate across similar-sized samples from the same population (Browne & Cudeck, 1993). Because the AIC and ECVI coefficients can assume any value, there are no fixed cut-off points to help in determining model-data fit. To evaluate the potential for replication of the proposed path model, we compared the ECVI and AIC values with the saturated and the independence model. Comparing the three models, the model with the smallest ECVI and AIC value would exhibit the greatest potential for replication.

Firstly, can the model be replicated in future studies? Since the ECVI value of the path model (.089) was the lowest (saturated model ECVI = .093 and independence model ECVI = .758), the answer to this question is more likely to be affirmative. Secondly, to what extent will the parameters, estimated from the current sample, cross-validate in future samples? The findings demonstrated a high probability of cross-validation because the statistical fit of the hypothesised model (AIC = 40.528) was substantially smaller than the saturated (AIC = 42.000) or the independence (AIC = 343.262) models. In sum, although the results of these two parameters (AIC and ECVI) do not allow an unequivocal conclusion concerning the replicability of the model to other samples, these positive results strengthen the discussed findings and suggest profitable direction for future research.

Discussion

The main goal of the present study was to analyse the impact of three HW variables (i.e. the amount of HW completed from the total assigned, time spent on HW and the perceived quality of HW study time management) on students' academic achievement after controlling for students' gender and grade level. Data concerning the HW variables were collected from students in Spanish Compulsory Education (six different grade-level years; 10–16 year olds). The data were analysed in four steps: (i) the relationships between the variables included in this study were analysed; (ii) a MANOVA with two factors (gender and grade level) and three dependent variables (HW variables) was carried out to determine whether the variability of the HW variables was related to students' gender and grade level; (iii) thirdly, a hierarchical linear regression analysis was conducted to assess the

amount of variance explained by the three HW variables taken together for the academic achievement, after controlling for the effects of grade level and gender; and (iv) finally, a path analysis to examine the association between the three HW variables and their mediating role between grade level, gender and academic achievement was carried out.

The findings support most of our initial predictions. Specifically, the data provided by the MANOVA indicate that both gender and grade level significantly explained the variance found in the three HW variables. As in other studies (Rosário et al., 2006; Wagner et al., 2007; Xu, 2006, 2007, 2010a; Younger & Warrington, 1996), the present findings indicate that girls report doing a greater amount of HW and spending more time on HW completion. Like Xu (2010c), no relationship was found between gender and the perceived quality of HW time management.

Although several studies have reported a positive relationship between HW engagement and grade level (e.g. Cooper & Valentine, 2001; Xu, 2005), our findings are consistent with the literature that suggest that as students advance in compulsory education, the amount of HW they complete decreases (e.g. Bryan & Nelson, 1994; Cooper, Lindsay, & Nye, 2000; Hong et al., 2009; Rosário, Mourão, et al., 2009; Xu, 2004). However, no differences have been found in the amount of time spent on HW. A novel finding in the present work is that the students' perception of the quality of their HW time management decreased as they advanced in grade level.

This finding could be explained by students' increasing difficulty to manage HW time along schooling due to the higher complexity of school tasks, the increasing workload and a dysfunction on the self-regulation competencies to manage HW time (Pintrich, 2004), but also to the increasing demands of social life as students grow older.

Considering the results of the regression analysis, with regard to the association of HW variables and academic achievement, the three HW variables measured in this study significantly predict academic achievement, even after controlling for the effects of grade level and gender. As in previous research (e.g. Trautwein et al., 2002; Trautwein et al., 2009), the findings indicate that the self-reported amount of HW completed positively and significantly predicts academic achievement: the greater the amount of HW completed (from the total assigned HW set), the better the academic achievement. Nevertheless, when analysing this finding in depth, one must consider that the strength of this prediction is low. Specifically, this path was statistically significant ($\beta = .25$), but low, indicating that each standard deviation change in the self-reported amount of HW completed will result only in .25 of a standard deviation change in academic achievement. Nevertheless, this result reinforced the importance of doing HW to foster learning and achievement. Research should consider not only the amount but also the quality of HW completed to increase the relevance of this variable in the model (see Dettmers et al., 2010).

Regarding the relationship between the self-reported amount of time spent on HW and academic achievement, the results of the present study are somewhat mixed. First, after controlling for the effects of gender and grade level (as in previous research, e.g. De Jong et al., 2000; Tam, 2009; Trautwein, 2007; Trautwein et al., 2002; Trautwein et al., 2009), our data suggested that the self-reported amount of time spent on HW negatively predicts academic achievement. Second, the path analysis findings expand and complement those of the regression analysis.

Specifically, the self-reported amount of time spent on HW completion showed a strong and positive relationship with academic achievement, as mediated by its effect on the self-reported amount of HW completed: more time spent on HW and higher perceived quality of HW time management lead to more amount of HW completed, and subsequently higher academic achievement. Thus, when considering the relationship between HW and academic achievement, the amount of time spent on HW along with the perceived quality of HW time management are crucial variables, as they explain a significant proportion of variance related to the amount of HW completed and this, in turn, positively explains students' academic achievement. This finding aligned with Xu (2010c) suggesting that the perceived quality of HW time management can have an important effect on HW completion and academic achievement.

These data add to the HW literature by highlighting the role of time spent on HW completion. These findings suggest that to foster the amount of HW completed, and thus increase academic achievement, one has to consider the perceived quality of HW time management rather than simply the absolute amount of time spent on HW.

In summary, although empirical evidence of the relationship between the three HW variables and academic achievement is significant, the variance explained by the three HW variables was relatively low. This finding should be a motive of reflection about what personal and contextual conditions could lead HW variables to explain only 12% of the academic achievement?

The inclusion of a measure in the model to assess the quality of the HW was completed (see Dettmers et al., 2010); but also the consideration that the role of the HW variables in the academic achievement could be influenced by the motivation of students (e.g. learning goals vs. performance goals; see Xu, 2010c, 2011) and the emotions associated with the HW tasks completion (see Trautwein et al., 2009; Xu, 2008) could help to increase the variance explained in the academic achievement.

Future research could also consider the possibility that HW variables can increase their weight in the explanation of academic achievement when HW is perceived by students as designed to foster learning and autonomy, is academically relevant, but also the number and extension of the tasks assigned is adequate. In order to address these challenges, robust designs (e.g. multilevel designs), including students from different cultural contexts (e.g. South-American cultures), and employing not only self-reports but also other measures to capture students HW behaviours online (e.g. event measures; Zimmerman, 2008) are needed.

Educational implications

Taking into consideration the non-experimental design of the present study and the limitations associated with this fact, our findings highlight the following concepts for parents and teachers.

Our data stress the importance of perceived quality of HW time management because it is positively associated with both the amount of HW completed and academic achievement, suggesting that parents should take an active role in supervising their children's attitudes and behaviours towards HW (e.g. providing adequate physical space; keeping possible distractions away from the study environment and favouring opportunities to complete assigned tasks). As students advance through

the grade levels, they are expected to complete more HW. Nevertheless, some students are not able to complete every assigned task due to involvement in extracurricular activities or dysfunction of their self-regulated learning process, namely the lack of control over distractions and poor time management. Adequate time management when completing HW involves, among other factors, organisation of the study environment, budgeting of time to meet deadlines, concentration and exclusive focusing of attention on the task (Xu, 2010c). The use of these strategies would certainly facilitate students' perceived quality of HW time management and allow them to do their HW more quickly and accurately, thus improving their learning and, consequently, their academic results.

In order for students to manage their HW time adequately and to attain a stronger relationship between HW, learning and academic achievement, it would be interesting to train the students in the use of self-regulated learning strategies that would maximise the efficacy of their learning process (Rosário, González-Pienda, et al., 2010). The study of Stoeger and Ziegler (2008) may provide a good example for teachers and school psychologists, who could implement similar kinds of programmes in their schools (see Núñez, Rosário, Vallejo, & González-Pienda, 2013; Rosário, Núñez, et al., 2010). These school-based interventions are very important, as our data suggest that HW management competencies decrease throughout the years of compulsory education.

Study limitations

Trautwein et al. (2009) stress that more investigation is needed to illuminate the relationship between HW variables and academic achievement because this relationship is still not clear and can vary across countries. In light of this notion, the present research aimed to add new data to the HW–achievement relationship. Nevertheless, we acknowledge the following limitations. Firstly, although the total sample includes students from six different grade years throughout compulsory education, the number of students in each grade year is small. Secondly, following the HW research tradition, we assessed the variables: time spent on HW completion, the amount of HW completion and the perceived quality of HW time management with self-reports (e.g. Trautwein, Lüdtke, Kastens et al., 2006; Trautwein et al., 2009; Xu, 2011) using three items for each variable. In addition to self-reports, future research should include other measures of these variables, such as daily logs, parents' information and online data from HW tasks completed in hypermedia environments. Third, our study just focused on individual level; if other levels of analysis had been considered (i.e. class level, between-student level and within-student level), as Trautwein et al. (2009) suggested, results could have been different.

The limitations exist and must be taken into account when drawing conclusions and defining educational implications. However, we expect the data from this study to be sufficiently reliable since the results derived from ECVI and AIC indices indicated that both the model paths and the parameters obtained are more likely to be replicated with other samples.

Finally, future research on the relationship between HW and achievement should be designed to include other HW variables (e.g. the type of tasks assigned; the nature of feedback provided; and motivational individual differences) and to look at HW not as a final product but mainly as a process.

Acknowledgements

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References

- Arbuckle, J. L. (2009). *Amos 18.0 user's guide*. Crawfordville, FL: Amos Development Corporation.
- Bandalos, D. L. (1993). Factors influencing cross-validation of confirmatory factor analysis models. *Multivariate Behavioral Research*, 28, 351–374. doi:10.1207/s15327906mbr2803_3
- Bentler, P. M. (1990). Comparative fit indexes in structural models. *Psychological Bulletin*, 107, 238–246.
- Browne, M. W., & Cudeck, R. (1993). Alternative ways of assessing model fit. In K. Bollen & J. Long (Eds.), *Testing structural equation models* (pp. 136–162). Newbury Park, CA: Sage.
- Bryan, T., & Nelson, C. (1994). Doing homework: Perspectives of elementary and junior high school students. *Journal of Learning Disabilities*, 27, 488–499. doi:10.1177/002221949402700804
- Cooper, H. (1989). Synthesis of research on homework. *Educational Leadership*, 47, 85–91.
- Cooper, H., Jackson, K., Nye, B. A., & Lindsay, J. J. (2001). A model of homework's influence on the performance evaluations of elementary school students. *Journal of Experimental Education*, 69, 181–199.
- Cooper, H., Lindsay, J. J., & Nye, B. (2000). Homework in the home: How student, family, and parenting-style differences relate to the homework process. *Contemporary Educational Psychology*, 25, 464–487. doi:10.1006/ceps.1999.1036
- Cooper, H., Lindsay, J. J., Nye, B. A., & Greathouse, S. (1998). Relationships between attitudes about homework, the amount of homework assigned and completed, and student achievement. *Journal of Educational Psychology*, 90, 70–83.
- Cooper, H., Robinson, J., & Patall, E. (2006). Does homework improve academic achievement? A synthesis of research, 1987–2003. *Review of Educational Research*, 76, 1–62. doi:10.3102/00346543076001001
- Cooper, H., & Valentine, J. C. (2001). Using research to answer practical questions about homework. *Educational Psychologist*, 36, 143–153. doi:10.1207/S15326985EP3603_1
- Corno, L. (1994). Student volition and education: Outcomes, influences, and practices. In D. H. Schunk & B. J. Zimmerman (Eds.), *Self-regulation of learning and performance* (pp. 229–251). Hillsdale, NJ: Erlbaum.
- Corno, L. (2000). Looking at homework differently. *Elementary School Journal*, 100, 529–548. doi:10.1086/499654
- De Jong, R., Westerhof, K. J., & Creemers, B. P. M. (2000). Homework and student math achievement in junior high schools. *Educational Research and Evaluation*, 6, 130–157. doi:10.1076/1380-3611(200006)6:2;1-E;F130
- Dettmers, S., Trautwein, U., & Ludtke, O. (2009). The relationship between homework time and achievement is not universal: Evidence from multilevel analyses in 40 countries. *School Effectiveness and School Improvement*, 20, 375–405. doi:10.1080/09243450902904601
- Dettmers, S., Trautwein, U., Ludtke, O., Kunter, M., & Baumert, J. (2010). Homework works if homework quality is high: Using multilevel modeling to predict the development of achievement in mathematics. *Journal of Educational Psychology*, 102, 467–482. doi:10.1037/a0018453
- Dorman, J. P. (2008). The effect of clustering on statistical tests: An illustration using classroom environment data. *Educational Psychology*, 28, 583–595. doi:10.1080/01443410801954201
- Eliam, B. (2001). Primary strategies for promoting homework performance. *American Educational Research Journal*, 38, 691–725.
- Epstein, J. L., & Van Voorhis, F. L. (2001). More than minutes: Teachers' roles in designing homework. *Educational Psychology*, 36, 181–193. doi:10.1207/S15326985EP3603_4

- Farrow, S., Tymms, P., & Henderson, B. (1999). Homework and attainment in primary schools. *British Educational Research Journal*, 25, 323–341. doi:10.1080/0141192990250304
- Finney, S. J., & DiStefano, C. (2006). Non-normal and categorical data in structural equation modelling. In G. R. Hancock & R. O. Mueller (Eds.), *Structural equation modelling: A second course* (pp. 269–314). Greenwich, CT: Information Age.
- Gelman, A., & Hill, J. (2006). *Data analysis using regression and multilevel hierarchical models* (doi:10.1017/CBO9780511790942). Cambridge: Cambridge University Press.
- Goldstein, H. (2003). *Multilevel statistical models*. New York, NY: Arnold.
- Harris, S., Nixon, J., & Rudduck, J. (1993). School work, homework and gender. *Gender and Education*, 5, 3–14. doi:10.1080/0954025930050101
- Henderson, M. (1996). *Helping your student get the most out of homework*. Washington, DC: National Education Association.
- Hong, E., & Milgram, R. M. (2000). *Homework: Motivation and learning preference*. Westport, CT: Bergin & Garvey.
- Hong, E., Peng, Y., & Rowell, L. L. (2009). Homework self-regulation: Grade, gender, and achievement-level differences. *Learning and Individual Differences*, 19, 269–276. doi: 10.1016/j.lindif.2008.11.009
- Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, 6(1), 1–55.
- Maas, C. J. M., & Hox, J. J. (2005). Sufficient sample sizes for multilevel modeling. *Methodology*, 1, 86–92. doi: 10.1027/1614-2241.1.3.86
- Núñez, J. C., Rosário, P., Vallejo, G., & González-Pienda, J. A. (2013). A longitudinal assessment of the effectiveness of a school-based mentoring program in middle school. *Contemporary Educational Psychology*, 38, 11–21. doi:10.1016/j.cedpsych.2012.10.002
- OECD. (2007). *PISA 2006 results: Science competencies for tomorrow's world*. Retrieved from <http://www.oei.es/evaluacioneducativa/InformePISA2006-FINALingles.pdf>
- Paschal, R. A., Weinstein, T., & Walberg, H. J. (1984). The effects of homework on learning: A quantitative synthesis. *Journal of Educational Research*, 78, 97–104.
- Pintrich, P. R. (2004). A conceptual framework for assessing motivation and self-regulated learning in college students. *Educational Psychology Review*, 16, 385–407. doi:10.1007/s10648-004-0006-x
- Ronning, M. (2011). Who benefits from homework assignments? *Economics of Education Review*, 30, 55–64.
- Rosário, P., Costa, M., Núñez, J. C., González-Pienda, J., Solano, P., & Valle, A. (2009). Academic procrastination: Associations with personal, school, and family variables. *Spanish Journal of Psychology*, 12, 118–127.
- Rosário, P., González-Pienda, J. A., Cerezo, R., Pinto, R., Ferreira, P., Lourenço, A., & Paiva, O. (2010). Efficacy of the program «Testas's (mis)adventures» to promote the deep approach to learning. *Psicothema*, 22, 828–834.
- Rosário, P., Mourão, R., Baldaque, M., Nunes, T., Núñez, J. C., González-Pienda, J., ... Valle, A. (2009). Homework, self-regulation of learning, and achievement in mathematics. *Journal of Psychodidactics*, 14, 179–192.
- Rosário, P., Mourão, R., Núñez, J. C., González-Pienda, J., & Valle, A. (2006). SRL and EFL homework: Gender and grade effects. *Academic Exchange Quarterly*, 10, 135–140.
- Rosário, P., Núñez, J. C., González-Pienda, J. A., Valle, A., Trigo, L., & Guimarães, C. (2010). Enhancing self-regulation and approaches to learning in first-year college students: A narrative-based program assessed in the Iberian Peninsula. *European Journal of Psychology of Education*, 25, 411–428. doi:10.1007/s10212-010-0020-y
- Rosário, P., Núñez, J. C., Valle, A., Paiva, O., & Polydoro, S. (2013). Approaches to teaching in high school when considering contextual variables and teacher variables. *Journal of Psychodidactics*, 18, 25–45. doi:10.1387/RevPsicodidact.6215
- Schmitt, N. (1996). Uses and abuses of coefficient alpha. *Psychological Assessment*, 8, 350–353. doi:10.1037//1040-3590.8.4.350
- Stoeger, H., & Ziegler, A. (2008). Evaluation of a classroom-based training to improve self-regulation in time management tasks during homework activities with fourth graders. *Metacognition and Learning*, 3, 207–230. doi:10.1007/s11409-008-9027-z

- Tam, V. C. W. (2009). Homework involvement among Hong Kong primary school students. *Asia Pacific Journal of Education*, 29, 213–227. doi:10.1080/02188790902859004
- 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., & Köller, O. (2003). The relationship between homework and achievement – still much of a mystery. *Educational Psychology Review*, 15, 116–145. doi:10.1023/A:1023460414243
- Trautwein, U., Köller, O., Schmitz, B., & Baumert, J. (2002). Do homework assignments enhance achievement? A multilevel analysis in 7th grade mathematics. *Contemporary Educational Psychology*, 27, 26–50. doi:10.1006/ceps.2001.1084
- Trautwein, U., Lüdtke, O., Kastens, C., & Köller, O. (2006). Effort on homework in grades 5 through 9: Development, motivational antecedents, and the association with effort on class-work. *Child Development*, 77, 1094–1111. doi:10.1111/j.1467-8624.2006.00921.x
- 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.
- Trautwein, U., Schnyder, I., Niggli, A., Neumann, M., & Lüdtke, O. (2009). Chameleon effects in homework research: The homework-achievement association depends on the measures used and the level of analysis chosen. *Contemporary Educational Psychology*, 34, 77–88. doi:10.1016/j.cedpsych.2008.09.001
- Wagner, P., Schober, B., & Spiel, C. (2007). Time students spend working at home for school. *Learning and Instruction*, 18, 309–320. doi:10.1027/0044-3409.215.3.183
- Walberg, H. J. (1991). Does homework help? *School Community Journal*, 1, 13–15.
- Warton, P. M. (2001). The forgotten voices in homework: Views of students. *Educational Psychologist*, 36, 155–165. doi:10.1207/S15326985EP3603_2
- West, S. G., Finch, J. F., & Curran, P. J. (1995). Structural equation models with non-normal variables: Problems and remedies. In R. Hoyle (Ed.), *Structural equation modeling: Concepts, issues and applications* (pp. 56–75). Newbury Park, CA: Sage.
- Wigfield, A., Eccles, J. S., Yoon, K. S., Harold, R. D., Arbreton, A. J. A., Freedman-Doan, C., & Blumenfeld, P. C. (1997). Change in children's competence beliefs and subjective task values across the elementary school years: A 3-year study. *Journal of Educational Psychology*, 89, 451–469. doi:10.1037/0022-0663.89.3.451
- Xu, J. (2004). Family help and homework management in urban and rural secondary schools. *Teachers College Record*, 106, 1786–1803. doi:10.1111/j.1467-9620.2004.00405.x
- Xu, J. (2005). Purposes for doing homework reported by middle and high school students. *The Journal of Educational Research*, 99, 46–55.
- Xu, J. (2006). Gender and homework management reported by high school students. *Educational Psychology*, 26, 73–91. doi:10.1080/01443410500341023
- Xu, J. (2007). Middle-school homework management: More than just gender and family involvement. *Educational Psychology*, 27, 173–189. doi:10.1080/01443410601066669
- Xu, J. (2008). Models of secondary school students' interest in homework: A multilevel analysis. *American Educational Research Journal*, 45, 1180–1205. doi:10.3102/0002831208323276
- Xu, J. (2010a). Gender and homework management reported by African American students. *Educational Psychology*, 30, 755–770. doi:10.1080/01443410.2010.506673
- Xu, J. (2010b). Predicting homework distraction at the secondary school level: A multilevel analysis. *Teachers College Records*, 112, 1937–1969.
- Xu, J. (2010c). Predicting homework time management at the secondary school level: A multilevel analysis. *Learning and Individual Differences*, 20, 34–39. doi:10.1016/j.lindif.2009.11.001
- Xu, J. (2011). Homework completion at the secondary school level: A multilevel analysis. *The Journal of Educational Research*, 104, 171–182. doi:10.1080/00220671003636752
- Xu, J., & Corno, L. (2006). Gender, family help, and homework management reported by middle school students. *Journal of Research in Rural Education*, 21(2), 1–13.
- Xu, J., & Yuan, R. (2003). Doing homework: Listening to students', parents', and teachers' voices in one urban middle school community. *School Community Journal*, 13, 25–44.

- Younger, M., & Warrington, M. (1996). Differential achievement of girls and boys at GCSE: Some observations from the perspective of one school. *British Journal of Sociology of Education, 17*, 299–313. doi:10.1080/0142569960170304
- Zimmerman, B. J. (2008). Investigating self-regulation and motivation: Historical background, methodological developments, and future prospects. *American Educational Research Journal, 45*, 166–183. doi:10.3102/0002831207312909

4.1.2. Publicación II

Núñez, J.C., Suárez, N., Rosário, P., Vallejo, G., Cerezo, R., & Valle, A. (2014). Teachers' feedback on homework, homework-related behaviors and academic achievement. *Journal of Educational Research*, (DOI:10.1080/00220671.2013.878298)

The authors intended to (a) identify the association between gender or grade level and teachers' homework (HW) feedback and (b) examine the relationship between teachers' HW feedback, HW-related behaviors (e.g., amount of HW completed), and academic achievement. Four hundred fifty-four students (Grades 5–12) participated in this study. The results showed that (a) at higher grade levels, there is a lower perceived amount of teachers' HW feedback, (b) teachers' HW feedback as perceived by students is positively and significantly related to the amount of HW completed and to the perceived quality of HW time management but not to the amount of time spent on HW, (c) the amount of HW completed and the perceived quality of HW time management positively and significantly predict academic achievement, and (d) teachers' HW feedback as perceived by students has an indirect relationship with students' academic achievement by its effect on students' HW-related behaviors.

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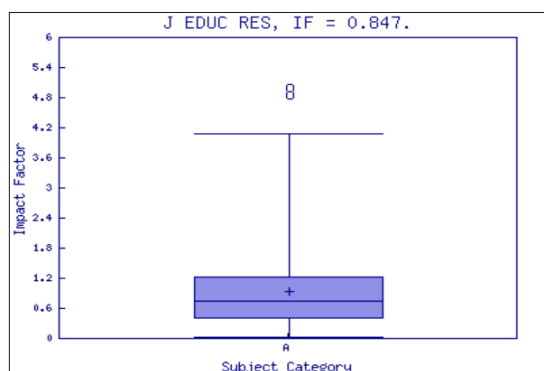
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Category Name	Total Journals in Category	Journal Rank in Category	Quartile in Category
EDUCATION & EDUCATIONAL RESEARCH	219	88	Q2

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Teachers' Feedback on Homework, Homework-Related Behaviors, and Academic Achievement

José Carlos Núñez, Natalia Suárez, Pedro Rosário,
Guillermo Vallejo, Rebeca Cerezo, and António Valle

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TABLE OF CONTENTS LISTING

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Teachers’ Feedback on Homework, Homework-Related Behaviors, and Academic Achievement
José Carlos Núñez, Natalia Suárez, Pedro Rosário, Guillermo Vallejo, Rebeca Cerezo, and António Valle

Teachers' Feedback on Homework, Homework-Related Behaviors, and Academic Achievement

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10

Q1

20 **ABSTRACT.** The authors intended to (a) identify the asso-
ciation between gender or grade level and teachers' home-
work (HW) feedback and (b) examine the relationship
30 between teachers' HW feedback, HW-related behaviors
(e.g., amount of HW completed), and academic achieve-
ment. Four hundred fifty-four students (Grades 5–12) par-
ticipated in this study. The results showed that (a) at higher
grade levels, there is a lower perceived amount of teachers'
40 HW feedback, (b) teachers' HW feedback as perceived by
students is positively and significantly related to the amount
of HW completed and to the perceived quality of HW time
management but not to the amount of time spent on HW,
50 (c) the amount of HW completed and the perceived quality
of HW time management positively and significantly predict
academic achievement, and (d) teachers' HW feedback as
perceived by students has an indirect relationship with
students' academic achievement by its effect on students'
HW-related behaviors.

Keywords: academic achievement, homework, homework
time management, teacher feedback

60 **P**resently, there is an important debate in Spanish
schools (and in schools in other countries) about
whether to assign homework (HW). Students
often complain about the amount of time they spend com-
pleting HW instead of engaging in leisure activities.
70 Parents sometimes complain about the quantity and qual-
ity of HW tasks assigned to their children (whether they
are too difficult or too easy) and about the amount of time
they spend helping their children. Finally, some teachers
complain about the lack of parental support and the lack
80 of time available to prepare effective HW assignments and
to deliver feedback (Cooper, Robinson, & Patall, 2006).
Furthermore, previous research has produced considerable,
but not conclusive, data on the relationship among
assigned homework, completed homework, and academic

achievement (e.g., Cooper, 1989; Dettmers, Trautwein, &
Lüdtke, 2009; Farrow, Tymms, & Henderson, 1999; 90
Paschal, Weinstein, & Walberg, 1984; Trautwein &
Köller, 2003; Trautwein, Köller, Schmitz, & Baumert,
2002).

Some researchers (e.g., Ronning, 2011) have indicated
that this relationship is mediated by individual student- 95
related variables (i.e., cognitive, motivational, and behav-
ioral variables), school-related variables (i.e., teachers'
involvement) and family variables (i.e., parents' involve-
ment). This study aims to conduct an in-depth analysis of
the relationship between teachers' HW feedback as perceived 100
by students, students' HW-related behaviors and
academic achievement.

Research on Teachers' HW Feedback

Research on the importance of the teacher's role in the
relationship between students' HW-related behaviors and 105
academic achievement is still scarce, perhaps because
homework has been traditionally considered an out-of-
school task over which the teacher has no direct control.
However, many teachers assign homework because they
believe that homework (a) improves students' academic 110
achievement (Cooper, 1989), (b) increases students' moti-
vation and ability to self-regulate their learning processes
(Hoover-Dempsey et al., 2001; Rosário et al., 2009;
Warton, 2001), and (c) establishes a positive relationship
between school and family (Epstein & Van Voorhis, 2001; 115

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Q2

Hill & Taylor, 2004; Trautwein, Niggli, Schnyder, & Lüdtke, 2009).

Typically, teachers' involvement with HW occurs at two moments: (a) when they plan the number and type of HW tasks to assign and (b) when they provide feedback on HW to students.

The study by Dettmers, Trautwein, Lüdtke, Kunter, and Baumert (2010) focused on the importance of planning the quantity and quality of HW tasks assigned. The authors studied a sample of more than 3,000 high school students to analyze the extent to which perceived homework quality was related to students' motivation and attitudes toward HW and also to academic achievement in mathematics. The results showed that higher perceived homework quality was associated with more positive attitudes toward HW and higher academic achievement in mathematics among the students. In this same study, the data were analyzed at the student level and at the class level, and the results varied according to the level of analysis. At the class level, perceived homework quality positively predicted academic achievement in mathematics, but this finding did not occur at the student level. Without considering the moderating effect of class, this study showed that the perceived quality of homework predicted mathematics achievement indirectly through its effect on students' motivations and attitudes.

When considering the role of teachers' feedback on students' homework, the data from previous investigations indicated that the benefits of doing homework increase when HW is checked and corrected in the classroom (Paschal et al., 1984; Walberg, 1991). These results have been corroborated more recently by Trautwein, Niggli, et al. (2009), who reported that students are more likely to strive to do homework when they perceive teachers' control. Similar conclusions were obtained in a recent investigation with a large sample of teachers from different countries (Murillo & Martínez-Garrido, 2013). The findings of this study showed that HW assignments may be counterproductive if they are not corrected in class to help students learn how to troubleshoot their errors and how to improve their HW. The amount of HW feedback provided by teachers to students is related to the students' age (Katz, Kaplan, & Gueta, 2010; Xu & Wu, 2013). Katz et al. (2010) noted that junior high school students (Grade 8) perceived less teacher support related to HW (in terms of the teachers' interest in the students' understanding of the homework, the degree of individual adaptation of homework assignments to the students' needs, and involvement in mistakes) compared to the perceptions of students in 4th grade. In the same study, the authors noted that teacher support significantly affects the quantity and quality of students' motivation to do HW. However, some researchers (e.g., Trautwein & Lüdtke, 2009) have considered the quality of homework supervision to be the most important issue regarding HW feedback (in terms of the supervision of homework completion).

Teachers' HW Feedback, Students' HW-Related Behaviors, and Academic Achievement

Recent literature on HW analyses different student variables related to academic achievement: procrastination and learning strategies (Lubbers, Van der Werf, Kuyper, & Hendriks, 2010); frequency of HW assignments, time spent on HW, HW emotions (Trautwein, Schnyder, Niggli, Neumann, & Lüdtke, 2009); HW management (Oubrayrie-Roussel & Safont-Mottay, 2011; Xu, 2010, 2011); attitude toward HW and reasons for doing HW (Xu & Wu, 2013); HW effort (Trautwein, Lüdtke, Schnyder, & Niggli, 2006; Trautwein, Schnyder, et al., 2009); or help seeking strategies (Bembenutty & White, 2013). The present study analyzes three of those student HW behavior variables: amount of HW completed, time spent on HW and time spent on HW management.

The findings regarding the relationship between the amount of time spent on HW and academic achievement show significant discrepancies. Whereas some previous reviews report a positive relation between time spent on HW and achievement (e.g., Cooper, 1989; Cooper et al., 2006; Cooper & Valentine, 2001), other investigations claim that same relation to be as either rather low or even negative (e.g., De Jong, Westerhof, & Creemers, 2000; Dettmers et al., 2009; Núñez et al., 2013; Tam, 2009; Trautwein, 2007; Trautwein et al., 2002; Trautwein, Lüdtke, Schnyder, & Niggli, 2006; Trautwein, Schnyder, et al., 2009; Xu, 2011). Similar to other works, the study of Núñez et al. (2013) found a negative association, with a small effect size, between the amount of time spent on HW completion and academic achievement. In fact, the perceived quality of HW time management played a relevant role in that prediction.

Therefore, completing a reasonable amount of HW on a daily basis can help to develop study habits that facilitate learning and, ultimately, improve academic achievement (Cooper et al., 2006; Corno, 1994; Epstein & Van Voorhis, 2001; Henderson, 1996; Rosário et al., 2009; Warton, 2001; Xu & Corno, 2006; Xu & Yuan, 2003). Still, despite a long history of research on HW, it is not yet clear how strong the relationship between amount of HW completed, time spent on HW, and academic achievement may be (e.g., Cooper, 1989; Dettmers et al., 2009; Farrow et al. 1999; Paschal et al., 1984; Trautwein & Köller, 2003; Trautwein et al., 2002), being this a source of discrepancies between teachers, parents and students (Cooper et al., 2006).

Purpose of the Study

Previous research (e.g., Katz et al., 2010; Trautwein & Lüdtke, 2009; Trautwein et al., 2006; Trautwein et al., 2009; Walberg, 1991; Xu, 2011; Xu & Corno, 2006) reported statistically significant positive relationships between teacher feedback and a range of HW-related constructs (e.g., HW effort, HW emotions, HW motivation, 280

HW interest, HW time, HW time management, HW management, HW completion). As the effect sizes found were small, Trautwein et al.; (2009) recommended further studies examining these same relationships but using samples including a wider educational age range. Moreover, Núñez et al. (2013) suggested, for instance, that a significant amount of variance in academic performance is explained by variables such as the amount of time spent on HW (and how to manage it) and the amount of HW completed.

Thus, the present study was conducted with students from six consecutive grades (from Grades 5 to 12). The aims were to provide additional data about the extent to which students' perceived teachers' feedback is related to three types of students' HW behaviors: (a) the amount of assigned HW completed, (b) the time spent on HW, and (c) the time spent on HW management, and these, on their turn, with academic achievement. The two specific goals of the present study are as follows:

1. Analyze the effects of gender and grade level on students' perceptions of teachers' HW feedback. Based on previous studies (e.g., Katz et al., 2010; Núñez et al., 2013; Wagner, Schober, & Spiel, 2007; Xu, 2006, 2007, 2010a), it was hypothesized that gender and grade level would be significantly related to students' perceptions of teachers' HW feedback. Specifically, with respect to grade level, higher grade levels were expected to be associated with lower perceived amounts of teacher HW feedback. As for gender, although some studies have analyzed the differences between boys and girls regarding their HW-related behaviors (e.g., Núñez et al., 2013; Xu, 2007; Xu & Corno, 2006; Xu & Wu, 2013), no investigations were found to our knowledge that analyze gender differences referring to teachers' HW feedback as perceived by students.
2. Using a structural equation model (SEM; see Figure 1), the relationship between students' perceived teachers' HW feedback, the three mentioned students' HW-related behaviors, and students' academic achievement was analyzed. To accomplish the latter mentioned task, a strategy of model comparison was conducted. Three models, (a) the full mediation model (b) and two alternative models (a partial mediation model and a nonmediation model), were compared as follows.

First, according to previous research, the full mediation model (M1 in Figure 1) hypothesized a positive and significant association between the students' perceptions of teachers' HW feedback and their HW-related behaviors, as well as with their academic achievement. It was also hypothesized that students' perceived teachers' HW feedback and students' academic achievement would be related indirectly (through HW-related behaviors).

In M1 teachers' HW feedback is indirectly associated with academic achievement, but this relationship could assume different paths from those hypothesized in M1.

Second, an alternative model, a partial mediation model (M2 in Figure 1), was hypothesized. M2 corresponds to M1 with an added direct path from perceived teachers' HW feedback (and direct paths from each of the students' HW-related behaviors) to students' academic achievement.

Third, a nonmediation model (M3 in Figure 1) hypothesizing that the perceived teachers' HW feedback and the students' HW-related behaviors would be directly related with the students' academic achievement was run.

Finally, in accordance with previous research, in the present research the full mediation model was expected to present a better fit.

Method

Participants

Four hundred fifty-four students (98% of all students) from three schools in northern Spain participated in this study. Their ages ranged between 10 and 16 years. Of these students, 48.5% were boys (220), and 51.5% were girls (234). The sample comprised 145 students in the last cycle of Spanish elementary education (EE; fifth grade: $n = 70$ [40 boys and 30 girls]; sixth grade: $n = 75$ [37 boys and 38 girls]) and 309 students from the four grade levels in compulsory Spanish secondary education (SSE; first grade: $n = 81$ [39 boys and 42 girls]; second grade: $n = 83$ [38 boys and 45 girls]; third grade: $n = 79$ [34 boys and 45 girls]; fourth grade: $n = 66$ [32 boys and 34 girls]). Students from three classes in each of the six grade levels were assessed (a total of 18 classes). At each grade level, one class was randomly selected from each one of the schools that participated in the study.

Variables and Measurement Instruments

Perceptions of teacher involvement. In the present study, teacher involvement was estimated in the SEM by the students' perceptions of the teachers' feedback about their HW. The following five items included in the teacher HW feedback scale were selected from the questionnaires by Walberg, Paschal, and Weinstein (1985) and Xu (2011): (a) the teacher emphasizes the importance of completing the HW, (b) in each class, the teacher checks whether students have done their HW, (c) the teacher takes HW into account when assigning final grades, (d) HW is corrected in class to fix the errors, and (e) the teacher gives students positive reinforcement when their HW is done. The students responded to the five items on a 5-point Likert-type scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). During the instructions, the students were told to assess their teachers' HW feedback globally (not focusing on a particular class or teacher). The reliability of this scale was not high, but it was acceptable (Cronbach's $\alpha = .66$).

HW-related variables. The three HW variables were assessed by the Homework Survey (HW-S; Núñez et al.,

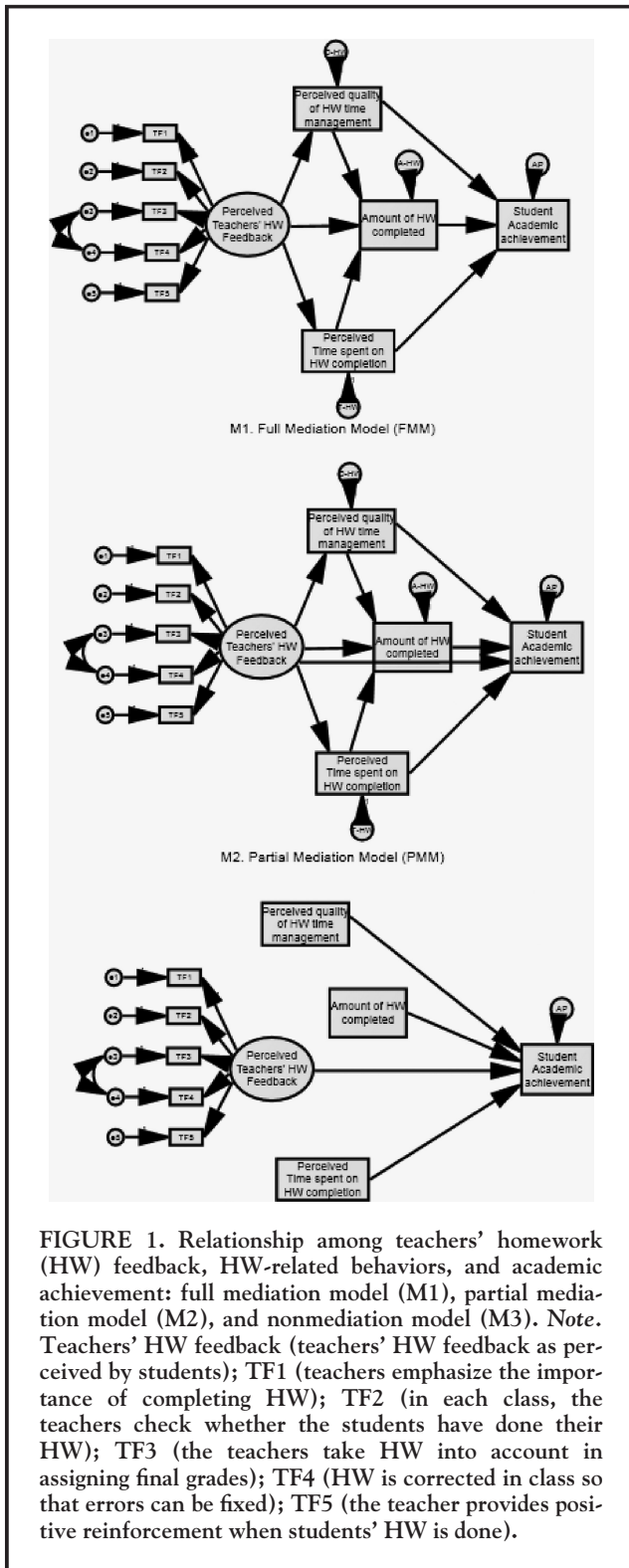


FIGURE 1. Relationship among teachers' homework (HW) feedback, HW-related behaviors, and academic achievement: full mediation model (M1), partial mediation model (M2), and nonmediation model (M3). *Note.* Teachers' HW feedback (teachers' HW feedback as perceived by students); TF1 (teachers emphasize the importance of completing HW); TF2 (in each class, the teachers check whether the students have done their HW); TF3 (the teachers take HW into account in assigning final grades); TF4 (HW is corrected in class so that errors can be fixed); TF5 (the teacher provides positive reinforcement when students' HW is done).

responses to three items: "Some students complete all of their HW, and others only complete some of it. And you? How much of your homework do you do... usually/in a typical week/on a typical weekend?" The students provided their answers on a 5-point Likert-type scale ranging from 1 (*I don't do any of my homework*) to 5 (*I do all of my homework*). Because there were only three items, the reliability of the measure was acceptable ($\alpha = .72$). 450 Q9

The *time spent on HW* was assessed with three items: "How much time do you (usually/ in a typical week/ on a typical weekend) spend doing HW?" The response options ranged from 1 (*less than 30 minutes*) to 5 (*more than 2 hours*). Like the previous scale, the reliability of this scale was also acceptable ($\alpha = .69$). 455 Q10

The perceived quality of HW time management was assessed by collecting students' responses to three items:

Students often spend a lot of time doing HW, although most of the time they don't use that time properly because they waste it (e.g., talking on the phone, being distracted by intrusive thoughts, procrastinating). And you, how do you manage the time you spend doing your HW (usually/ in a typical week/on a typical weekend)? 465

They were asked to indicate their level of HW time optimization on a 5-point Likert-type scale ranging from 1 (*I don't optimize it at all: "I am continually distracted by everything."*) to 5 (*I optimize it completely: "I concentrate, and until I finish doing homework, I don't think about anything else."*). Again, the reliability of this scale was acceptable ($\alpha = .78$). 470 Q11

Academic achievement. Academic achievement was assessed using students' final academic grades, which were collected from the secretariat of the schools at the end of the school year. The average grade for the EE students was calculated from their grades in Spanish language, English as a foreign language, mathematics, and sciences. For the SSE students, achievement corresponded to the mean of the students' grades in the subjects of Spanish language, English as a foreign language, mathematics, social sciences, and natural sciences. 475 480

Procedure 485

All 454 students volunteered to participate and obtained authorization from their parents. The questionnaires were administered during a regular class. The researchers signed a written agreement with the school boards to organize sessions with parents and teachers to present the results of the research and discuss the potential educational implications of the findings. 490

Statistical Analyses

First, a two-way (2×6) Gender \times Grade analysis of variance (ANOVA) was used to study the effects of gender and grade level on teachers' HW feedback. The dependent 495

2013), which is based on a set of different Multi-Item Homework Scales (e.g., Trautwein et al., 2006; Xu, 2008, 2010c).

The amount of HW completed by the students as a proportion of the total tasks assigned was assessed from their

variable (teachers' HW feedback as perceived by students) was created by summing the five items related to teachers' HW feedback and dividing by the number of items. Second, the SEM was analyzed using AMOS.18 (Arbuckle, 2009). In the school system, students are nested in classes, and students in the same class are more likely to share educational commonalities (e.g., the same teachers, similar learning assessment practices, a similar amount of assigned HW). Nested data often require multilevel analyses (Dettmers et al., 2010; Trautwein et al., 2009; Xu, 2011). However, this data analysis strategy is appropriate only when certain conditions are met (Gelman & Hill, 2006; Goldstein 2003). One of those requirements is related to the sample size at each level of the hierarchical structure (Maas & Hox, 2005; Vallejo, Tuero-Herrero, Núñez, & Rosário, 2014). In the present study, the number of units at the class level was considerably lower than 50 (there were 18 classes in the total sample), and thus, the data were analyzed at the student level. Consequently, a SEM was run only at the student level to test the relationship between teachers' HW feedback as perceived by students, the three students' HW-related variables, and students' academic achievement.

The second goal of the present study was to examine to what extent the students' HW-related behaviors mediate the relationship between teachers' HW feedback as perceived by students and academic achievement. As mentioned previously, three models (M1, M2, and M3; see Figure 1) were run. The strategy of data analysis followed two steps: (a) information criteria-based model selection tools were used to compare the fit to the data of the three candidate models and (b) after checking the fitted model, the final model was used to carry out inferences of interest.

A series of statistics and indices were used in the two steps. On one hand, model selection tools such as Akaike's

(1974) information criterion (AIC), Raftery's (1993) Bayesian information criterion (BIC), and Browne-Cudeck's (Browne & Cudeck, 1993) criterion (BCC) were used to select the proper mediation model. On the other hand, to assess the fit of the model chosen, in addition to chi-square (χ^2) statistics and their associated probability (*p*) values, we used (a) two absolute indices, the goodness-of-fit index (GFI) and the adjusted goodness-of-fit index (AGFI); (b) a relative index, the comparative fit index (CFI; Bentler, 1990); and (c) a close-fit parsimony-based index, the root mean square error of approximation (RMSEA), and their 90% confidence intervals (Hu & Bentler, 1999). According to these authors, the model fits well if the following values are obtained: GFI and AGFI > .90, CFI > .95, and RMSEA ≤ .05. Last, AIC and the Expected Cross-Validation Index (ECVI) were used to examine whether the hypothesized model is likely to be replicated in other similar samples (Byrne, 2001).

Results

Descriptive Analyses

The descriptive statistics and inter-correlations are presented in Table 1. First, a large percentage of the correlations are statistically significant (64%), with values ranging between .006 and .369, indicating that the matrix is appropriate for the model proposed. Second, one of the important assumptions of the SEM methodology is that the variables must be normally distributed. Because maximum likelihood (ML) can produce biases when this assumption is violated (West, Finch, & Curran, 1995), we examined the distribution of all the variables (i.e., for kurtosis and skewness). According to Finney and DiStefano (2006), 2 and 7 are the maximum allowable values for

TABLE 1. Pearson Correlation Coefficients and Descriptive Statistics for Variables Included in the Full Mediation Model

	1	2	3	4	5	6	7	8	9
1.	—								
2.	.369***	—							
3.	-.020	.296***	—						
4.	.330***	.369***	.045	—					
5.	.124***	.106*	.006	.137***	—				
6.	.177***	.148***	-.037	.209***	.239***	—			
7.	-.005	.010	-.024	.108*	.240***	.225***	—		
8.	.121***	.191***	-.040	.114*	.193***	.326***	.092	—	
9.	.058	.076	-.080	.081	.177***	.168***	.208***	.207***	—
M	6.605	4.403	3.343	3.599	4.284	3.918	3.625	4.561	3.105
SD	1.798	0.738	1.129	0.804	0.816	1.025	1.084	0.705	1.163
Skw	-0.284	-1.292	-0.142	-0.757	-1.123	-0.538	-0.434	-1.783	-0.122
Kur	-0.781	1.665	-0.889	0.626	1.234	-0.542	-0.474	3.575	-0.721

Note. 1 = academic achievement; 2 = amount of HW completed; 3 = time spent on homework; 4 = perceived quality of homework time management; 5 = TF1; 6 = TF2; 7 = TF3; 8 = TF4; 9 = TF5; Skw = Skewness; Kur = Kurtosis.
* *p* < .05. *** *p* < .001.

600 skewness and kurtosis, respectively, to use ML; we found that all of the variables respected those criteria (see Table 1). Therefore, with the condition of normality met, we fitted the model using ML.

610 *Gender and grade level effects on teachers' HW feedback as perceived by students.* The descriptive statistics and the results of the post hoc comparisons between the groups in the two-way ANOVA are provided in Table 2. The results show that both factors explain 16.6% of the total variance in the teachers' feedback on HW. Whereas the main effect of gender was not statistically significant, $F(1, 442) = 0.848, p = .358$, the main effect of grade level was significant, $F(5, 442) = 16.357, p < .001, \eta_p^2 = .156$, with a large effect size. The interaction between both factors was not statistically significant, $F(5, 442) = 0.807, p = .545$.

630 In Figure 2, the relationships of gender, grade level, and their interaction with HW-related factors are presented. Figure 2 also shows how teachers' HW feedback decreases as the students' grade level increases, both for boys and girls. The post hoc comparisons show that the biggest differences are between the fifth- and sixth-grade students and the ninth- and 10th-grade students. The analysis of the homogeneous subsets reported three different groups (between-group differences and not within-group differences), which correspond to the three levels of education:

last cycle of EE (fifth and sixth grade), first cycle of SSE (seventh and eighth grade) and second cycle of SSE (ninth and 10th grade). 650

Structural equation model. The fit of the hypothesized theoretical model (full mediation model: M1 in Figure 1) to the data in the correlation matrix was acceptable, $\chi^2(23, N =) = 41.731, \chi^2/df = 1.814, p = .010$; GFI = .980; AGFI = .961; CFI = .953; RMSEA = .042 (CI [.021, .063]). Although the statistical evaluation model showed an acceptable fit, the residuals and the modification indexes were analyzed. We observed a need for a model that acknowledged the relationship between the measurement errors 3 and 4 of teachers' HW feedback (MI [modification index] = 8.078; a minimum expected value for the parameter of $-.091$). 660

Although this relationship is not theoretically relevant to the model assumptions, it was included in the model because correlations between the measurement errors of items on questionnaires are common in self-reported assessments. The results of the modified model indicated that the fit of this model was good, $\chi^2(22, N =) = 30.371, \chi^2/df = 1.381, p = .110$; GFI = .985; AGFI = .970; CFI = .979; RMSEA = .029 (CI [.001, .052]). As expected, the new estimated parameter was statistically significant ($-.126; p < .001$). Neither the residuals nor the 665

Q13

Q14

TABLE 2. Means, Standard Deviations and Post Hoc Analysis of Gender and Grade Level Effects on Perceived Teachers' Homework Feedback

Gender/grade level	M	SD	Post hoc analysis					
			5 th Md/p	6 th Md/p	7 th Md/p	8 th Md/p	9 th Md/p	10 th Md/p
Total								
5th	4.202	0.501				-.292*	-.562***	-.663***
6th	4.112	0.520					-.471***	-.572***
7th	3.972	0.492					-.332**	-.433***
8th	3.910	0.548	.292*					-.371**
9th	3.640	0.541	.562***	.471***	.332**			
10th	3.539	0.624	.663***	.572***	.433***	.371**		
Boys								
5th	4.270	0.463						
6th	4.194	0.472						
7th	3.948	0.565						
8th	3.973	0.460						
9th	3.588	0.584						
10th	3.531	0.726						
Girls								
5th	4.113	0.542						
6th	4.031	0.557						
7th	3.995	0.420						
8th	3.857	0.612						
9th	3.680	0.510						
10th	3.547	0.521						

Md/p = mean difference / probability.
* $p < .05$. ** $p < .01$. *** $p < .001$.

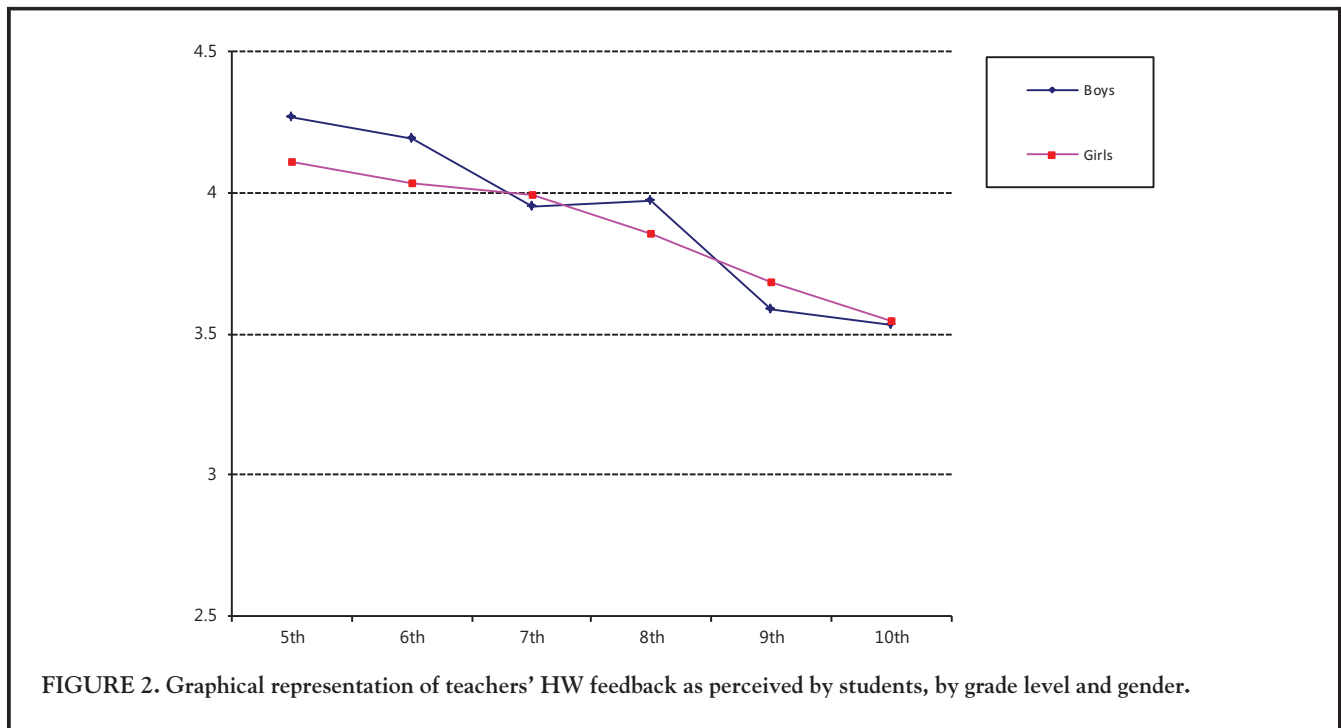


FIGURE 2. Graphical representation of teachers' HW feedback as perceived by students, by grade level and gender.

675 modification indexes suggested the need for further
 680 changes to the model.

Model comparison. Once satisfied that the fit of the full mediation model (M1 in Figure 1) is adequate, we proceeded to the comparison of the fit of this model with the alternative models: partial mediation model, M2 in Figure 1 (that involves direct path from teachers' HW feedback, and direct paths from each of the HW-related behavior and students' academic achievement), and non-mediation model, M3 in Figure 1 (unmediated paths between perceived teachers' HW feedback, amount of HW completed, perceived time spent on HW completion, perceived quality of HW time management, and academic achievement).

Q15 705 The analysis of the models revealed that the fit of the nonmediation model is poor, $\chi^2(26, N =) = 170.618$, $\chi^2/df = 6.562$, $p = .000$; GFI = .925; AGFI = .870; CFI = .637; RMSEA = .111 (CI [.095, .127]). Hence, we can conclude that the nonmediation model does not describe data adequately. However, the partial mediation model, as well as the full mediation model, displayed a good fit, $\chi^2(21, N =) = 29.032$, $\chi^2/df = 1.382$, $p = .113$; GFI = .986; AGFI = .970; CFI = .980; RMSEA = .029 (CI [.000, .053]). Note that the goodness of the fit indices for M1 and M2 are rather similar. When testing M1 against M2, the results are not significant, $\chi^2(1, N =) = 1.34$, which indicates that according to the likelihood ratio test procedure the relative support for M1 and M2 in the data is equal.

Plus, we used the statistical information provided by the AIC, BIC, and BCC to determine if it is possible for any of

these two models (full and partial mediation models) to accurately describe the relationships in the matrix data. 735 The results are presented in Table 3. As can be seen, all criteria favor M1 (full mediation model). Note, however, that the AIC and BCC values of M1 and M2 are rather close (i.e., <2), but both criteria are lower for M1. Thus, based on the suggestions given by Burnham and Anderson 740 (2002) one might conclude that, although M1 seems to be the best model, both are equally likely to have generated the data, and there is no credible evidence that M2 should be ruled out as being the actual Kullback-Leibler (K-L) best model for all the possible samples. However, according 745 to Raftery (1993), BIC values inform that the full mediation model (BIC = 5.11) is admitted as valid, what is not true for the partial mediation model (BIC = 9.89) exceeding 6. To facilitate the interpretation of BIC, it is enlightening to report the ratio of the transformed criteria of the 750 two candidate models. For the values shown in Table 3, this results in $\exp(-.5(5.11 - 9.89)) \cong 11$, which indicates that M1 is 11 times more likely to have generated the data than M2. Moreover, both efficient criteria (i.e., AIC, which tends to choose more complex models; Vallejo 755 et al., 2014) as consistent criteria (i.e., BIC, which tends to choose simpler models) favor full mediation model choice.

Thus, considering these data, it should be noted that the full mediation model (M1) should be selected, instead of the partial mediation model (M2), because it is the one 760 presenting the lowest values in AIC, BCC, and BIC. Furthermore, in the partial mediation model the direct effect of teacher' HW feedback on students' academic achievement is statistically nonsignificant ($b = .091$, $p = .138$).

TABLE 3. Results of Running Model Comparison Strategy

Model	NP	df	χ^2	$\chi^2 - df$	AIC	BCC	BIC	χ^2/df	<i>p</i>
Full mediation model	23	22	30.37	8.37	.99	1.03	5.11	1.38	.11
Partial mediation model	24	21	29.03	8.03	1.65	1.74	9.89	1.38	.11
Nonmediation model	19	26	170.62	144.62	133.14	133.10	120.88	6.56	.00
Saturated model	45	0	.00	.00	14.62	15.66	109.33	—	—

Note. NP = number of parameters; AIC = Akaike's information criterion; BCC = Browne-Cudeck's criterion; BIC = Bayesian information criterion.

Moreover, the estimate of this effect did not change the size of the other path.

770 *Assessment of the full mediation model.* Table 4 and Figure 3 show the unstandardized and standardized coefficients corresponding to the direct effects in the full mediation model (M1) and their respective estimation errors, critical ratios, and associated probability values.

780 The present study has confirmed the two hypotheses stated earlier. First, there is a statistically significant association between teachers' HW feedback as perceived by students and two of the three students' behavioral HW variables (i.e., the amount of HW completed, $b = .17, p < .01$; and the perceived quality of HW time management, $b = .27, p < .001$). These findings indicated that higher perceptions of teachers' HW feedback were associated with a greater quantity of homework completed by the students and with better homework time management. However, there is no relationship between teachers' HW feedback as perceived by students and the amount of time spent on HW ($b = -.06, p = .317$). Second, there is a statistically significant relationship between students' HW-related behaviors and students' academic achievement. The data showed that 20% of the variance in the students' academic achievement was positively predicted by the amount of HW completed ($b = .32, p < .001$) and by the perceived quality of HW time management ($b = .22, p < .001$), whereas it was negatively predicted by the amount of time spent on HW ($b = -.13, p < .01$). Third, 23% of the variance in the amount of HW completed was predicted by the teachers' HW feedback, the amount of time spent on HW ($b = .29, p < .001$),

and the perceived quality of HW time management ($b = .31, p < .001$). Fourth, when analyzing the results of the comparison of the two models, considering the total, direct, and indirect effects (Breivik, Olweus, & Endresen, 2009), the full mediation model show that the indirect association between teachers' HW feedback as perceived by students and students' academic achievement was positive and statistically significant ($b = .14, p < .01$), while direct effects are zero (see Table 5).

Finally, as mentioned previously, we examined whether the full mediation model is likely to be replicated in other samples of similar students. To answer this question, the ECVI value of 0.169 (CI [0.150, 0.210]) found in our SEM model was compared with that of both the saturated model (0.199; CI [0.199, 0.199]) and the independence model (1.000; CI [0.860, 1.156]). The ECVI value of the path model was the lowest, indicating that this model has the best fit to the data, and thus, the answer to the question is likely to be affirmative. Moreover, to what extent will the parameters estimated from the present sample of students be confirmed in future samples of similar students? The findings demonstrated a high probability of cross-validation because the AIC of the hypothesized model (AIC = 76.371; CI [77.410, .171.087]) was substantially smaller than those of the saturated (AIC = 90.000; CI [92.032, 275.314]) or the independence (AIC = 452.890; CI [453.296, 489.953]) models. In summary,

TABLE 4. Unstandardized Direct Effects of Full Mediation Model

	<i>b</i>	SE	Critical ratio	<i>p</i>
Teachers' HW feedback → perceived HW time management	.620	.153	4.040	.001
Teachers' HW feedback → amount of HW completed	.357	.124	2.886	.004
Teachers' HW feedback → time spent on HW	-.189	.189	-1.001	.317
Perceived HW time management → amount of HW completed	.284	.040	7.030	.001
Time spent on HW → amount of HW completed	.191	.027	7.056	.001
HW time management → academic achievement	.481	.102	4.738	.001
Amount of HW completed → academic achievement	.796	.116	6.870	.001
Time spent on HW → academic achievement	-.202	.070	-2.865	.004

Note. HW = homework.

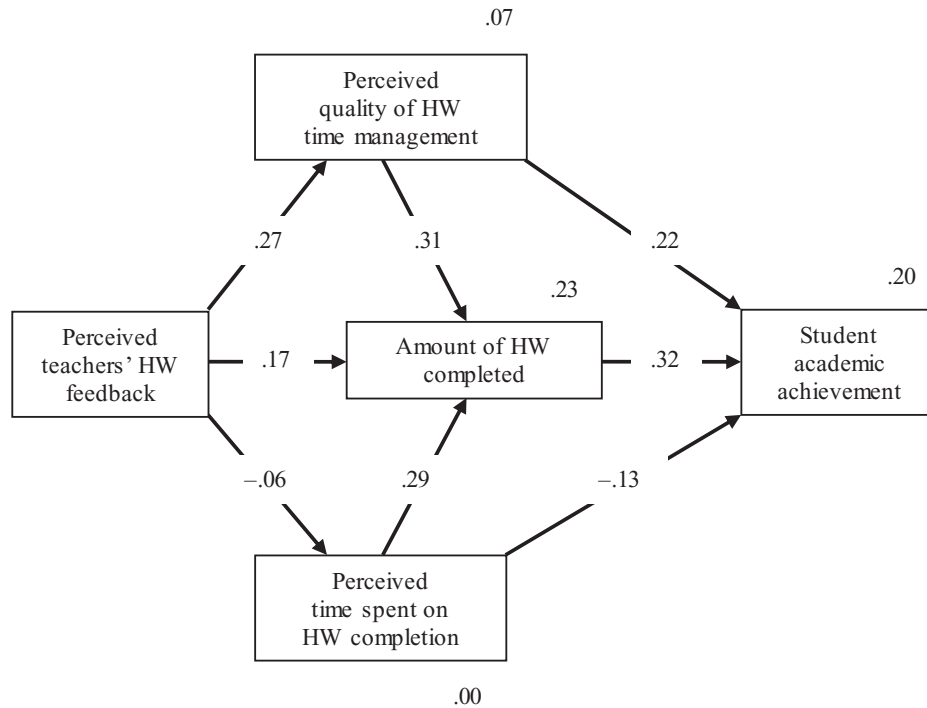


FIGURE 3 . Final structural equation model (full mediation model) with the standardized solution. All regression coefficients are statistically significant except Teachers' HW feedback → time spent on HW completion. TF1 to TF5 (items included in the teachers' HW feedback latent variable).

860 although these two parameters (AIC and ECVI) do not enable an unequivocal conclusion concerning the replication of the model in other samples of students of similar ages, but these positive results strengthen the findings and suggest profitable directions for future research.

Discussion

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The present study aimed to provide information about (a) the relationship among grade level, students' gender, and teachers' HW feedback as perceived by students and (b) the association between teachers' HW feedback as

TABLE 5. Total, Direct, and Indirect Standardized Effects in Full Mediation Model

	Q_HW_TM	A_HW_C	T_HW_C	S_AA
Total effects (effect direction →)				
Teachers' HW feedback (T_HW_F)	.272	.239	-.059	.144
Quality of HW time management (Q_HW_TM)	.000	.311	.000	.316
Amount of HW completed (A_HW_C)	.000	.000	.000	.325
Time spent on HW completion (T_HW_C)	.000	.294	.000	-.031
Direct effects (effect direction →)				
Teachers' HW feedback (T_HW_F)	.272	.171	-.059	.000
Quality of HW time management (Q_HW_TM)	.000	.311	.000	.215
Amount of HW completed (A_HW_C)	.000	.000	.000	.325
Time spent on HW completion (T_HW_C)	.000	.294	.000	-.127
Indirect effects (effect direction →)				
Teachers' HW feedback (T_HW_F)	.000	.067	.000	.144
Quality of HW time management (Q_HW_TM)	.000	.000	.000	.101
Amount of HW completed (A_HW_C)	.000	.000	.000	.000
Time spent on HW completion (T_HW_C)	.000	.000	.000	.096

perceived by students, students' HW-related behaviors, and students' academic achievement. To address our first aim, a factorial analysis of variance was conducted, and the second aim was addressed using SEM methodology.

With regard to our first aim, the findings showed that higher grade levels (among Grades 5–12) were associated with lower levels of perceived HW feedback from teachers. Our results corroborate the results of previous studies (e.g., Katz et al., 2010), and the large effect size found using a large and diverse sample of students from six consecutive grade levels (from Grades 5 to 12) adds to the literature by reinforcing the previous results. We agree with Xu and Wu (2013): "this is also an important message for secondary school teachers in particular, as they tend to place less value on developing good study habits (e.g., managing homework time) than do their elementary counterparts" (p. 11). With regard to the effect of gender on perceptions of teachers' HW feedback, unlike other studies (Xu & Corno, 2006), our results do not show statistically significant differences. This discrepancy could be due to the different grade levels used in our study (Grades 5–12) compared to the grade levels used in previous studies (Grades 8–11). Although there were no interaction effects found between age and gender, Figure 2 shows that the differences between age groups could be statistically significant (although slight), favoring the boys at an early age and the girls at the end of compulsory education. These results suggest the need for more research on the effects of age and gender on teachers' HW feedback as perceived by students in relation to HW-related behaviors and academic achievement.

With regard to the second aim, our model comparison data supports a full mediation model (e.g., M1 in Figure 1), which recognizes the total mediational role of students' HW-related behaviors between teachers' HW feedback as perceived by students and academic achievement. However, it should be noted that although M1 is estimated to be the best model, according to Burnham and Anderson's (2002) guidelines, M2 should not be ruled out. Considering the previous results, as in previous studies (e.g., Corno & Xu, 2004; Katz et al., 2010; Paschal et al., 1984; Trautwein & Lüdtke, 2009; Trautwein et al., 2006; Trautwein et al., 2009; Walberg, 1991; Xu, 2008, 2011; Xu & Wu, 2013), our data show that teachers' HW feedback as perceived by students was positively and significantly related to the amount of HW completed and the perceived quality of HW time management, but it was not related to the amount of time spent on HW. Figure 3 shows that the proportion of the variance explained by the two aspects of HW-related behavior is relatively small (3% for the amount of HW completed and 7% for the perceived quality of HW time management). These data align with the findings in the literature about perceived HW feedback from teachers (e.g., Xu, 2011; Xu & Wu, 2013) and homework assignments (e.g., Trautwein et al., 2009). In light of this weak but significant association found in this

exploratory study, what can educators do to increase the impact of teachers' HW feedback on students' HW-related behaviors? As shown by other researchers (e.g., Corno & Xu, 2004; Trautwein et al., 2009), good homework promotes students' motivation and self-regulation. Acknowledging the exploratory nature of our data and the need for future studies replicating our findings, school administrators could consider including content about HW in teacher training courses (e.g., how to design HW, what to assign and how to provide feedback to students in order to increase their motivation and their self-regulated learning processes), and promoting school debates about the advantages and disadvantages of assigning homework (Cooper, 1989; Corno & Xu, 2004; Elawar & Corno, 1985; Trautwein et al., 2006; Trautwein et al., 2009; Xu, 2005).

With respect to the second part of the SEM, it was observed that the three students' HW-related variables significantly predict students' academic achievement. Corroborating previous studies (e.g., Trautwein et al., 2002; Trautwein et al., 2009), our data showed that the amount of HW completed significantly and positively predicts students' academic achievement. As in other studies, a negative association with a small effect size was found between the amount of time spent on HW and academic achievement (e.g., De Jong et al., 2000; Tam, 2009; Trautwein, 2007; Trautwein et al., 2002; Trautwein et al., 2009). The quantity of time spent on homework was not a relevant predictor of academic achievement, but the perceived quality of HW time management was a relevant predictor. The SEM findings show that the perceived quality of HW time management significantly predicted the amount of HW completed and academic achievement. These model results emphasize several points: (a) the amount of HW completed is relevant to overall academic achievement and (b) the amount of HW completed is significantly related to the quantity of time spent on HW and to the effective management of the time spent on HW (i.e., the quality of HW time management).

Overall, our findings (a) support assigning homework, (b) suggest the need to train students in effective HW time management, (c) reveal the need to analyze the reasons why perceived HW feedback from the teacher decreases as student progress through school, and (d) highlight the importance of teachers' involvement in HW design, the importance of the feedback provided to students, and the need for organizing school-based training courses for teachers on how to design motivating HW assignments.

Limitations and Future Research

Our exploratory results show that HW feedback from teachers (as perceived by students) decreases significantly with increasing grade levels. This initial finding, if confirmed by future studies, could help to understand why students do more or less homework, why they spend more or less time on HW, and why are they more or less effective

985 Q21

990

995 Q22

Q23

1000

Q24

1005

Q25

1010

1015

1020

1025

1030

1035

Q18

Q19

955

965

975

Q20

in managing the time they spend on HW. Since our study did not report causal relationships, but only potential significant relationships between variables, future studies should further investigate this relationship. Although our results seem to be consistent, there are some limitations that are important to consider.

First, a larger sample size would facilitate fitting the model for various grade levels (e.g., elementary school vs. high school); it is possible for the relationships and the effect sizes to vary according to the grade level. Thus, future studies could conduct multigroup analyses to test the invariance hypothesis. Second, although our results are consistent with those reported in the literature, the magnitude of the effects might have been different if the data had been obtained using methods other than self-report questionnaires. Third, findings should be interpreted cautiously. The intraclass correlation coefficient and deff values were 0.094 and 3.26, respectively, with an average class size of 25 students. According to Muthen and Satorra (1995), when the value of deff is greater than 2, the standard errors are usually underestimated and could be misleading into perceiving the coefficient as significant. Nevertheless, since all regression coefficients in the present study were statistically significant at p values less than 1/1000, it is not likely for the significance of this coefficient levels to change. Fourth, taking into account the indicated limitations as well as the fact that both models (full and partial mediation models) showed good statistical fit, and both have theoretical plausibility, there is a need for subsequent (replication) studies to test the consistency and generalizability of these initial findings.

Finally, additional studies are needed to examine the relationships between the quality of HW, the type of teachers' HW feedback, HW-related behaviors, and academic achievement. These studies could provide essential information for designing more effective training courses for teachers related to homework.

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REFERENCES

- Akaike, H. (1974). A new look at the statistical model identification. *IEEE Transaction on Automatic Control*, *AC-19*, 716–723.
- Arbuckle, J. L. (2009). *Amos 18.0 user's guide*. Crawfordville, FL: Amos Development Corporation.
- Bembenutty, H., & White, M. C. (2013). Academic performance and satisfaction with homework completion among college students. *Learning and Individual Differences*, *24*, 83–88.
- Bentler, P. M. (1990). Comparative fit indexes in structural models. *Psychological Bulletin*, *107*, 238–24.
- Breivik, K., Olweus, D., & Endresen, I. (2009). Does the quality of parent-child relationships mediate the increased risk for antisocial behavior and substance use among adolescents in single mother and single father families? *Journal of Divorce and Remarriage*, *50*, 400–426.
- Browne, M. W., & Cudeck, R. (1993). Alternative ways of assessing model fit. In K. Bollen & J. Long (Eds.), *Testing structural equation models* (pp. 136–162). Newbury Park, CA: Sage.
- Burnham, K. P., & Anderson, D. R. (2002). *Model selection and multimodel inference: A practical information-theoretic approach*. New York, NY: Springer.
- Byrne, B. (2001). *Structural equation modeling with AMOS*. Mahwah, NJ: LEA.
- Cooper, H. (Ed.). (1989). *Homework*. New York, NY: Longman.
- Cooper, H., Robinson, J., & Patall, E. (2006). Does homework improve academic achievement? A synthesis of research, 1987–2003. *Review of Educational Research*, *76*, 1–62.
- Cooper, H., & Valentine, J. C. (2001). Using research to answer practical questions about homework. *Educational Psychologist*, *36*, 143–153.
- Corno, L. (1994). Student volition and education: Outcomes, influences, and practices. In D. H. Schunk & B. J. Zimmerman (Eds.), *Self-regulation of learning and performance: Issues and educational applications* (pp. 229–254). Hillsdale, NJ: Erlbaum.
- Corno, L., & Xu, J. (2004). Homework as the job of childhood. *Theory into Practice*, *43*, 227–233.
- De Jong, R., Westerhof, K. J., & Creemers, B. P. M. (2000). Homework and student math achievement in junior high schools. *Educational Research and Evaluation*, *6*, 130–157.
- Dettmers, S., Trautwein, U., & Lüdtke, O. (2009). The relationship between homework time and achievement is not universal: Evidence from multilevel analyses in 40 countries. *School Effectiveness and School Improvement*, *20*, 375–405.
- Dettmers, S., Trautwein, U., Lüdtke, O., Kunter, M., & Baumert, J. (2010). Homework works if homework quality is high: Using multilevel modeling to predict the development of achievement in mathematics. *Journal of Educational Psychology*, *102*, 467–482.
- Elawar, M. C., & Corno, L. (1985). A factorial experiment in teachers' written feedback on student homework: Changing teacher behavior a little rather than a lot. *Journal of Educational Psychology*, *77*, 162–173.
- Epstein, J. L., & Van Voorhis, F. L. (2001). More than minutes: Teachers' roles in designing homework. *Educational Psychologist*, *36*, 181–193.
- Farrow, S., Tymms, P., & Henderson, B. (1999). Homework and attainment in primary schools. *British Educational Research Journal*, *25*, 323–341.
- Finney, S. J., & DiStefano, C. (2006). Non-normal and categorical data in structural equation modelling. In G. R. Hancock & R. O. Mueller (Eds.), *Structural equation modelling: A second course* (pp. 269–314). Greenwich, CT: Information Age.
- Gelman, A., & Hill, J. (2006). *Data analysis using regression and multilevel hierarchical models*. Cambridge, UK: Cambridge University Press.
- Goldstein, H. (2003). *Multilevel statistical models*. New York, NY: Arnold.
- Henderson, L. (1996). Instructional design of interactive multimedia: A cultural critique. *Educational Technology Research and Development*, *44*, 85–104.
- Hill, N. E., & Taylor, L. C. (2004). Parental school involvement and children's academic achievement: Pragmatics and issues. *Current Directions in Psychological Science*, *13*, 161–164.
- Hoover-Dempsey, K. V., Battiato, A. C., Walker, J. M. T., Reed, R. P., DeJong, J. M., & Jones, K. P. (2001). Parental involvement in homework. *Educational Psychologist*, *36*, 195–209.
- Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, *6*, 1–55.
- Katz, I., Kaplan, A., & Gueta, G. (2010). Students' needs, teachers' support, and motivation for doing homework: A cross-sectional study. *The Journal of Experimental Education*, *78*, 246–267.
- Lubbers, M. J., Van der Werf, M. P. C., Kuyper, H., & Hendriks, A. A. J. (2010). Does homework behavior mediate the relation between personality and academic performance? *Learning and Individual Differences*, *20*, 203–208.
- Maas, C. J. M., & Hox, J. J. (2005). Sufficient sample sizes for multilevel modeling. *Methodology*, *1*, 86–92.
- Murillo, F. J., & Martínez-Garrido, C. (2013). Homework influence on academic performance. A study of Iberoamerican students of primary education. *Revista de Psicodidáctica*, *18*, 157–171.
- Muthen, B. O., & Satorra, A. (1995). Complex sample data in structural equation modeling. *Sociological Methodology*, *25*, 267–316.

- Núñez, J. C., Suárez, N., Cerezo, R., González-Pienda, J. A., Rosário, P., Mourão, R., & Valle, A. (2013). Homework and academic achievement across Spanish compulsory education. *Educational Psychology*. Advance online publication. doi:10.1080/01443410.2013.817537
- Oubrayrie-Roussel, N., & Safont-Mottay, C. (2011). Adolescent homework management strategies and perceptions of parental involvement. *International Journal About Parents in Education*, 5, 78–85.
- 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.
- Raftery, A. E. (1993). Bayesian model selection in structural equation models. In K. A. Bollen & J. S. Long (Eds.), *Testing structural equation models* (pp. 163–180). Newbury Park, CA: Sage.
- Ronning, M. (2011). Who benefits from homework assignments? *Economics of Education Review*, 30, 55–64.
- Rosário, P., Mourão, R., Baldaque, M., Nunes, T., Núñez, J. C., González-Pienda, J. A., . . . Valle, A. (2009). Homework, self-regulated learning and math achievement. *Revista de Psicodidáctica*, 14, 179–192.
- Tam, V. C. (2009). Homework involvement among Hong Kong primary school students. *Asian Pacific Journal of Education*, 29, 213–227.
- Trautwein, U. (2007). The homework-achievement relation reconsidered: Differentiating homework time, homework frequency, and homework effort. *Learning and Instruction*, 17, 372–388.
- Trautwein, U., & Köller, O. (2003). The relationship between homework and achievement—still much of a mystery. *Educational Psychology Review*, 15, 115–145.
- Trautwein, U., Köller, O., Schmitz, B., & Baumert, J. (2002). Do homework assignments enhance achievement? A multilevel analysis of 7th grade mathematics. *Contemporary Educational Psychology*, 27, 26–50.
- Trautwein, U., & Lüdtke, O. (2009). Predicting homework motivation and homework effort in six school subjects: The role of person and family characteristics, classroom factors and school track. *Learning and Instruction*, 19, 243–258.
- Trautwein, U., Lüdtke, O., Kastens, C., & Köller, O. (2006). Effort on homework in grades 5 through 9: Development, motivational antecedents, and the association with effort on class-work. *Child Development*, 77, 1094–1111.
- 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.
- Trautwein, U., Niggli, A., Schnyder, I., & Lüdtke, O. (2009). Between-teacher differences in homework assignments and the development of students' homework effort, homework emotions, and achievement. *Journal of Educational Psychology*, 101, 176–189.
- Trautwein, U., Schnyder, I., Niggli, A., Neumann, M., & Lüdtke, O. (2009). Chameleon effects in homework research: The homework-achievement association depends on the measures used and the level of analysis chosen. *Contemporary Educational Psychology*, 34, 77–88.
- Vallejo, G., Tuero-Herrero, E., Núñez, J. C., & Rosário, P. (2014). Performance evaluation of recent information criteria for selecting multilevel models in behavioral and social sciences. *International Journal of Clinical and Health Psychology*, 14, 48–57.
- Wagner, P., Schober, B., & Spiel, C. (2007). Time students spend working at home for school. *Learning and Instruction*, 18, 309–320.
- Walberg, H. J. (1991). Does homework help? *The School Community Journal*, 1, 13–15.
- Walberg, H. J., Paschal, R. A., & Weinstein, T. (1985). Homework's powerful effects on learning. *Educational Leadership*, 42, 76–79.
- Warton, P. M. (2001). The forgotten voices in homework: Views of students. *Educational Psychologist*, 36, 155–165.
- West, S. G., Finch, J. F., & Curran, P. J. (1995). Structural equation models with non-normal variables: Problems and remedies. In R. Hoyle (Ed.), *Structural equation modeling: Concepts, issues and applications*, (pp.56–75). Newbury Park, CA: Sage.
- Xu, J. (2006). Gender and homework management reported by high school students. *Educational Psychology*, 26, 73–91.
- Xu, J. (2005). Purposes for doing homework reported by middle and high school students. *The Journal of Educational Research*, 99, 46–55.
- Xu, J. (2007). Middle-school homework management: More than just gender and family involvement. *Educational Psychology*, 27, 173–189.
- Xu, J. (2010). Predicting homework time management at the secondary school level: A multilevel analysis. *Learning and Individual Differences*, 20, 34–39.
- Xu, J. (2011). Homework completion at the secondary school level: a multilevel analysis. *The Journal of Educational Research*, 104, 171–182.
- Xu, J., & Corno, L. (2006). Gender, family help, and homework management reported by middle school students. *Journal of Research in Rural Education*, 21, 1–13.
- Xu, J., & Wu, H. (2013). Self-regulation of homework behavior: homework management at the secondary school level. *The Journal of Educational Research*, 106, 1–13.
- Xu, J., & Yuan, R. (2003). Doing homework: Listening to students', parents', and teachers' voices in one urban middle school community. *School Community Journal*, 13, 25–44.

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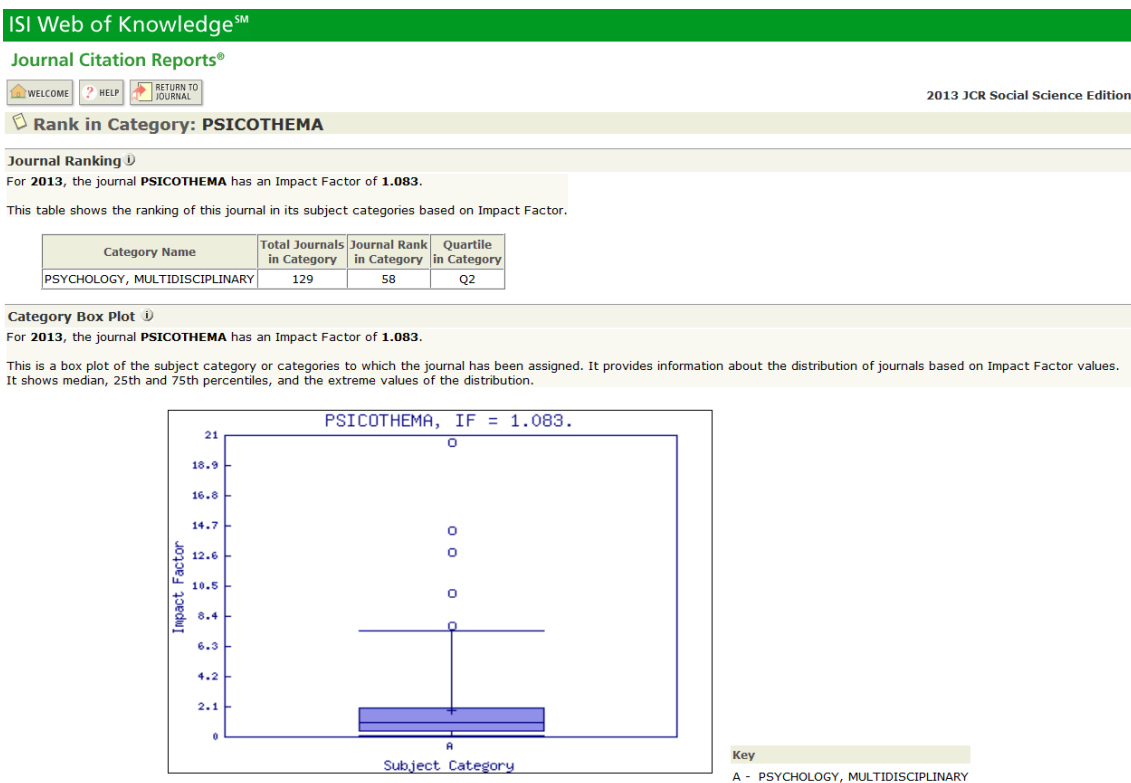
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4.1.3. Publicación III

Cunha, J., Rosário, P., Macedo, L., Nunes, A.R., Fuentes, S., Pinto, R., & Suárez, N. (2015). Parents' conceptions about their homework involvement in elementary school. *Psicothema*, (DOI: 10.7334/psicothema2014.210)

Homework is a universal practice used in schools, and is commonly related to academic achievement. According to literature, parental homework involvement has positive and negative aspects, depending on parents' behaviors. Assuming a phenomenographic perspective, this study examined 4th graders parents' conceptions about parents involvement in homework. With the purpose of mapping the various parents' conceptions on homework involvement, semi-structured interviews were conducted and analyzed. The results show that parents' conceptions of homework involvement have a positive meaning, and focus primarily on the role played on the promotion of academic learning by (a) fostering their children's autonomy, (b) exerting control over their learning, and (c) providing them emotional encouragement. Furthermore, educational implications are addressed.



Parents' conceptions about their homework involvement in elementary school

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Abstract

Background: Homework is a universal practice used in schools, and is commonly related to academic achievement. According to literature, parental homework involvement has positive and negative aspects, depending on parents' behaviors. **Method:** Assuming a phenomenographic perspective, this study examined 4th graders' parents' conceptions about their involvement in homework. With the purpose of mapping the parents' various conceptions of homework involvement, 32 semi-structured interviews were conducted and analyzed. **Results:** The results show that parents' conceptions of homework involvement have a positive meaning, and focus primarily on the role played in the promotion of academic learning by (a) fostering their children's autonomy, (b) exerting control over their learning, and (c) providing them with emotional encouragement (when children struggle with difficulties). **Conclusions:** Given that parents perceive their involvement in their children's homework as important, it is necessary to promote parent-teacher collaboration and parent-training workshops to improve the quality of parental homework involvement.

Keywords: Conceptions, parental involvement, homework, phenomenography.

Resumen

Concepciones de los padres sobre su implicación en los deberes en la escuela primaria. Antecedentes: los deberes escolares son una práctica universal utilizada en la mayoría de las escuelas y que está frecuentemente asociada al rendimiento académico. Uno de los pilares básicos en esta asociación es la implicación de los padres. Sin embargo, los datos de la investigación pasada indican que la implicación parental puede tener efectos positivos y negativos, dependiendo del tipo de implicación. **Método:** desde una perspectiva fenomenográfica, con el propósito de mapear las distintas concepciones de los padres sobre su implicación en los deberes escolares, fueron realizadas entrevistas semiestructuradas a 32 padres de alumnos de 4.º de Educación Primaria. **Resultados:** los padres participantes en el estudio presentan una perspectiva positiva de su implicación en los deberes escolares y el aprendizaje académico. Los datos obtenidos indican que los padres pueden implicarse para: a) promocionar la autonomía de los niños; b) controlar el aprendizaje y sus resultados; y c) aportar apoyo motivacional y emocional (principalmente en presencia de dificultades). **Conclusiones:** dado que los padres perciben importante su implicación en los deberes escolares de los hijos, es necesario promover la colaboración entre los padres y profesores y talleres de formación de padres para mejorar la calidad de su implicación en los deberes.

Palabras clave: concepciones, implicación de los padres, los deberes, fenomenografía.

Homework is one of the most popular and frequent instructional tools used in home-based involvement, and it is a task in which parents are involved more directly in their child's learning (Katz, Kaplan, & Buzukashvily, 2011; Wilder, 2014). However, research on parental involvement in homework is still inconclusive concerning its effects (Pattall, Cooper, & Robinson, 2008; Wilder, 2014; Wingard & Forsberg, 2009). While some authors advocate parents' involvement as a positive practice, as it can enhance academic achievement, others describe this support as a mere time-consuming exercise, which frequently generates discomfort, anxiety, and conflict in the family due to fighting

over homework (Cooper, 2001; Murray et al., 2006; Pattall et al., 2008).

These inconclusive findings could be due to the different parents' behaviors when they are involved in their child's homework (Dumont et al., 2012; Dumont, Trautwein, Nagy, & Nagengast, 2014; Karbach, Gottschling, Spengler, Hegewald, & Spinath, 2013). Thus it would be relevant to study parents' conceptions of parental involvement in homework, as their conceptions of parenting influence their parenting behaviors (e.g., Simons, Beaman, Conger, & Chao, 1993). The present study aims at deepening our understanding of the role of parental involvement in homework by analyzing parents' discourses from a phenomenographic perspective.

Parental homework involvement practices

Previous studies had already explored the ways parents become involved in their children's homework from elementary

school to high school level (e.g., see Hoover-Dempsey, Bassler, & Burow, 1995; Hoover-Dempsey et al., 2001; Xu & Corno, 1998). Walker, Hoover-Dempsey, Whetsel, and Green (2004) summarized parental homework involvement into 8 practices: interaction with the teacher (e.g., communication about students' homework); structuring children's homework completion (e.g., organizing materials); general homework supervision; responding to children's homework performance (e.g., correcting homework); engaging in specific tasks (e.g., teaching, "working with"); modeling meta-strategies related to "the task and student's knowledge, skills, and abilities" (e.g., breaking tasks into small steps); supporting students' understanding of homework (e.g., checking for understanding), and modeling "meta-strategies to help the student learn processes conducive to achievement" (e.g., encouraging self-monitoring) (p. 2).

Pomerantz, Moorman, and Litwack (2007), for example, organized parents' involvement in homework into four qualitatively different, but dynamically related, dimensions: *autonomy support versus control* (parents supporting children in developing their own schedules for doing homework vs. parents making decisions without children's input); *process versus person focus* (parents helping children focus on the process of mastering the school work vs. parents emphasizing achievement); *positive versus negative affect* (parents who establish a sense of connectedness with the children by maintaining positive affect and intrinsic motivation vs. parents who are hostile and critical while checking children's homework); and *positive versus negative beliefs about children's potential* (parents trusting their children capabilities to do well vs. parents focusing on avoiding complete failure). Lorenz and Wild (2007) proposed instead the following four different dimensions of homework parental involvement: *autonomy supportive practices* (encouragement of self-initiated homework activities), a dimension that was conceptualized as separate from *control* (e.g., pressure on children to complete their homework assignments, providing direct instructions that undermine autonomous behavior); *structure* (parents' organization of the homework environment); and *emotional involvement* (e.g., parental readiness to acknowledge children's feelings about homework).

The study of parental homework involvement according to the previous dimensions is important because students' academic outcomes are positively and negatively related to the quality of parental involvement. For this reason, meta-analyses probably only show a moderate effect size of the relationship between parental involvement (i.e., including interest in and guidance of homework) and students' academic achievement (see Hattie, 2009). For example, parental support perceived by students and parental support for children's autonomy reported by parents were associated with students' higher academic achievement, whereas parent-child conflict about homework perceived by students or interference with children's autonomy reported by parents were negatively associated with educational outcomes (Cooper, Lindsay, & Nye, 2000; Dumont et al., 2012). Furthermore, the association between the quality of parental homework involvement and student achievement proved to be mediated by grade level. Findings in middle and high school on the relationship between homework parental involvement and achievement are consistent, whereas in elementary school data are contradictory (see Chen, 2008; Núñez, Suárez, Rosário, Vallejo, & Epstein, submitted; Patall, Cooper, & Robinson, 2008). Thus, further research is needed to overcome these inconclusive findings in elementary school.

The study of parents' conceptions about their involvement in homework can contribute to deepening our understanding of the support behaviors parents report when helping their children with the school tasks. To our knowledge, research often neglects the parents' perspective (see Fan, 2013; Kaplan, 2005), and the analysis of parents' conceptions about the nature and importance of their involvement in homework is limited (Pomerantz & Grolnick, 2009). In fact, Patall and colleagues (2008) called for qualitative studies analyzing the reasons for parents to become involved at each grade level and the quality of the help provided, in order to discuss the mixed results found. As an answer to this call, our study intends to explore the complex social phenomenon of parental involvement from the parents' perspective.

The current research aims to understand how parents of fourth-grade students conceptualize their involvement in their children's homework, and to understand how parents report their involvement in their children's homework.

Method

Participants

Out of the 230 parents from the 4th-grade students of three Portuguese public schools, 50 were randomly chosen and invited to participate in the research. In Portuguese school system, the fourth grade is the last grade of elementary school (9-year-olds). Globally, the invited families are lower-middle class (41% of the students receive free or reduced-price lunches). An invitation letter explaining the objectives of the study was sent to the 50 families by the school principals. Forty parents responded positively, but only thirty-two attended the interviews on the agreed date. The interviews were conducted with all parents who attended on the scheduled date (12 males and 20 females aged between 35 and 50 years). At that time, 85% of the parents were working while the remaining ones were unemployed. All the participants signed an informed consent form before the interview.

Instruments

An individual semi-structured interview, lasting 25 to 30 minutes was conducted with all of the participants. All of them answered three questions: (a) In your opinion, what does parental involvement in children's homework mean?; (b) How do you think parents should become involved in their children's homework?; and (c) Why do you think parents can become more or less involved in their children in homework?

These three questions set the basis for the discussion with the participants about the phenomenon of parental involvement in children's homework. During the interviews, the participants were encouraged to reflect on and explain their statements on parental involvement in homework.

Procedure

This study followed a phenomenographic design to analyze the parents' conceptions of involvement in their children's homework. Within the phenomenography framework, research adopts a second-order perspective, as the data collected are to be examined through the participants' perspective and not through the researcher's (Marton, 1986; Harris, 2011b). Marton (1981, 1986)

explained that a conception refers to actual experiences, reflecting how individuals see or understand that experience. Marton and Pong (2005) indicate that a conception presents two aspects: the referential aspect (i.e., revealing the global significance of the object that is conceptualized), and the structural aspect (i.e., disclosing the combination of features that are intended to distinguish and focus on the concept). The latter is composed of *what* and *how* aspects (see Harris, 2011b; Pramling, 1983; Rosário et al., 2013).

In the current study, the *what* and *how* aspects (Harris, 2011a, b; Pramling, 1983; Rosário et al., 2013) were used to examine the conceptions of parents' involvement in homework. In parents' discourses, the *what* aspect is related to the participants' understanding of the phenomenon (i.e., parents' perception of parental involvement in homework), and the *how* aspect refers to their conceptions of the behaviors that facilitate their involvement in homework.

In phenomenographic studies, data is usually collected through recorded interviews (Sin, 2010), in which the participant is encouraged to elaborate on his/her own speech. The main purpose of the researcher is to collect as complete and detailed information as possible, in order to deepen understanding of the participant's knowledge of the phenomenon. All the interviews were conducted by the second author, taped on a laptop, and transcribed *verbatim* afterwards.

Data analysis

Although the data were analyzed from the participants' perspective and not from the researcher's (Marton, 1986), it is

not possible to completely eliminate the subjectivity inherent to this process. However, data were not categorized according to the literature, but instead, categories were developed using participants' own words. To increase the reliability of the analysis process, the first author presented the process followed in the data analysis and the results to a group of expert researchers on the topic of students' approaches to learning, receiving several inputs and suggestions.

The data analysis followed two main steps (Marton, 1986). The first step concerned the creation of pools of meaning (Harris, 2011a), which were subsequently abstracted into categories of description (Marton, 1981). These categories of description represent the different forms in which the participants experience the phenomenon. The second step comprised the organization of the categories of description in the outcome space, which includes all the possible descriptors of the phenomenon as experienced by the participants (Rosário et al., 2013).

After the complete transcript of each interview, and several integral readings of all of the data, the different utterances were compared and subsequently organized into pools of meaning according to the *what* and *how* aspects (Pramling, 1983). In this step, two indicators were used to facilitate the collection of relevant information: (a) frequency (how often an idea is articulated by the participants), and (b) position (position of the statement in the discourse. In fact, the relevant elements are often at the beginning of each response) (Harris, 2011a).

After establishing pools of meaning, the utterances within the pools were compared and contrasted, leading to changing some data

Table 1
Outcome space

Conception (What)	Description	Example	Conception (How)	Description	Example
Promoting autonomy	Helping children to be autonomous and responsible in carrying out their tasks	Parents must promote the autonomy and creativity of their children.... (CF6) Parents can help them to control the distractions in the house, and to assume responsibility for their work. (AC1)	Subsidiarity	Not doing homework for children	I must help him to structure the information to find the best way to solve the exercises, while not losing sight that he is the student, not me. (CF5) I help him to interpret the meaning of the math problems, but he solves the exercises. (LP13)
Learning control	Acknowledging the children's level of content knowledge and their main difficulties when doing homework	When parents are helping their children doing homework, they can follow the content topics children are learning in school. When I see his notebooks, I see it all... (GD11)	Collaboration	Teaching strategies for solving exercises, and modeling study behaviors	For example, parents could help children to interpret texts and explain the grammar questions, or read the written essays to check inconsistencies and mistakes. (FC10) Usually children have difficulties to understand what to do, where to start doing the tasks. For example, cleaning the desk is always a good start. (AP2)
Learning incentive	Helping to ensure that children do their work and grow better students	Parents can help their children to consolidate the skills acquired in school and reinforce them to continue working. (PC17)	Controlling emotions	Displaying strategies to help the children to cope with discouragement and negative emotions	Whenever she is in despair or stuck, I encourage her by saying, for example, "I know you can do it", or "do you remember the last time? In the end you could finish the task" (PF18)...

from the pool. Following Marton (1981), when all the cases within the pools of meaning are aligned, and the criteria for each pool of meaning is clear and stable, data in each pool is abstracted into categories of description. Finally, the organization of the categories of description is displayed in the outcome space (Sin, 2010).

In the outcome space the *what* and *how* categories are aligned. The level of alignment between the categories is considered high when the participants' utterance contains the *what* and *how* aspects (Harris, 2011a). In phenomenographic studies, once the outcome space summarizes all possibilities of describing the phenomenon for that group of participants, replication is not a condition for the validation of the results (Marton, 1986). For this same reason, and following the phenomenographic tradition, inter-judge reliability was not used in this investigation (Sandberg, 1997).

Results

Data analysis produced six categories relating the participants' conceptualization of parents' involvement in homework. Three categories are related to the *what* aspect, and describe the participants' understanding of parental involvement in homework. The other three categories are related to the *how* aspect, and describe how participants conceptualize parents' involvement in homework. The description of these categories and their correspondence are presented in Table 1.

What aspect categories

The *what* aspect categories seek to describe how participants define their involvement in their children's homework. In the first *what* aspect category, *promoting autonomy*, parental support in homework is described as an opportunity to develop a sense of independence and responsibility in their children while doing homework.

"Parents should encourage autonomy, and children must play their role. They [children] need to create routines. Creating habits; working methods... help them to be more responsible." (CF6)

In this example, parental involvement is seen as an enabler of autonomy. Participants emphasized that parents should be available to provide support by facilitating the conditions that make the work more effective. However, the students are the ones who must perform the school-work.

In the second *what* aspect category, *learning control*, homework is seen as a tool with instructional utility, allowing parents to control the level of knowledge content mastered, but also the learning process followed and the difficulties experienced along that instructional path.

"I know what is best for [A.]. When he is having difficulties I show him candies to help him focus" (PC19)

Finally, the last *what* aspect category, *learning incentive*, describes involvement as an enabler of school success. For example, parents could help their children to resist discouragement, avoid skipping homework or postponing it until the evening. One participant justified the importance of parental involvement in homework as follows:

"I consider [parents' involvement] important because it helps children to understand the importance of learning and working hard (...) Also, the parents' help prevents the children from postponing homework until evening." (PF18)

Participants characterized parents' involvement as a key factor to maintain children focused on homework, reinforcing the idea that parents' involvement prevents children from postponing homework. In the participants' words, the control of the children's work appears closely related to children's motivation for academic achievement.

In sum, in the *what* aspect categories of description, participants conceptualize parents' involvement in homework as a useful and effective tool to promote their children's academic success. The incentive and motivation to study, and the control and monitoring of the learning activities enabling children to perform better at school are aspects highlighted by participants as essential to their conceptualization of parental involvement.

How aspect categories

The three categories regarding the *what* aspect, previously described and analyzed, are closely related to the three *how* aspect categories: *subsidiarity*, *collaboration*, and *controlling emotions*. These categories describe how parents report engaging with their children during homework completion.

In the first *how* aspect category, *subsidiarity*, parents reported that, in order to help children to be autonomous in their homework, they should not do their children's homework. Parents doing their children's homework was considered an ineffective strategy, as children will not learn to assume responsibility and autonomy in their schoolwork, as suggested by the following example:

"When doing homework with my son, I do not solve the problems or write down the answers (...) in the end, he has to do it by himself, otherwise he won't learn." (CF5)

The second *how* aspect category, *collaboration*, describes the willingness of parents to help the children to study, organizing the study environment and teaching them relevant learning strategies to complete their tasks. The selection and organization of the core information for completing homework are examples of the strategies mentioned by parents as important to facilitate their children's work.

"I'm always available and near him to see what happens. When I see mistakes or incomplete answers, we, my son and I, correct the homework together, searching for alternatives and creative solutions." (CF6)

The last *how* aspect category, *controlling emotions*, is directly related to the parents' actions to cope with children's negative emotions while doing homework. In situations of emotional distress (e.g., tantrums, sobbing), parents report displaying emotional control strategies (e.g., changing to a different task, lowering the voice to calm the child, allowing a break) to help children remain focused on the task, even in difficult situations when children do not believe they are capable of accomplishing the task. These strategies of emotional control are referred to by parents as aids for children to assume the control of tasks, predisposing them to complete their work in time.

"One day M. couldn't find the answer to a few questions and told me in tears:" I do not know, I do not know... " (...) I said: "If you do not know ... let it go. Go to the bathroom and take your bath, have dinner, and then you'll start again." (FC10)

Within the three *how* aspect categories described above, participants referred to a set of overt behaviors (e.g., teaching learning strategies to overcome difficulties, and encouraging the continuation of the task) as evidence of parents' involvement in homework. Participants stressed the idea that it is important for their children to develop the ability to work autonomously and to cope with distress adequately.

Discussion

As presented above, Category 1 from both the *what* and *how* aspects is aligned and linked. Within these two categories, parents focused on the importance of encouraging an autonomous and responsible study behavior. Parents discussed the importance of not doing the homework for their children, even in the presence of difficult questions or problems. Instead, parents defended the need to guide their children toward the correct answer, scaffolding their study behavior (Hoover-Dempsey et al., 1995). Participants believe that their educational involvement fosters their children's academic learning. This idea is corroborated by Epstein, Simon, and Salinas (1997), and Cooper and colleagues (2000), whose results indicate that parental involvement improves children's learning habits and their performance in homework.

Category 2 in the *what* aspect is related to Category 2 in the *how* aspect. These categories stress the relevance of parents' helping with the children's learning, and also the prospect that, as a result of their involvement, parents can recognize children's content gaps and difficulties while doing homework. For this reason, participants emphasized the need for providing children with learning strategies to cope with personal study (e.g., mind maps, time management), homework, and distractors (Wilder, 2014).

Lastly, Category 3 of the *what* aspect is aligned with Category 3 of the *how* aspect. Within these categories, participants emphasized aspects related to incentivizing children to study and deal with emotions while completing homework. Participants said that their assistance with homework helps the children to focus on the task, and reported using strategies such as positive reinforcement, encouragement, and praising to motivate the children. Hoover-Dempsey and colleagues (2001) found that parents' expression of positive beliefs towards homework encourages a more effective work done by the child.

Our collection of discourses on homework involvement by parents of elementary school ages analyzed from the phenomenographic framework, is not very different from middle and high school students' self-reports of their parents involvement (e.g., see Lorenz & Wild, 2007; Pomerantz et al., 2007). Thus, future studies could try to examine what may be contributing to the inconsistent findings in elementary school (see Chen, 2008; Núñez et al., submitted; Patall et al., 2008).

In the current study, participants talked extensively about their involvement in children's homework as a means of promoting their independence and encouraging and monitoring their learning. However, participating parents' did not follow Pomerantz et al. (2007) in conceptualizing autonomy and control as opposite ends

of a continuum. These two dimensions were conceptualized as separate, even though interrelated. Some parents acknowledged the importance of controlling children's behaviors (e.g., using extrinsic rewards to help children progress), while acknowledging the limited value of this strategy when the goal is to promote autonomy and intrinsic motivation. Promoting autonomy was conceptualized by the participating parents as more than avoiding excessive control (Silk, Morris, Kanaya, & Steinberg, 2003). To accomplish these educational goals, participants stressed the need to reduce educational assistance as soon as possible, as their children should assume the responsibility for their homework (Núñez et al., 2013). Moreover, parents also underlined the importance of collaborating with their children, for example organizing the learning environment and providing instructions and strategies to cope with homework tasks. These educational guidelines and learning strategies are especially important to help children learn how to self-regulate their learning (Núñez, Rosário, Vallejo, & González-Pienda, 2013; Rosário, Núñez et al., 2010; Rosário, González-Pienda, et al., 2010). This finding is aligned with the dimensions called "supportive control" by Baumrind (1991), and "structure" by Lorenz and Wild (2007).

However, children often present difficulties and display negative emotions while completing homework, as participants noted. Parents also stressed the need to be sensitive to children's feelings during the completion of the task, and to display emotional control strategies whenever necessary. In spite of acknowledging the importance of helping their children to control the emotions, which is aligned with the dimension of "emotional involvement" described by Lorenz and Wild (2007), participants revealed some difficulties to console and encourage the children to continue working.

"I know I shouldn't shout at my son because of homework. It is wrong, and doesn't help to overcome the situation...but sometimes he drives me crazy" (CH3)

Thus, future studies should analyze in depth the difficulties associated with the process of helping children with homework by exploring the conditions that may interfere with the nature and quality of that involvement. In the current study, the majority of participants presented a positive perspective of parental involvement, focusing on the "bright side" of their involvement. However, students and teachers often report pressure whenever parents are involved in homework (e.g., Patall et al., 2008). Thus, the emerging categories of this study show the need to conduct more detailed qualitative studies to explore "all sides" of parental homework involvement (e.g., observations, videotaping).

In general, our results are consistent with parental involvement practices in their children's homework as reported in the literature (Hoover-Dempsey et al., 1995, 2001), but participants focused only parental involvement directly related to the moment of homework completion and did not refer to other ways of becoming involved in their children's homework (e.g., consultations with their children's teacher about student homework difficulties and progress) (see Walker et al., 2004). Cooperation between parents and teachers can be used as a tool to overcome children's specific difficulties, including homework (e.g., Christenson, 1995). Parents can talk about their concerns to teachers so they can work with the children in classroom and/or teachers can offer some strategies for parents to use with their children at home (e.g., Hoover-Dempsey et al., 1995).

It is also important to analyze our findings in light of some limitations that should be acknowledged. The nature of this study, the instrument used, and the limited number of participants do not allow generalization of the results. Studies conducted with parents with other opinions about homework would probably have obtained different results. Converging multiple sources of data is probably the key for developing a comprehensive understanding of the phenomenon.

There are some educational implications derived from our findings.

First, it would be useful to promote parent-teacher collaboration in order to facilitate communication about students' homework behaviors and performance. Strengthening this partnership would foster parents' efforts to help their children and would improve children's homework process. Secondly, schools should offer training programs for parents addressing the core aspects of parents' involvement (e.g., training in how to prevent and cope with children's emotional distress; parental pressure). Despite parents' discourse of promoting their children's autonomy, students seem to be at an observational or imitative level of self-regulatory

development, as they still depend on their parents' guidance (see Schunk & Zimmerman, 1997). Parents' training could address this issue and equip them to help their children to become more self-regulated learners.

These educational courses, following a practical and experiential format (e.g., case study method), could provide real opportunities for parents to reflect upon the *how* and the *what* of their involvement (Cooper, 2001) (e.g., discussing positive and negative aspects of teaching their children problem-solving techniques far beyond their grade level against the teacher guidelines; types of rewards given; strategies to cope with emotional distress). An evidence-based orientation will prevent these workshops from following a recipe format, and may enhance the benefits associated with both the completion of homework and parental involvement in school education (Cooper, 2001; Hoover-Dempsey et al., 2001).

In conclusion, deepening our understanding about conceptions and parental practices allow data to be used for the design of effective school-based programs and questionnaires on parental involvement in homework, fostering the quality of the educational process and improving students' academic results (Wilder, 2014).

References

- Baumrind, D. (1991). The influence of parenting style on adolescent competence and substance use. *Journal of Early Adolescence*, 11, 56-95.
- Chen, J. (2008). Grade level differences: Relations of parental, teacher and peer support to academic engagement and achievement among Hong Kong students. *School Psychology International*, 29, 183-198.
- Christenson, S.L. (1995). Best practices in supporting home-school collaboration. In A. Thomas & J. Grimes (Eds.), *Best practices in school psychology III* (pp. 253-267). Washington, DC: National Association of School Psychologists.
- Cooper, H. (2001). *The battle over homework: Common ground for administrators, teachers, and parents* (2nd ed.). Thousand Oaks, CA: Sage Publications.
- Cooper, H., Lindsay, J.J., & Nye, B. (2000). Homework in the home: How student, family, and parenting-style differences relate to the homework process. *Contemporary Educational Psychology*, 25, 464-487.
- Dumont, H., Trautwein, U., Lüdtke, O., Neumann, M., Niggli, A., & Schnyder, I. (2012). Does parental homework involvement mediate the relationship between family background and educational outcomes? *Contemporary Educational Psychology*, 37, 55-69.
- Dumont, H., Trautwein, U., Nagy, G., & Nagengast, B. (2014). Quality of parental homework involvement: Predictors and reciprocal relations with academic functioning in the reading domain. *Journal of Educational Psychology*, 106(1), 144-161.
- Epstein, J.L., Simon, B.S., & Salinas, K.C. (1997). Involving parents in homework in the middle grades. *Research Bulletin*, 18 (September). Bloomington, IN: Phi Delta Kappa, CEDR.
- Fan, Q. (2013). *Parents' perceptions and practices in homework: Implications for school-teacher-parent partnerships* (Unpublished doctoral dissertation). University of Illinois, Chicago, IL.
- Harris, L.R. (2011a). Secondary teachers' conceptions of student engagement: Engagement in learning or in schooling? *Teaching and Teacher Education*, 27, 376-386.
- Harris, L.R. (2011b). Phenomenographic perspectives on the structure of conceptions: The origins, purposes, strengths, and limitations of the what/how and referential/structural frameworks. *Educational Research Review*, 6, 109-124.
- Hattie, J. (2009). *Visible learning: A synthesis of over 800 meta-analyses relating to achievement*. New York: Routledge.
- Hoover-Dempsey, K.V., Bassler, O.C., & Burow, R. (1995). Parents' reported involvement in students' homework: Strategies and practices. *Elementary School Journal*, 95, 435-450.
- Hoover-Dempsey, K.V., Battiato, A.C., Walker, J.M.T., Reed, R.P., DeJong, J.M., & Jones, K.P. (2001). Parental involvement in homework. *Educational Psychologist*, 36, 195-209.
- Kaplan, C.L. (2005). *Perceptions and practices of homework in Mexican immigrant families* (Unpublished doctoral dissertation). University of Illinois, Chicago, IL.
- Karbach, J., Gottschling, J., Spengler, M., Hegewald, K., & Spinath, F.M. (2013). Parental involvement and general cognitive ability as predictors of domain-specific academic achievement in early adolescence. *Learning and Instruction*, 23, 43-51.
- Katz, I., Kaplan, A., & Buzukasshvil, T. (2011). The role of parents motivation in students autonomous motivation for doing homework. *Learning and Individual Differences*, 21, 376-386.
- Lorenz, F., & Wild, E. (2007). Parental involvement in schooling – results concerning its structure and impact on students' motivation. In M. Prenzel & L. Allolio-Näcke (Eds.), *Studies on the quality of schools* (pp. 299-316). Münster: Waxmann.
- Marton, F., & Pong, W.Y. (2005). On the unit of description in phenomenography. *Higher Education Research & Development*, 24, 335-348.
- Marton, F. (1981). Phenomenography - Describing conceptions of the world around us. *Instructional Science*, 10, 177-200.
- Marton, F. (1986). Phenomenography – A research approach to investigating different understanding of reality. *Journal of Thought*, 21(3), 28-49.
- Murray, L., Woolgar, M., Martins, C., Christaki, A., Hipwell, A., & Cooper, P. (2006). Conversations around homework: Links to parental mental health, family characteristics and child psychological functioning. *British Journal of Developmental Psychology* 24, 125-149.
- Núñez, J.C., Suárez, N., Rosário, P., Vallejo, G., & Epstein, J.L. (submitted). Relationships between parental involvement in homework, student homework behaviors, and academic achievement: Differences among elementary, junior high, and high school students. *Metacognition and learning*.
- Núñez, J., Rosário, P., Vallejo, G., & González-Pienda, J. (2013). A longitudinal assessment of the effectiveness of a school-based mentoring program in middle school. *Contemporary Educational Psychology*, 38, 11-21.
- Núñez, J., Suárez, N., Cerezo, R., González-Pienda, J., Rosário, P., Mourão, R., & Valle, A. (2013). Homework and academic achievement across Spanish Compulsory Education. *Educational Psychology*.
- Patall, E.A., Cooper, H., & Robinson, J.C. (2008). Parental involvement in homework: A research synthesis. *Review of Educational Research*, 78, 1039-1101.

- Pomerantz, E.M., & Grolnick, W.S. (2009). Toward a clear and inclusive conceptualization of parental control: Reply to the commentaries. *Child Development Perspectives*, 3, 176-177.
- Pomerantz, E.M., Moorman, E.A., & Litwack, S.D. (2007). The how, whom and why of parents' involvement in children's academic lives: More is not always better. *Review of Educational Research*, 77, 373-410.
- Pramling, I. (1983). *The child's conceptions of learning*. Goteborg: Acta Universitatis Gothoburgensis.
- Rosário, P., González-Pienda, J.A., Pinto, R., Ferreira, P., Lourenço, A., & Paiva, O. (2010). Efficacy of the program "Testas's (mis)adventures" to promote the deep approach to learning. *Psicothema*, 22(4), 828-834.
- Rosário, P., Núñez, J.C., Azevedo, R., Cunha, J., Pereira, A., & Mourão, R. (2013). Understanding gypsy children's conceptions of learning: A phenomenographic study. *School Psychology International*.
- Rosário, P., Núñez, J.C., González-Pienda, J., Valle, A., Trigo, L., & Guimarães, C. (2010). Enhancing self-regulation and approaches in first-year college students: A narrative-based program assessed in the Iberian Peninsula. *European Journal of Psychology of Education*, 25, 411-428.
- Sandberg, J. (1997). Are phenomenographic results reliable? *Higher Education Research & Development*, 16, 203-212.
- Schunk, D., & Zimmerman, B. (1997). Social origins of self-regulatory competence. *Educational Psychologist*, 32(4), 195-208.
- Silk, J.S., Morris, A.S., Kanaya, T., & Steinberg, L. (2003). Psychological control and autonomy granting: Opposite ends of a continuum or distinct constructs? *Journal of Research on Adolescence*, 13, 113-128.
- Simons, R.L., Beaman, J., Conger, R.D., & Chao, W. (1993). Childhood experience, conceptions of parenting, and attitudes of spouse as determinants of parental behavior. *Journal of Marriage and the Family*, 55, 91-106.
- Sin, S. (2010). Considerations of quality in phenomenographic research. *International Journal of Qualitative Methods*, 9, 305-319.
- Walker, J.M.T., Hoover-Dempsey, K.V., Whetsel, D.R., & Green, C. (2004). Parental involvement in homework: A review of current research and its implications for teachers, after school program staff, and parent leaders. Cambridge, MA: *Harvard Family Research Project*. Retrieved October 8, 2004, from <http://www.gse.harvard.edu/hfrp/projects/fine/resources/research/homework.html>.
- Wilder, S. (2014). Effects of parental involvement on academic achievement: A meta-synthesis. *Educational Review*, 66(3), 377-397.
- Wingard, L., & Forsberg, L. (2009). Parent involvement in children's homework in American and Swedish dual-earner families. *Journal of Pragmatics*, 41, 1576-1595.

4.1.4. Publicación IV

Núñez, J.C., Suárez, N., Rosário, P., Vallejo, G., Valle, A., & Epstein, J.L. (2015). Relationships between perceived parental involvement in homework, student homework behaviors and academic achievement: differences among elementary, junior high and high school students. *Metacognition and Learning*, (DOI: 10.1007/s11409-015-9135-5)

This study aims to produce a deeper understanding of the relationship between perceived parental homework involvement (i.e., parental homework control and parental homework support), student homework behaviors (i.e., time spend on homework completion, time management, and amount of homework completed), and student academic achievement. Using Mplus5.1, a structural equation model was fit for 1683 students at different stages of schooling (i.e., elementary school–5th and 6th grades; junior high school–7th and 8th grades; and high school–9th and 10th grades). The data showed that student homework behaviors, perceived parental homework involvement, and academic achievement are significantly related. However, results vary depending on the students' grade level: (a) in junior high and high school, perceived parental homework involvement is related to students' homework behaviors, but not in elementary school; and (b) although students' homework behaviors are related to academic achievement at each school level, the direction and magnitude of the relationships vary. Specifically, the relationship between perceived parental homework involvement and academic achievement is stronger in junior high and high school than in elementary school; and student homework behaviors mediate the association between perceived parental homework involvement (control and support) and academic achievement only in junior high and high school.

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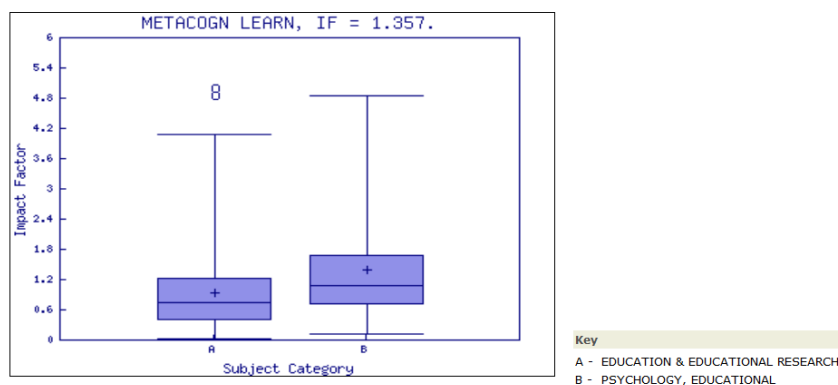
This table shows the ranking of this journal in its subject categories based on Impact Factor.

Category Name	Total Journals in Category	Journal Rank in Category	Quartile in Category
EDUCATION & EDUCATIONAL RESEARCH	219	38	Q1
PSYCHOLOGY, EDUCATIONAL	53	19	Q2

Category Box Plot [⌵]

For 2013, the journal **Metacognition and Learning** has an Impact Factor of 1.357.

This is a box plot of the subject category or categories to which the journal has been assigned. It provides information about the distribution of journals based on Impact Factor values. It shows median, 25th and 75th percentiles, and the extreme values of the distribution.



Relationships between perceived parental involvement in homework, student homework behaviors, and academic achievement: differences among elementary, junior high, and high school students

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Abstract This study aims to produce a deeper understanding of the relationship between perceived parental homework involvement (i.e., parental homework control and parental homework support), student homework behaviors (i.e., time spend on homework completion, time management, and amount of homework completed), and student academic achievement. Using Mplus5.1, a structural equation model was fit for 1683 students at different stages of schooling (i.e., elementary school—5th and 6th grades; junior high school—7th and 8th grades; and high school—9th and 10th grades). The data showed that student homework behaviors, perceived parental homework involvement, and academic achievement are significantly related. However, results vary depending on the students' grade level: (a) in junior high and high school, perceived parental homework involvement is related to students' homework behaviors, but not in elementary school; and (b) although students' homework behaviors are related to academic achievement at each school level, the direction and magnitude of the relationships vary. Specifically, the relationship between perceived parental homework involvement and academic achievement is stronger in junior high and high school than in elementary school; and student homework behaviors mediate the association between perceived parental homework involvement (control and support) and academic achievement only in junior high and high school.

Keywords Perceived parental control · Perceived parental support · Student homework behavior · Academic achievement

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Introduction

In the past decade, the importance of parental involvement in children's education has received considerable attention from researchers, educators, parents, politicians, and the media (Dearing et al. 2006; Desforges and Abouchaar 2003; Epstein et al. 2009; Fan and Chen 2001; Hill and Chao 2009; Hoover-Dempsey et al. 2001; Sheldon and Epstein 2002). However, despite attempts by teachers and administrators to encourage parents to become more involved with their children on completing homework as a way to improve academic achievement (Cooper 1989, 2001; Cooper et al. 2000; Hill and Tyson 2009), the results of previous research are not unanimous (Patall et al. 2008). Patall et al. (2008), for example, suggest that different patterns of results may be explained by the fact that parental involvement in homework is more directly related to intermediate variables (e.g., students' cognitions, goals, study habits) than to academic performance. In line with this argument, Dumont and colleagues (2012) found that relationships between parental homework involvement and students' motivational outcomes (i.e., academic self-concept and homework behavior) were stronger than the relationship between parental homework involvement and student achievement outcomes.

The present study was designed to deepen knowledge about the relationship between students' perceptions of parental homework involvement (i.e., perceived parental homework control and perceived parental homework support), student homework behavior (i.e., time spent on homework completion, time management, and amount of homework completed) and academic achievement in elementary, junior high and high school. In addition, we explored the mediating role of student behavior between perceived parental homework involvement and academic achievement.

Parental homework involvement and its relationship with students' academic achievement

Supporting children doing homework is one of the most common forms of parental involvement (Cooper 1989; Epstein 1988). Most parents assume that they should be involved with their children on homework. Although they may vary in their intentions, strategies, and actions, parents generally believe that helping their children with their homework is a parental responsibility (Epstein and Van Voorhis 2012; Hoover-Dempsey et al. 1995). However, findings from previous research on the relationship between parental homework involvement and students' educational outcomes are inconclusive. Results vary depending on factors such as the research design (Patall et al. 2008); the content domain (e.g., subject-specific vs. general homework and academic achievement, Epstein and Van Voorhis 2012; Van Voorhis 2011); different dimensions of the construct measured (Dumont et al. 2012; Dumont et al. 2013; Karbach et al. 2013); and student grade level (Cooper and Valentine 2001).

In a meta-analysis examining the type of research design, Patall et al. (2008) concluded that experimental studies provided strong evidence of positive causal effects of parent involvement on students' homework behavior and academic achievement. In three longitudinal studies, Van Voorhis (2011) found a positive relationship between parental homework involvement guided by a systematic intervention and students' academic performance in math, science, and language arts. However, studies using cross-sectional data found inconsistent effects of parental involvement in homework on student achievement. Similarly, although some studies using structural equation modeling (SEM) reported positive relationships between parental homework involvement and academic achievement (Cooper et al. 2001; Pomerantz and Eaton 2001), others found negative relationships, and still others reported mixed results (Dumont et al. 2012).

With respect to content domain, Epstein and colleagues found that the strength of the relationship between parental homework involvement and students' educational outcomes depended on whether parents were involved in "goal-linked" or "subject-specific" activities. For example, results for students' reading skills were stronger if families were engaged with students in reading-related homework activities.

Findings from studies of the relationship between parental homework involvement and students' educational outcomes highlighted the importance of the dimensions of parent involvement. In this regard, Dumont et al. (2012) suggested that "it is therefore crucial to distinguish between different dimensions of parental homework involvement and not to focus only on its quantity. Because different forms of parental homework involvement may have contrasting effects, an exclusive focus on the extent of parents' involvement may lead to erroneous conclusions about its effectiveness" (p. 64).

Pomerantz et al. (2005, 2007) indicated four qualitatively different but dynamically related dimensions of parent involvement in homework: *autonomy support vs. control* (i.e., parents support children in developing their own schedules for doing homework vs. parents make decisions without children's input); *process vs. person focus* (i.e., parents help children focus on the process of mastering the school work vs. parents emphasize achieving); *positive vs. negative affect* (i.e., parents establish a sense of connectedness with children by maintaining positive affect and intrinsic motivation vs. parents are hostile and critical when checking children's homework); and *positive vs. negative beliefs* about children's potential (i.e., parents trust their children capabilities to do well vs. parents focus on avoiding complete failure). Lorenz and Wild (2007), on the other hand, proposed four different dimensions of parental involvement in homework as follows: *autonomy supportive practices* (i.e., parents encourage self-initiated homework activities); *control* (i.e., parents pressure children to complete their homework assignments and issue instructions that undermine autonomous behavior), *structure* (i.e., parents organize the homework environment), and *emotional involvement* (i.e., parents acknowledge children's feelings about homework).

Investigating parental involvement from a multidimensional perspective, Dumont et al. (2012) found both positive and negative relationships of different measures of students' perceptions of the quality of parental homework involvement (e.g., support, conflict, competence) with different educational outcome measures (e.g., achievement subject, academic self-concept, attitudes toward school work). These researchers found stronger positive relationships of parental homework involvement with students' motivational outcomes than with achievement outcomes. They also found that the relationship was different depending on the nature of parental involvement. For example, perceived parent-child conflict about homework was negatively associated with students' educational outcomes, whereas perceived parental competence and support were positively related with school outcomes.

Similar results were reported by Karbach et al. (2013), who found, on one hand, that academic achievement in math and German was significantly negatively associated with parental control and parental structure (i.e., excessive control and pressure on children to complete assignments as well as clear and consistent guidelines and rules about homework and school work). They also found that academic achievement was not explained by parental autonomy or by parental responsivity as reported by students (i.e., parents' willingness and ability to take their children's perspective and respond to their needs). All of the multidimensional variables in these studies referred to aspects of parents' support for or control of students' homework behaviors. These contrasting variables—support or control—are basic expressions of parenting style of engagement with students about homework.

Relationship between student homework behaviors and academic achievement

Studies of homework have investigated the association of different student homework behaviors and students' academic achievement. These included procrastination and learning strategies (Lubbers et al. 2010); frequency of homework assignments, time spent on homework, homework emotions (Núñez et al. 2013a, b; Núñez et al. 2014a, b; Trautwein et al. 2009a, b); homework management (Oubrayrie-Roussel and Safont-Mottay 2011; Xu 2010, 2011); attitudes toward homework and reasons for doing homework (Xu and Wu 2013); homework effort (Trautwein et al. 2006a, b; Trautwein et al. 2006a, b; Trautwein et al. 2009a, b); and help seeking strategies (Bembenutty and White 2013; Puustinen et al. 2008).

Time spent on homework and the amount of *homework completed* by students are the two variables of the above mentioned that have been measured most often, perhaps due to their social relevance (e.g., criticism by parents and students on the usefulness of time on homework for student learning) or to ease of measurement on surveys of parents and students. The results reported in the literature on these two topics are unclear. Moreover, the variable of *time management* has been lately studied (Xu 2010; Xu et al. 2014) as a variable that may be closely related to the previous two measures and, therefore, to students' academic performance (Nadinloyi et al. 2013). To contribute to the literature and to clarify the interconnections of these measures, the current study included three student homework behavior variables: time spent on homework, quality of concentration or homework management, and quantity of completed homework.

The amount of time spent on homework is often considered an indicator of academic success. However, extant research reports significant discrepancies in the relationship of these two variables. Some studies report a positive relationship between time spent on homework and achievement (e.g., Cooper 1989; Cooper et al. 2006; Cooper and Valentine 2001). Others indicate that this relationship may be null, low, or negative (e.g., de Jong et al. 2000; Dettmers et al. 2009; Núñez et al. 2013a, b; Núñez et al. 2014a, b; Tam 2009; Trautwein 2007; Trautwein et al. 2002; Trautwein et al. 2006a, b; Trautwein et al. 2009a, b; Xu 2011). For example, Núñez et al. (2013a, b) studied 454 students 10 to 16 years old, and found a small negative association between the amount of time spent to complete homework and students' academic achievement. In that study, the time spent on homework was not a significant predictor of academic achievement. This negative association may have been due to problems with the reliability and validity of the measures used for assessing the time spent on homework (e.g., reported by the student versus reported by their teacher), but also to the fact that spending a lot of time on homework may indicate a problem in students' self-regulated learning (SRL) resulting in the inefficient use of time and unmotivated homework completion (Rosário et al. 2009).

SRL literature defends that doing homework has self-regulatory benefits for students, for example, on the development of time management skills (Cooper and Valentine 2001; Zimmerman and Kitsantas 2005). Xu (2007) delved deeply into the relationships of time spent on homework and students' homework management strategies. Initially, no significant relationship between these two variables was found. Xu (2007) suggested that spending more time doing assignments does not necessarily mean that students use homework management strategies efficiently. Recently, Xu et al. (2014) analyzed the relationship between time spent on homework and homework time management using a multilevel design with a sample of 1799 Chinese students nested in 46 classes. Results were mixed, showing that although most of the variance in homework time management occurred at student level rather than at the class level, students' grade level, school context, and adult-oriented behaviors were positively associated with homework time management, but not with time spent on homework. However,

time spent on homework was positively associated with homework time management at class level. Xu and his colleagues (2014) discussed these complex results, stating that the positive relationship between the two variables at the class level could mean that classrooms assigned more homework tended to be those where students took the initiative to manage their time on homework—such as advanced or honors courses. It is clear that more research is needed to examine the relationship of time spent on homework and the management of that time.

In studies of the connections of homework time management and amount of homework completed at the secondary level, Xu (2010, 2011) and Xu and Wu (2013) indicated that homework time management explained a significant amount of variance of homework completion. Xu (2010) concluded that “homework time management can have a powerful effect on homework completion” (p.37). Also, Núñez et al. (2013a, b) reported that students’ perceptions of the quality of their homework time management (e.g., concentration on the assignment) were significantly and positively associated with student achievement. These findings indicate the importance of students’ use of SRL strategies while managing homework time, but the complex and contradictory findings across studies indicate that more research is needed to better understand the linkage between time spent on homework, homework time management, homework completion, and students’ academic achievement with both quantitative and qualitative methods.

Many studies found that completing a reasonable amount of homework on a daily basis helps students develop study habits that facilitate learning and, ultimately, improve academic achievement (Cooper et al. 2006; Corno 1994; Epstein and Van Voorhis 2001; Rosário et al. 2009; Warton 2001; Xu and Corno 2006; Xu and Yuan 2003). An OECD report based on PISA data concluded that engaging students in homework produced better academic outcomes. Focusing on science literacy, OECD (2007) found a positive relationship between completing homework and school achievement. Fifteen-year-old students who completed one extra hour of science homework per week scored 3.1 points higher in science than similar students. By means of multilevel modeling, Trautwein (2007) corroborated these findings after re-analyzing data from the German extension of the PISA 2000 study, which included a large additional sample of ninth graders. The amount of homework that students completed was positively related to their academic achievement, especially for secondary school students (Cooper et al. 2006; Cooper et al. 2001; Cooper and Valentine 2001).

Despite the history of research on homework, the strength of relationships of time spent, amount of homework completed, and students’ academic achievement is not fully understood (e.g., Cooper 1989; Dettmers et al. 2009; Farrow et al. 1999; Núñez et al. 2014a, b; Paschal et al. 1984; Trautwein and Koller 2003; Trautwein et al. 2002). Because of the contradictory results of the effects of homework on student achievement, some parents, teachers, and students still question the value or benefits of homework (Cooper et al. 2006).

Grade and school level differences

Most studies of the relationship between students’ homework behaviors and academic achievement have been conducted at one grade or school level. Literature reviews have looked across studies to compare results, leading to reports that this connection and, therefore, the importance of homework is stronger at the high school level than in junior high school, and stronger in junior high than in elementary school (Cooper and Valentine 2001). The comparisons across studies also have led to interesting suppositions. Cooper and Valentine (2001) noted that the differences by grade level may be due to the fact that younger students have less effective study habits and are less capable of avoiding distractions. Xu (2005) added that middle school students may be more intrinsically motivated to do homework compared to

elementary students, who may rely more on extrinsic motivators to do their work. This suggests that older students are more likely to understand and internalize the intrinsic value of homework than younger students, resulting in a stronger relationship of homework completion (and other homework behaviors) with student achievement in older students. On the other hand, Hong et al. (2009) analyzed Chinese students' (7th and 11th graders) reported behavior doing homework and concluded that older students were less engaged, persisted less, and expressed less enjoyment doing homework less than did younger students. This pattern that some older students devalue school work and display less effort and persistence when completing homework is in line with others' studies and analyses (Epstein and Van Voorhis 2012; Hong and Milgram 2000; Wigfield et al. 1997).

The association between parent involvement in homework and student achievement was mediated by students' grade level (Skaliotis 2010). The variable children's age may work as a moderating variable important for explaining some of the inconsistencies of previous research (e.g., Hill and Tyson 2009; Patall et al. 2008). For example, many studies have reported that parent involvement in homework is less frequent as students grow older (Epstein and Lee 1995; Hoover-Dempsey and Sandler 1997), while other studies found that the level of parental involvement through courses was different depending on the type of involvement observed (e.g., Gonida and Cortina (2014) indicated that parent autonomy support and control on homework decreased from fifth to eighth grade, but parent interference and cognitive engagement did not change across those grade level). Besides, while findings in middle and high school on the relationship between homework parental involvement and achievement are consistent, for elementary school data are contradictory (see Chen 2008; Patall et al. 2008). For example, Gonida and Cortina (2014) found that independently of the grade level (elementary and junior high school) autonomy support was the type of parental involvement more beneficial for homework, while parental interference was the most harmful. To clarify the complex results concerning parental engagement with students on homework, Patall et al. (2008) suggested that future research should refine the various forms of parental involvement by grade level "to better identify what particular elements of homework parental involvement may be most effective for what types of students, and when" (p. 1093).

To clarify the inconsistencies in the literature on findings about relationships of perceived parental involvement, students' homework behavior, and academic achievement (Dumont et al. 2012; Patall et al. 2008), and the role that the school level may play in this relationship (e.g., Cooper and Valentine 2001; Trautwein et al. 2009a, b), the present study included large samples of students at different stages of schooling (elementary school—5th and 6th grades; junior high school—7th and 8th grades; and high school—9th and 10th grades).

The present study

This study aims to deepen our comprehension of the association between perceived parental homework involvement, student homework behaviors, and student academic achievement, and how these relationships vary depending on school level (i.e., elementary, junior high, and high school). In the literature (e.g., Dumont et al. 2012, 2013; Karbach et al. 2013; Pomerantz et al. 2007), parental homework involvement is conceptualized as a multidimensional construct (Patall et al. 2008). Different forms of parental homework involvement are likely to show distinct relationships with students' school progress (Hoover-Dempsey et al. 2001). Previous research (e.g., Pomerantz et al. 2005) suggest that forms of parental involvement focusing on control have null or negative impact on the motivation and performance of students (e.g., setting strict rules, restrictions, and punishments). By contrast, forms of parental

involvement displaying help and support for students' efforts (e.g., giving clear and consistent guidelines about homework) are the most effective.

The present study focused on these two important dimensions of homework parental involvement (i.e., control and support) to examine their relationships with academic performance and students' homework behaviors at different grade levels. In this study, *parental homework control* is understood as the control and pressure on children to complete assignments (e.g., check if children do all their homework and punish children when homework was not done; prioritize homework to other school activities), and *parental homework support* refers to the value of parents' assistance by students and the legitimacy and spirit of help given. (e.g., be attentive to children need of support while doing with homework; help children to solve problems with homework).

The nature of parental involvement and the degree of control and support may differ depending on children's educational skills and stages of development. For example, Patall et al. (2008, p.1089) concluded that "although providing guidelines for homework behavior or providing direct help with homework may be an effective form of involvement for elementary students, as students reach adolescence, it may be important that parents gradually withdraw from the homework process." To date, however, little research has examined the relationship between parent involvement with on homework and students' academic achievement simultaneously and with the same measures for the three school levels (elementary school, junior high school and high school).

This study measured three indicators of student homework behavior: time spent on homework completion, time homework management, and amount of homework completed. The three variables were chosen to contribute to the literature by analyzing how these behaviors varied in students at different grade levels. These variables have been the focus of public interest and controversy (e.g., time students should spend on homework, amount of homework that teachers should assign, skills needed by students to properly manage the study process at home, nature of parental involvement). This study includes academic achievement measures of students' report card grades in mathematics, Spanish language, English language, and social sciences.

Following Dumont et al. (2012), we developed a model for SEM analyses, including the previously-mentioned variables (see Fig. 1), to answer the following questions (graphically represented in Fig. 2), comparing elementary, junior high, and high school students:

- (a) Does parental homework involvement as perceived by the student predict student homework behavior?
- (b) Does student homework behavior predict academic achievement?
- (c) Does parental homework involvement, as perceived by the student, predict student academic achievement?
- (d) Does student homework behavior mediate the association between perceived parental homework involvement and academic achievement?

Based on the findings of previous research, our hypothesis were as follows:

1. Parental involvement in homework (control and support) is positively and significantly related to student homework behavior (i.e., time spent on homework and homework time management; and the amount of homework completed – (e.g., Xu 2011). These relationships are expected to be stronger in elementary and high school than in junior high school (Patall et al. 2008).

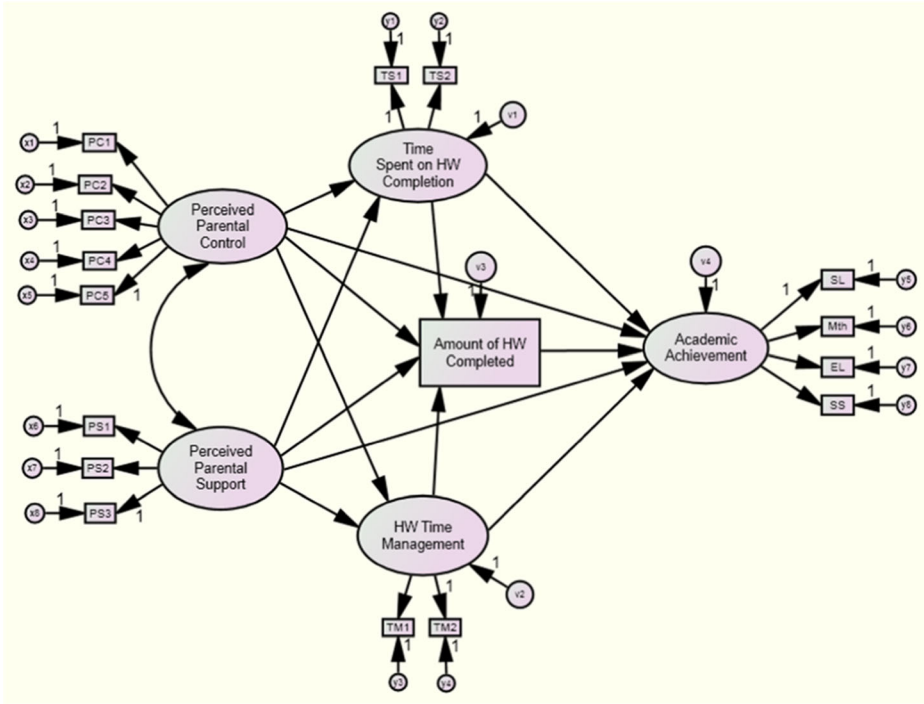


Fig. 1 Graphical representation of the full mediation structural equation model. *Note:* PC1, ..., PC5 (measures of Perceived Parental Control), PS1,..., PS3 (measures of Perceived Parental Support), TS1 and TS2 (measures of Time Spent on Homework Completion), TM1 and TM2 (measures of Homework Time Management), HWC (measure of Amount of Homework Completed), SL (measure of Spanish Language Achievement), Mth (measure of Mathematics Achievement), EL (measure of English Language Achievement), SS (measure of Social Sciences Achievement). V1 to V5 represent the variance explained. X1 to X8 and Y1 to Y8 are observed variables

2. Parental involvement in homework is expected to be significantly related to academic achievement— positively for support, and negatively for control (e.g., Cooper et al. 2001; Dumont et al. 2012; Karchach et al. 2013; Patall et al. 2008; Van Voorhis 2011).
3. The amount of homework completed is positively related to academic achievement (e.g., Cooper et al. 2006; Epstein and Van Voorhis 2001; Trautwein 2007; Warton 2001; Xu and Como 2006).

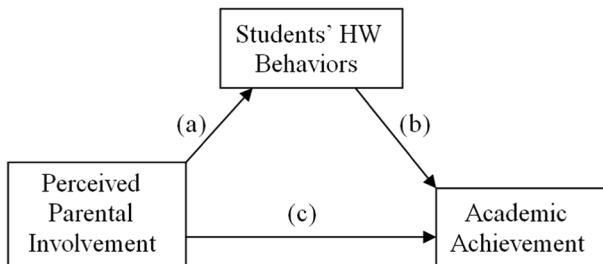


Fig. 2 Hypothesized mediation model of the relationship between perceived parental homework involvement, students' homework behaviors, and academic achievement. The relationships (a), (b), and (c) correspond to the research questions. HW is the acronym of homework

4. Homework time management is expected to show a positive and significant relationship with amount of homework completed and academic achievement (e.g., Núñez et al. 2013a, b; Xu 2010; Xu and Wu 2013).
5. With awareness of inconsistent results at different grade levels in previous studies, and acknowledging that data were analyzed at student level, we hypothesized that time spent on homework is a) positively related to the amount of homework completed (e.g., Epstein and Van Voorhis 2001); b) not significantly associated with homework time management (Xu 2013; Xu et al. 2014); and c) negatively related to academic achievement (Dettmers et al. 2009; Núñez et al. 2014a, b; Trautwein 2007; Trautwein et al. 2009a, b; Xu 2011).

Method

Participants and school contexts

Participants

A total of 1683 Spanish students participated in this study. The students, 10 to 16 years old, attended 94 classes in 10 urban public schools. About 51 % were boys (858) and 49 % were girls (825). The total sample was subdivided into three subgroups: 433 elementary school students in grades 5 and 6 (i.e., fifth grade: $n=216$, 104 boys and 112 girls; sixth grade: $n=217$, 108 boys and 109 girls); 716 junior high school students in grades 7 and 8 (i.e., seventh grade: $n=370$, 192 boys and 178 girls; eighth grade: $n=346$, 183 boys and 163 girls); and 534 high school students in grades 9 and 10 (i.e., ninth grade: $n=257$, 132 boys and 125 girls, and tenth grade: $n=277$, 139 boys and 138 girls).

All schools in the study were urban public schools. There were no statistical significant differences between schools in the educational level of fathers ($F(10,1665)=.574$; $p=.837$) or mothers ($F(10,1663)=1.476$; $p=.142$). Also, there were no statistically significant differences between the educational levels of parents of students in elementary, junior high, and high school: fathers ($F(2,1673)=1.563$; $p=.210$) and mothers ($F(2,1666)=2.339$; $p=.097$).

School contexts

Spanish teachers have autonomy to decide if, how, and how much homework to assign, and the majority of school teachers usually assign homework to their students. According to the latest data available from the Spanish Ministry of Education, between 2003 and 2007, about half of all 6th grade students (11 years) reported spending between 1 and 2 h a day doing homework, and about 25 % reported spending two to 3 h a day completing homework. Moreover, the report indicated that the higher the parents' education, the more students spent an hour or more doing homework. About 64 % of the 6th graders reported receiving help while doing homework (i.e., 52 % received help from their parents and 12 % from tutors, teachers, or friends).

In 2012, the Spanish public school organization of parents (Spanish Confederation of Associations of Parents of Students, or CEAPA), following similar initiatives in France and other European countries, launched an initiative to abolish homework, at least at the elementary school level. CEAPA contended that homework overloaded children's time after school hours and was a source of inequality in education, as not all students had the benefit of competent help from parents when doing homework. The results of this initiative are not yet

available, but teachers retain the liberty to decide whether or not to assign homework at all grade levels.

Procedure

All students in the study were volunteer participants with approval from their parents. Researchers signed a written agreement with the collaborating school boards to conduct workshops for participating teachers and for parents on the results and implications of the research.

Measures and instruments

The measures of students' perceptions of parental homework involvement and students' homework behaviors were gathered using a questionnaire for students, which was administered during one regular class period for about 25 min. The students' academic achievement data (report card grades) were provided by the secretariat of each school. A confirmatory factor analysis (CFA) was performed with all seventeen observed measures. It showed that six constructs (perceived parental control, perceived parental support, time spent on homework completion, amount of homework completed, homework time management, and academic achievement) were related, but that each measure represented only one construct (see measurement model in Fig. 1). The results indicated a good model fit ($\chi^2=410,702$; $df=94$, $p<.001$, $TLI=.96$, $CFI=.97$, $RMSEA=.045$, 90 % CI [.040, .049], $p=.97$) showing that the measuring instruments produced appropriate construct validity.

Perceived parental involvement variables

Following other researchers (Dumont et al. 2012; Skinner et al. 2005), we were interested in assessing students' perceptions of their parents' behavior regarding homework. As some authors suggested (Grolnick and Slowiaczek 1994; Hoover-Dempsey et al. 2005), it is likely that children's perceptions of their parents' involvement in homework are more real or "knowable" to them than the actual nature or extent of parents' behavior related to homework. Accordingly, two dimensions of *perceived* parental homework involvement were assessed: *students' perceptions of control* exercised by parents and *students' perceptions of support* provided by their parents. The items (see Table 4) were adapted from prior studies (Carter and Wojtkiewicz 2000; Dumont et al. 2012; Trautwein and Lüdtke 2009).

Students' perceptions of parental control were assessed with five items (e.g., "My parents are fully aware of me completing all my tasks") on a Likert scale with five responses ranging from 1 (completely false) to 5 (completely true). The reliability coefficients were acceptable: elementary school ($\alpha=.63$), junior high school ($\alpha=.74$), and high school ($\alpha=.79$). The five items were used to create a latent variable (Perceived Parental Control) in the Structural Equation Model. For the full sample, the factor loadings of the five items on the latent variable were appropriate in size, between .59 and .70, with acceptable estimation errors between .04 and .06.

Students' perception of parental support was computed from student responses to three items (e.g., "When I have to do homework, explanations by my parents are very useful") using the same scoring system as for Parental Control. The reliability coefficients were acceptable: elementary school ($\alpha=.70$), junior high school ($\alpha=.76$), and high school ($\alpha=.81$). A latent variable (Perceived Parental Support) was built from the three items for the SEM. For the full sample, the factor loadings of the three items on the latent variable were appropriate in size, between $\lambda=.66$ and $\lambda=.80$, with estimated errors between .035 and .036.

Student homework behavior variables

The three student homework behaviors in our model (i.e., time spent on homework completion, time management, and amount of homework completed) were measured by items (see Table 4) used in other studies (e.g., Núñez et al. 2013a, b; Núñez et al. 2014a, b).

Time spent on homework completion was calculated from student responses to two items: “How much time do you usually spend on homework each day, Monday through Friday?” and “How much time do you usually spend doing homework during the weekend?” The items were scored on a 5-point Likert scale, ranging from 1 (*less than 30 min*), 2 (*30 min to 1 h*), 3 (*1 hour to hour and a half*), 4 (*1 h and a half to 2 h*), to 5 (*more than 2 h*). Given that only two items were used, the reliability coefficients were acceptable: elementary school ($\alpha=.71$), junior high school ($\alpha=.73$), and high school ($\alpha=.78$). For the full sample, the factor loadings linking the two items with the latent variable were appropriate in size ($\lambda=.71$ and $\lambda=.77$), with acceptable estimation errors (.08 in both cases).

Homework time management was calculated from student responses to two items: “When I’m doing my homework, I get distracted by anything that is around me,” and “When I start homework, I concentrate and do not think about anything else until I finish”. These items were rated on a 5-point Likert scale, ranging from 1 (*always*) to 5 (*never*), with the second item reverse-coded. Given that only two items were used, the reliability coefficients were acceptable: elementary school ($\alpha=.60$), junior high school ($\alpha=.69$), and high school ($\alpha=.75$). In the total sample, the factor loadings linking the latent variable with the two indicators were appropriate in size ($\lambda=.72$ and $\lambda=.76$) with acceptable estimation errors (.055 and .057).

Amount of homework completed (HWC) was assessed from student responses to the following question: “Usually, how many tasks do you complete from the assigned homework?” This item was rated on a 5-point Likert scale, ranging from 1 (*none*) to 5 (*all*).

Academic achievement

Academic achievement was obtained from students’ report card grades in mathematics, Spanish language, English language, and social sciences at the end of the academic year. The reliability coefficients were high in elementary school ($\alpha=.93$), junior high school ($\alpha=.93$), and high school ($\alpha=.91$). Previous investigations (e.g., Dumont et al. 2013; Karbach et al. 2013; Silinskas et al. 2012), found similar results for different subjects such as: mathematics, reading skills, reading achievement, and German language. Although it is not expected that parents be involved to the same extent in all four academic subjects, it is possible that the nature of parents’ involvement (i.e., control or support) will be similar for all four subjects. For this reason, the grades from the four subjects were used to build a latent variable (academic achievement) in SEM. In the full sample, factor loadings linking the four measures of achievement to the latent variable were strong (between .83 and .92) with low estimation errors (between .018 and .019).

Statistical analysis

After studying the psychometric properties of the variables, data were analyzed in three stages. First, the hypothesized full mediated model was fit for the total sample to assess the assumptions of the model, with students’ grade level included as a covariate. Second, because grade level was found to be a relevant variable, multi-group analyses were performed to check the degree of invariance of the model for the three grade level subgroups. Third, because no

invariance between the three groups was found, analyses were conducted to identify the best fitting model across grade level subgroups.

The model was fitted with Mplus 5.1 (Muthén and Muthén 1998–2007), using «type=complex» in the analysis command and «cluster=class» in the variable command. This procedure allowed computation of the standard errors and chi-square tests of model fit, taking into account clustering information and/or non-independence of observations, such as adjusting the standard errors of the regression coefficients. Moreover, the MLR estimator (maximum likelihood robust) was selected, which is sensitive to non-normality and non-independence of observations.

A series of statistics and indices common for SEM analyses were used to assess model-data fit. In addition to a chi-squared (χ^2) test and its associated probability (p), we used two related indexes: the comparative fit index (*CFI*) and the Tucker-Lewis index (*TLI*) (Hu and Bentler 1999); a close-fit parsimony-based index—the root mean square error of approximation (*RMSEA*), including 90 % confidence intervals (Hu and Bentler 1999); and the *SRMR* index (standardized root mean square residual) (Marsh et al. 2004). *CFI* and *TLI* values of .90 or above are indicative of an acceptable fit of the proposed model to data (Hu and Bentler 1999). For *RMSEA*, a common rule of thumb is that a value of *RMSEA* less than or equal to .05 implies close approximate fit, with values between .06 and .10 indicating acceptable fit, but values greater than .10 indicating poor approximate fit. Finally, a value of *SRMR* of less than or equal to .08 is recommended as an indication of a well-fitted model, with the value of .10 as an upper limit.

Results

Initial data analysis

In Table 1 (and Tables 5, 6 and 7), we report the descriptive statistics for the full sample and three subsamples, by grade level. Before calculating the fit of the model, we examined three matrixes to check for missing values. Due to missing data or outliers, 7 students from the elementary school sample (5th and 6th grades), 11 students from middle/junior high school sample (7th and 8th grades), and 5 students from high school sample (9th and 10th grades) were eliminated.

The distribution of the variables (skewness and kurtosis) was analyzed to verify whether they met the distribution requirements. Adopting the criterion of Finney and DiStefano (2006), who defend maximum values of 2 and 7, respectively, for skewness and kurtosis, the values of the four matrixes met this criterion (see Table 1, and Tables 5, 6 and 7) and will be analyzed with MLR procedure of Mplus 5.1.

Another important step was to verify whether the key variables in the model were significantly correlated with each other. In the three subgroups, most of the variables were significantly correlated (in Tables 5, 6 and 7), but none of the correlations were excessively high, so problems of multicollinearity among variables were not expected. Nevertheless, some patterns of correlations were different for the three groups of students. For example, the correlations for the elementary sample (grades 5 and 6) of perceived parental support with student time spent on homework completion, homework time management, and amount of homework completed were mainly null (with a few exceptions), whereas these correlations were mainly significant and positive at the junior high and high school levels.

It was observed that perceived parental homework feedback decreased as the students' grade level increased (perceived parental control: $F(1680, 2)=150.03, p<.001, \eta_p^2=.152$;

Table 1 Descriptive statistics of the variables in the structural equation model for the total sample ($n=1683$ students)

	PC1	PC2	PC3	PC4	PC5	PS1	PS2	PS3	TS1	TS2	TM1	TM2	HWC	SL	MT	EL	SS
PC1	-																
PC2	.43**	-															
PC3	.42**	.45**	-														
PC4	.35**	.38**	.48**	-													
PC5	.34**	.37**	.40**	.46**	-												
PS1	.35**	.37**	.33**	.26**	.19**	-											
PS2	.30**	.34**	.30**	.26**	.21**	.50**	-										
PS3	.33**	.40**	.35**	.32**	.25**	.51**	.61**	-									
TS1	.09**	.16**	.15**	.22**	.13**	.14**	.11**	.11**	-								
TS2	.06*	.10**	.07**	.13**	.07**	.13**	.12**	.15**	.54**	-							
TM1	.05	.14**	.12**	.15**	.11**	.08**	.08**	.15**	.08**	.11**	-						
TM2	.08**	.19**	.18**	.21**	.11**	.12**	.15**	.23**	.08**	.12**	.55**	-					
HWC	.16**	.29**	.25**	.30**	.23**	.18**	.22**	.30**	.33**	.27**	.38**	.38**	-				
SL	-.13**	-.01	-.12**	-.09**	-.09**	-.02	.02	.04	.14**	.29**	.14**	.13**	.28**	-			
Mth	-.09**	.00	-.08**	-.06*	-.03	-.04	.01	.04	.09**	.22**	.14**	.19**	.27**	.78**	-		
EL	-.13**	-.05	-.14**	-.11**	-.10**	-.05*	-.02	-.01	.10**	.27**	.09**	.08**	.16**	.79**	.72**	-	
SS	-.12**	-.02	-.09**	-.07**	-.06*	-.02	.00	.02	.13**	.30**	.11**	.11**	.21**	.81**	.72**	.79**	-
<i>M</i>	3.55	3.86	3.37	3.51	3.15	3.53	3.67	3.68	3.17	3.01	3.35	3.35	4.29	5.11	4.78	5.31	5.38
<i>SD</i>	1.34	1.12	1.44	1.45	1.45	1.38	1.37	1.32	1.13	1.27	1.11	1.10	.92	2.15	2.13	2.30	2.30
<i>Skew</i>	-.56	-.81	-.36	-.48	-.13	-.55	-.69	-.71	-.06	.10	-.37	-.32	-1.46	.23	.21	.07	.13
<i>Kurtosis</i>	-.85	-.08	-1.21	-1.11	-1.32	-.91	-.77	-.63	-.80	-1.03	-.40	-.54	1.70	-.51	-.53	-.63	-.63

PC1, ..., PC5 (measures of Perceived Parental Control), PS1, ..., PS3 (measures of Perceived Parental Support), TS1 and TS2 (measures of Time Spent on Homework Completion), TM1 and TM2 (measures of Homework Time Management), HWC (measure of Amount of Homework Completed), SL (measure of Spanish Language Achievement), Mth (measure of Mathematics Achievement), EL (measure of English Language Achievement), SS (measure of Social Sciences Achievement)

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

perceived parental support: $F(1680, 2)=75.06, p<.001, \eta_p^2=.082$), with a large and medium effect sizes, respectively. A Grade Level X Gender ANOVA showed statistically significant differences in perceived parental control, $F(1677, 1)=10.53, p<.05, \eta_p^2=.002$, indicating that boys' perceived more parental homework control than did girls across at all grade levels in this study. No gender differences were found in perceived parental homework support.

On students' homework behaviors, the ANOVAs showed that: (a) the amount of homework completed decreased significantly as grade level increased, $F(1680, 2)=116.98, p<.001, \eta_p^2=.122$, with a medium effect size, and females did more homework than males, $F(1677, 1)=14.48, p<.001, \eta_p^2=.009$; (b) time spent on homework completion increased slightly with grade level, $F(1680, 2)=8.75, p<.001, \eta_p^2=.010$, with a small effect size, and females dedicated more time to homework, $F(1677, 1)=40.33, p<.001, \eta_p^2=.023$; and (c) there were no differences in homework time management by grade level or by gender.

Fitting hypothesized model

The *full mediation model* (see Fig. 1) was tested for the total sample, with grade level as covariate. The results of fitting the hypothesized full mediation model were acceptable ($\chi^2=712.67, df=118, p<.001, TLI=.941, CFI=.954, RMSEA=.055, 90\% \text{ CI } [.051, .059], p<.05$), indicating that the model represented the tested relationships rather well. Moreover, it was observed that grade level was significantly associated with the six variables of the structural model. As hypothesized, the data suggested that the full mediation model behaved differentially depending on students' age and grade level.

Prior to fitting the model to each subsample, multi-group analyses were conducted. We tested the similarity of the model for the three subsamples on five dimensions: measurement weights, structural weights, structural covariances, structural residuals, and measurement residuals. This strategy produced information to clarify to what extent the results for the three subsamples were similar.

Results showed that, assuming that the unconstrained model is similar for the three groups ($\chi^2=1071.115, df=368, p<.001, TLI=.919, CFI=.927, RMSEA=.058, 90\% \text{ CI } [.054-.062]$), when testing the first model (equality in measurement weights), statistically significant differences were found ($\Delta\chi^2_{(30)}=103.704, p<.001, IFI=.009, TLI=-.003$). Because invariance was not found in the first level of analysis (measurement weights), comparisons of the different parts of the model were interrupted, yielding the conclusion that there were significant differences among the three groups of students. This finding justified the analysis of the scenarios separately for the elementary school, junior high school, and high school samples.

Fitting the full mediation model with the three samples

Table 2 presents the regression coefficients, standard errors, and statistical significance for the relationships of the variables for the three samples of students. The results of the SEM analysis show that the full mediation model fit well for the three samples: elementary school ($\chi^2=201.385, df=106, p<.001, TLI=.936, CFI=.950, RMSEA=.046, 90\% \text{ CI } [.036-.055], p>.05, SRMR=.050$), junior high school ($\chi^2=241.880, df=106, p<.001, TLI=.958, CFI=.967, RMSEA=.042, 90\% \text{ CI } [.035-.049], p>.05, SRMR=.046$), and high school ($\chi^2=315.607, df=106, p<.001, TLI=.921, CFI=.939, RMSEA=.061, 90\% \text{ CI } [.053-.069], p<.05, SRMR=.054$).

Figures 3, 4 and 5 show the standardized total effects of the full mediation model for the elementary, junior high, and high school samples. For clarity, only coefficients that were statistically significant are shown. Results obtained are presented in relation to the research questions (see Fig. 2).

Table 2 Standardized and unstandardized regression weights for elementary ($n=433$), junior high ($n=716$), and high school ($n=534$) student samples

		SRW	URW	SE	SRW/SE	<i>p</i> -value
Elementary school sample						
Perceived parental control	→ HW Time Management	.065	.074	.105	.615	.538
Perceived parental support	→ Time Spent on HW Completion	-.044	-.045	.123	-.360	.718
Perceived parental support	→ HW Time Management	-.042	-.024	.113	-.375	.708
Perceived parental control	→ Time Spent on HW Completion	.140	.174	.198	.711	.477
Perceived parental control	→ Amount of HW Completed	.013	.015	.107	.123	.902
Perceived parental support	→ Amount of HW Completed	-.002	-.004	.098	-.016	.988
HW time management	→ Amount of HW Completed	.363	.308	.065	5.602	.000
Time spent on HW completion	→ Amount of HW Completed	.123	.084	.108	1.139	.255
HW time management	→ Academic Achievement	.152	.229	.113	1.339	.181
Time spent on HW completion	→ Academic Achievement	-.121	-.164	.050	-2.397	.017
Amount of HW completed	→ Academic Achievement	.398	.738	.061	6.500	.000
Perceived parental control	→ Academic Achievement	-.256	-.617	.085	-3.007	.003
Perceived parental support	→ Academic Achievement	.135	.220	.086	1.565	.118
Perceived parental control	↔ Perceived Parental Support	.621	.426	.088	7.090	.000
Junior high school sample						
Perceived parental control	→ HW Time Management	.283	.297	.087	3.240	.001
Perceived parental support	→ Time Spent on HW Completion	.143	.152	.072	2.000	.045
Perceived parental support	→ HW Time Management	.097	.095	.071	1.366	.172
Perceived parental control	→ Time Spent on HW Completion	.264	.319	.081	3.248	.001
Perceived parental control	→ Amount of HW Completed	.091	.132	.056	1.622	.105
Perceived parental support	→ Amount of HW Completed	.021	.010	.048	.447	.655
HW time management	→ Amount of HW Completed	.366	.443	.046	7.896	.000
Time spent on HW completion	→ Amount of HW Completed	.403	.421	.040	10.122	.000
HW time management	→ Academic Achievement	.251	.688	.049	5.116	.000
Time spent on HW completion	→ Academic Achievement	.135	.360	.080	1.680	.093
Amount of HW completed	→ Academic Achievement	.371	.804	.066	5.610	.000
Perceived parental control	→ Academic Achievement	-.320	-.769	.061	-5.242	.000
Perceived parental support	→ Academic Achievement	.146	.272	.054	2.690	.007
Perceived parental control	↔ Perceived Parental Support	.586	.341	.041	14.121	.000
High school sample						
Perceived parental control	→ HW Time Management	.009	.003	.083	.108	.914
Perceived parental support	→ Time Spent on HW Completion	.200	.217	.106	1.882	.060
Perceived parental support	→ HW Time Management	.158	.165	.080	1.990	.047
Perceived parental control	→ Time Spent on HW Completion	.241	.218	.098	2.460	.014
Perceived parental control	→ Amount of HW Completed	.094	.128	.060	1.568	.117
Perceived parental support	→ Amount of HW Completed	-.006	-.027	.062	-.099	.921
HW time management	→ Amount of HW Completed	.381	.421	.037	10.293	.000

Table 2 (continued)

		SRW	URW	SE	SRW/SE	p-value
Time spent on HW completion	→ Amount of HW Completed	.447	.519	.052	8.561	.000
HW time management	→ Academic Achievement	.169	.415	.058	2.930	.003
Time spent on HW completion	→ Academic Achievement	.280	.770	.130	2.153	.031
Amount of HW completed	→ Academic Achievement	.250	.466	.090	2.788	.005
Perceived parental control	→ Academic Achievement	-.359	-.937	.066	-5.469	.000
Perceived parental support	→ Academic Achievement	.149	.271	.059	2.531	.011
Perceived parental control	↔ Perceived Parental Support	.592	.458	.041	14.607	.000

For clarity, data of measurement model (relation between the observed variables and the corresponding latent variables) are not included. SRW (Standardized Regression Weights), URW (Unstandardized Regression Weights), SE (Standard Error). HW is the acronym of homework

Perceived parental involvement and students' homework behaviors

Although the data suggest that perceived parental homework involvement (control and support behaviors) is significantly related to students' homework behavior variables, this relationship varies in intensity depending on the students' grade level. Specifically, for the sample of 5th-6th grade students, perceived parental control and perceived parental support were not significantly associated with any of the three student homework behavior variables (i.e., time spent on homework completion, homework time management, amount of homework completed), as shown in Fig. 3.

For the samples of junior high and high school students (7-8th and 9-10th grades) in Figs. 4 and 5, the relationship between perceived parental involvement and students' homework behavior varied by variable.

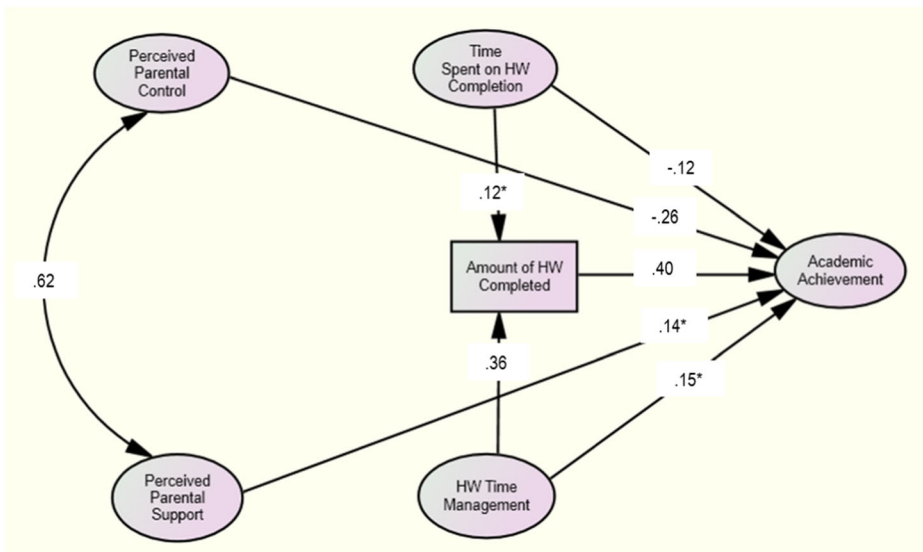


Fig. 3 Standardized total effects in the structural model of elementary school students sample ($n=433$). *Note:* Only coefficients that were statistically significant are shown. The coefficients with an asterisk, although not reaching statistical significance are close to (see Table 2). HW is the acronym of homework

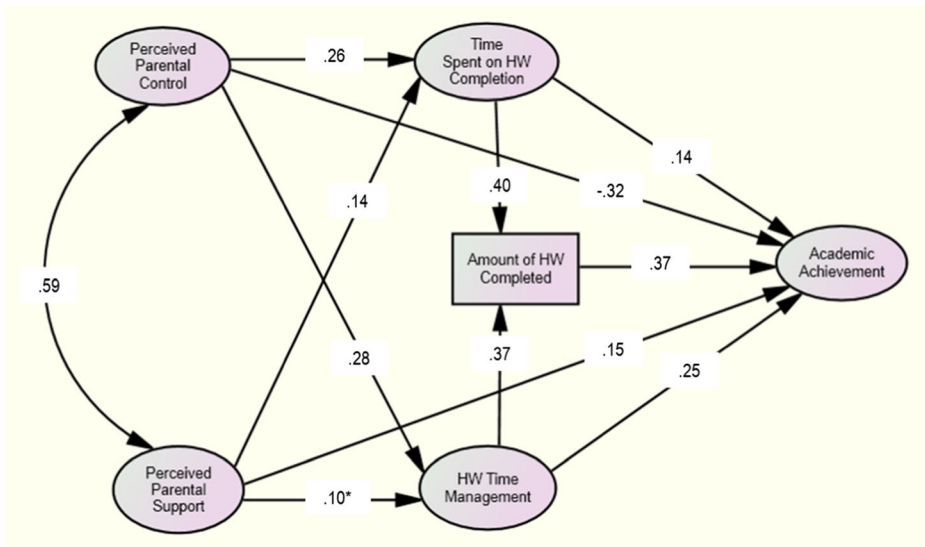


Fig. 4 Standardized total effects in the structural model of junior high school students sample ($n=716$). *Note:* Only coefficients that were statistically significant are shown. The coefficient between time spent on homework and academic achievement is statistically significant at $p < .1$. The coefficient with an asterisk, which did not reach statistical significance are close to (see Table 2). HW is the acronym of homework

- (a) Perceived parental control and support were not related to amount of homework completed in the full SEM model for either subgroup of students.
- (b) Perceived parental control, compared to perceived parental support, was more strongly related to time spent on homework completion and to homework time management for the 7th and 8th grade sample (see Fig. 4 and Table 2).

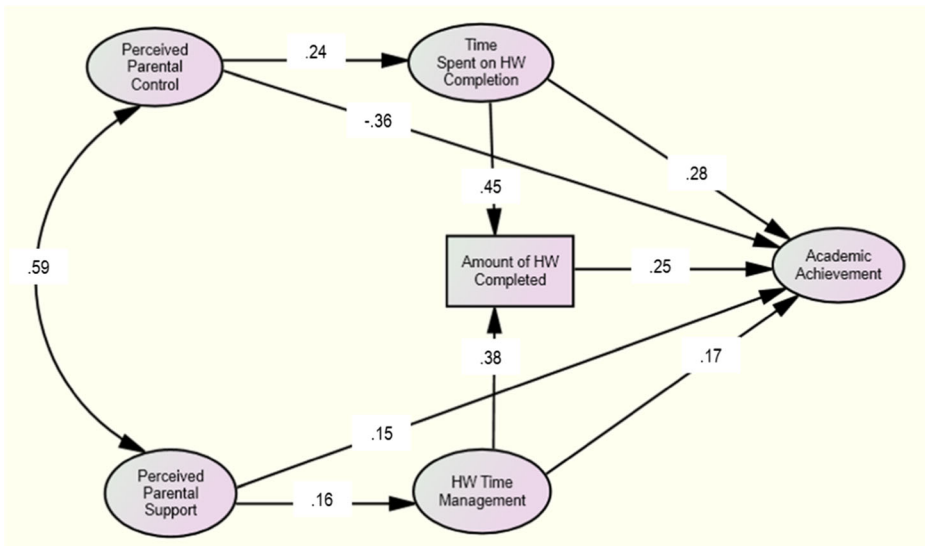


Fig. 5 Standardized total effects in the structural model of high school students sample ($n=534$)

- (c) Perceived parental support was significantly related with homework time management, whereas perceived parental control was significantly associated only with time spent on homework completion for the 9th and 10th grade sample.
- (d) Together, perceived parental control and support were more strongly and systematically related to time spent on homework completion in the older grades (accounting for 0, 14 and 16 % of explained variance in 5th-6th, 7th-8th, and 9-10th grades, respectively) than with homework time management (accounting for 0, 12 and 3 % of explained variance in 5th-6th, 7th-8th, and 9-10th grades, respectively). Students' perception of their parents' behaviors of control and support were related to time spent doing homework more than to students' homework time management (or concentration) while doing homework, particularly in the older grades.

Student homework behaviors and academic achievement

The relationships between students' homework behaviors and academic performance are important to highlight. Time spent on homework and homework time management were positively associated with the amount of homework completed. Although all three subgroups showed similar positive associations of homework time management and amount of homework completed (see coefficients of .36, .37, and .38, in Figs. 3, 4 and 5, respectively), time spent on homework was more strongly linked to amount of homework completed for the older students (see coefficients of .12, .40, and .45, in Figs. 3, 4 and 5, respectively). The data indicate that more time doing homework and good management of that time were related to completing more homework, especially for older students in junior high and high school.

In all three groups of students, the amount of homework completed and academic achievement were positively associated, indicating that the more homework students do, the higher their academic performance (and vice versa). However, as shown in Figs. 3, 4 and 5, and Table 2, the coefficients decreased in size from elementary to junior high to high school (e.g., in Table 2, elementary school: $b=.398$; junior high school: $b=.371$; high school: $b=.250$).

Time spent on homework and academic achievement were significantly related for all three grade level samples, but with some results pointing in different directions. In elementary school, the association was negative ($b=-.121$), null at the junior high

Table 3 Sum of indirect effects of perceived homework parental involvement variables (control and support) on academic achievement

	SRW	SE	SRW/SE	<i>p</i> -value
Elementary school sample ($n=433$)				
Perceived parental control→academic achievement	-.002	.046	-.039	.969
Perceived parental support→academic achievement	-.002	.041	-.042	.967
Junior/high school sample ($n=716$)				
Perceived parental control→academic achievement	.140	.039	3.643	.000
Perceived parental support→academic achievement	.052	.027	1.891	.059
High school sample ($n=534$)				
Perceived parental control→academic achievement	.093	.036	2.584	.010
Perceived parental support→academic achievement	.081	.054	1.510	.131

SRW (Standardized Regression Weights), SE (Standard Error)

school level ($b=.135$), but positive and close to significance at the $p<.05$ level, and positive and statistically significant at the high school level ($b=.280$). At the high school level, then, more time spent on homework was associated with higher student performance.

Similarly, homework time management and academic achievement were related. Findings indicated that homework time management (e.g., level of concentration on homework) positively and significantly predicted academic achievement at the junior high school level ($b=.251$) and in high school ($b=.169$), but this association was null in the elementary grades ($b=.152$). Therefore, effective management of time spent on homework was positively associated with academic achievement, especially for older students whose assignments may demand greater concentration.

Finally, in tests of the full model, academic achievement was significantly explained both by students' homework behaviors (i.e., homework time management, time spent on homework, and amount of homework completed) and by perceived parental control and support of homework (i.e., 26.4, 32.1 and 28.8 % of explained variance in elementary, junior high, and high school grades, respectively). Most of the variance was explained by student homework behavior variables.

Perceived parental involvement and academic achievement

The results showed that perceived parental involvement in homework and academic achievement was significantly and directly related (see Figs. 3, 4 and 5, and Table 2). This relationship is similar in magnitude and directions for the three subsamples (elementary, junior high, and high). However, the directions of the associations varied according to the quality of parents' involvement. First, the association of perceived parental homework control with academic achievement was negative at all three school levels. That is, higher perceived parental homework control was linked to lower academic performance (i.e., elementary $b=-.26$; junior high $b=-.32$; and high school $b=-.36$). Second, the association of perceived parental homework support with academic achievement was positive at all three school levels, such that higher perceived support was linked to higher student achievement (i.e., elementary $b=.14$; junior high $b=.15$; and high school $b=.15$).

Total indirect relations of perceived parental involvement variables with academic achievement

To address the fourth research question with each of the three samples of students, three indirect associations for each perceived parental involvement variable and for the total sample were calculated using the "model indirect" coding in Mplus 5.1. A total of 24 ($3 \times 2 \times 4$) indirect relations and of 8 (2×4) total indirect relations were calculated. For reasons of parsimony, only total indirect associations for perceived parental homework control and perceived parental homework support are indicated for the three samples of students (see Table 3).

Table 3 reveals that the indirect effects of the parental involvement variables of control and support varied significantly for the three subsamples of students. The sum of indirect effects for the elementary school sample (5-6th grades) indicated that the relationships between perceived parental involvement (i.e., perceived parental control and the perceived parental support) and academic achievement were not mediated by students' homework behaviors. However, mediation occurred at the junior high level (i.e., for perceived parental homework control: $b=.140$; and for perceived parental homework support: $b=.052$), and at the high

school level (i.e., for perceived parental homework control: $b = .093$; and not significant, but in the same direction, for perceived parental homework support: $b = .081$).

Discussion

This study's findings extend previous studies on the influence of homework completion on student achievement with attention to two dimensions of parental involvement—control and support, and two dimensions of student homework behavior—time spent and time management or concentration. The study examined the connections of these aspects of the homework process using the same measures at three school levels with sizable samples of elementary, junior high, and high school students. The study also suggests new questions for future research.

Perceived parental involvement and academic achievement

The results partially supported the first hypothesis that students' homework behaviors (i.e., time spent on homework, homework time management, and amount of homework completed) are significantly related to perceived parental homework involvement (control and support). Analyses of the data showed that students' perceptions of their parents' homework involvement were related significantly with their homework behaviors, although this was important only for some of these associations and only for the junior high and high school samples.

The results complement and extend those in previous studies. For example, Xu (2008, 2010) found that the effect of parents' involvement on student homework time management was indirect—mediated by students' attitudes and motivation. In the present investigation, we observed that this relationship was higher or lower depending on the students' grade level. Although the mechanisms through which perceived parental involvement could have an impact on children's homework behavior were not analyzed in this study, the lack of connections of these variables for younger students may be due to their inability, because of their youth, to fully understand their parents' behavior of control and support or how it affected their own behaviors, such as more or less time dedicated to homework, efficacy in focusing on their work, and the amount of homework completed. Another possible explanation is that the parents' behaviors as perceived by students were not always appropriate for producing desired effects on the children's homework behaviors.

Also, there may be less variation in parents' efforts at the elementary level to guide their children on homework. More parents may pay attention to their young students whether the children are advanced or lagging in achievement, making it difficult to find an effect of parents' supervision on their students' homework behaviors. Because students' perceptions of parental involvement have been relevant in other studies of homework, future research should delve deeply into which types of parental control and support actions are most appropriate at each school level for positive effects on students' homework behaviors. This information could contribute to the development of interventions to help families use their time most productively in guiding their children's homework habits and products (Epstein 2005; Epstein and Van Voorhis 2012).

On the other hand, the second hypothesis that academic achievement is directly affected by perceived parental homework involvement was confirmed. The findings

were consistent with the results of previous studies (e.g., Dumont et al. 2012; Dumont et al. 2013; Karbach et al. 2013; Levpuscek and Zupancic 2009), and extend prior work with attention to specific dimensions of perceived parental involvement (i.e., control and support). Our results reinforce those of prior studies (e.g., Cooper et al. 2000; Dumont et al. 2012; Pomerantz et al. 2005) in that different forms of parental homework support (e.g., avoiding direct involvement when children do not need help but assisting when children need help) show a positive relationship with academic achievement, especially for middle and high school students. Parental homework support benefit children's achievement by providing motivational resources that foster positive engagement in school. In fact, these students are more intrinsically motivated to homework (d'Ailly 2003) and show persistence when coping with challenging situations (Nolen-Hoeksema et al. 1995).

For elementary students, this relationship is positive but non-significant. This relationship may be due to (a) children age because young children need more parental control due to their limited self-regulation skills (Bronson 2000); (b) to children high perceptions of competence and intrinsic motivation (Grolnick et al. 1991), as this may compromise the process of covariance; (c) or the lack of cognitive maturity to mediate between parental involvement and performance of children (Steinberg et al. 1989).

In line with other studies (e.g., Karbach et al. 2013), this study of three sub-samples of students by grade level showed that perceived parental homework *control* was directly and negatively related to academic achievement. Although the coefficients varied by grade level, the data show that the higher the perceived parental homework control, the lower the students' academic achievement. This may be interpreted to mean that students who perceive higher parental homework control needed close monitoring due to past or present poor report card grades. The association of these variables is especially strong for students in junior high and high school, where more students start to have difficulties maintaining high grades and high achievement.

Dumont et al. (2013) also reported a negative relationship between perceived parental homework control and academic achievement, although the reported association in middle school was indirectly affected by homework procrastination. In line with the self-determination theory (e.g., Grolnick 2003), Dumont and colleagues interpreted their results as meaning that perceived parental control may be detrimental for children's motivational and academic achievement. Our study offers another interpretation, suggesting that students reported higher perceived parental homework control if they felt less confident about their own control over school work and homework. Students and their parents know that if they suffered poor report card grades in the past and want to improve their standing, they need to "buckle down" to do their work—on their own and with parents' encouragement. Future research should analyze in depth the relationship between perceived parental homework control, SRL strategies, and academic achievement. Further, with data from multiple reporters, including both parents and students from different grade levels, researchers could delve more deeply into mechanisms underlying these behaviors.

In this study perceived parental control and support for homework were directly—but differently—related to students' academic achievement (second hypothesis). The relationship was positive for perceived parental homework support and achievement and negative for perceived parental homework control and achievement. Moreover, total indirect associations of perceived parental homework control on academic achievement were found for the junior high and high school samples, but not at the

elementary grade level. Our findings indicate that junior high and high school students' homework behaviors partially mediated the association of perceived parental homework control and academic achievement through students' time spent on homework and homework time management. Previous studies reported this relationship at the middle school (junior high school) level, nevertheless, the measure of student homework behavior in one study was based on items concerning procrastination (Dumont et al. 2013), which is different from the measures used in this study. The results of this study enhanced earlier findings by administering the same measures of student perceptions of parental involvement and students' homework behaviors at the elementary, junior high, and high school levels. Data showed that patterns of associations were clearly different for the elementary and secondary grades.

These findings also have implications for teaching practice (e.g., designing school-based programs of parental engagement with children on homework). By identifying mediating variables at the junior high and high school levels, it should be possible to develop strategies and activities to maximize the effects of parental involvement on student learning and academic achievement. In this study, we examined the role of three student homework behaviors (i.e., time spent on homework completion, time management, and amount of homework completed), as mediators between perceived parental involvement and school achievement. Future research should explore the role of other student variables as mediators of perceived parental involvement in children's academic achievement (e.g., children's help-seeking behavior and their correspondence with parents' support behaviors).

Student homework behavior and academic achievement

The results of this study showed that in all three grade level subgroups of students, the amount of homework completed was positively related to academic achievement. This finding confirmed our third hypothesis, based on prior studies and strengthened understanding because this study is the first to use the same measures of homework behaviors with all three grade-level subgroups of students. The data showed that the strength of the relationship between homework completed and academic achievement decreased from elementary to high school, although the coefficients were significant and positive at all three school levels.

This finding could be due to the nature and amount of homework assignments across the grades. More homework is assigned in many subjects and homework tasks increase their complexity in the older grades. This could help to explain the size of the coefficient between the amount of homework completed and achievement at the higher grade levels. Also, the purposes of homework may vary at each school level and may influence homework completion. The finding may be due to the interrelationships of other variables in the model, which alter the impact of homework completed on achievement. In addition, there may be missing variables from our model that would explain the effects for students at the three school levels. These interesting issues raise important questions for future studies of the impact of students' homework behaviors on achievement.

In relation to the fifth hypothesis, the analyses of data in this study showed that the association between time spent on homework and students' academic achievement was different for the three subsamples of students—negatively for the 5-6th grade sample, null (but in a positive direction) for 7-8th grade sample, and strongly positively for 9-10th grade. A few prior studies found a negative relationship between these variables and concluded that students with low achievement showed less SRL behaviors, had difficulties in managing study time, and/or needed more time to do their homework. Although some earlier studies reported that more time on homework was not associated with higher academic achievement (e.g.,

Epstein and Van Voorhis 2001), our study adds new information to the literature. We found that when the relationship between time on homework and achievement was negative at the elementary level, there were no significant relationships between perceived parental homework support or control and student homework behaviors. However, when the relationship between time spent on homework and achievement was positive at the junior high and high school levels, the relationships between perceived homework parental control and/or support and students' time spent on homework and homework time management were positive. The data suggest that, for older students, perceived parental control and/or support may promote students' self-control and self-regulation of homework behaviors at a time when homework assignments are more difficult and require students' serious attention.

Time spent on homework was positively related to the amount of homework completed, but not significantly associated with homework time management. The results of this study indicated that spending more time doing homework does not necessarily mean that students use homework management strategies efficiently.

This finding needs to be further investigated. According to prior studies, for time on homework to affect or be affected by time management skills at least three conditions are needed: a) students are motivated to do homework in order to improve their knowledge and skills (Xu 2005, 2008; Xu et al. 2014); b) parents are involved in ways that support the development of student autonomy (Cooper et al. 2001; Dumont et al. 2013; Van Voorhis 2011; Xu 2010); and c) the design of the homework tasks facilitate the development of self-regulation skills (e.g., cognitive, motivational, behavioral, and/or contextual self direction) (Trautwein et al. 2009a, b; Van Voorhis 2004). We found positive relationships of time spent and time management of homework with homework completed, but no association between time on homework and time management. Future research should examine this relationship taking into account the three conditions listed above.

As predicted in the fourth hypothesis among high school students, as in previous studies, time management or concentration predicted a positive and significant relationship between the amount of homework completed and students' academic achievement. In line with other studies, we found that homework time management is a powerful predictor of homework completion and, consequently, of academic achievement.

This study contributes to the literatures with its finding of a strong and positive relationship between students' homework time management and amount of homework completed. Interestingly, the levels of homework time management did not increase across school levels and the amount of homework completed decreased from elementary to high school. Our data, with all three levels of schooling represented, extend other studies that suggested that students' motivation for school tasks tends to decrease in the older grades throughout schooling (Cleary and Chen 2009; Fredricks and Eccles 2002; Jacobs et al. 2002; Rosário et al. 2010; Rosário et al. 2013a, b). These worrying results suggest the need to rethink teachers to implement educational practices in class that promote and sustain students' engagement in the older grades, for example, by conducting intrinsically interesting school activities and offering student options to choose and control some aspects of their schoolwork, including types and topics of homework.

Overall, this study suggest that, if educators helped students improve their skills of homework time management and improved parents' understanding of productive involvement behaviors, more students would increase the amount of homework completed and improve their academic achievement. This provocative possibility must be addressed with studies of alternative interventions that aim to help more junior high and senior high school students sustain their commitment to schoolwork, manage their homework time, complete their homework, and succeed with school work.

Results pointing to the importance of students' homework time management also have implications for guiding parents at all grade levels to take an active role in supporting and supervising their children's homework behaviors and attitudes. Productive homework behaviors include, among other factors, organizing the study environment, managing time to meet deadlines, and concentrating on the task (Xu 2010). These strategies, which can be supported by parents, affect students' homework completion at all grade levels, which, in turn, affects student achievement. School-based interventions that train students to apply SRL strategies also could improve the efficacy of the learning process (e.g., Núñez et al. 2013a, b; Rosário et al. 2014), students' attitudes and initiative (Xu 2010), and the process of homework completion (e.g., Cooper et al. 2005; Stoeger and Ziegler 2008). Parents' knowledge about these important student behaviors and how to foster at homework time across the grades also could boost students' homework completion and learning.

Conclusion and study limitations

This study aimed to deepen an understanding of the relationship between students' homework behavior, perceived parental homework involvement, and students' academic achievement. The data showed that results varied by students' grade level. With this information as a base, future research will be able to study why the homework process in the elementary grades is simpler than at the secondary level. For example, future studies should examine whether there is less variation among parents' homework involvement at the elementary level, such that parents are involved whether their children have good homework behaviors or not, and whether or not their children are aware of how to respond to their parents' guidance and appeals.

Although our findings were based on the responses of three large samples of students at different grade levels, there were limitations to the study. First, the data were cross-sectional, not longitudinal nor experimental, so no causal conclusions can be drawn. Cross-sectional data do not allow analyses to go beyond reports of association or relationship. Further, although structural equation modeling permitted attention to fitting complete but parsimonious models, because of the cross-sectional nature of the data, it was not possible to study reciprocal influences of important variables, although parental homework involvement and academic functioning may reciprocally influence each other (Dumont et al. 2013; Silinskas et al. 2012). The findings reported across grade levels should encourage researchers to conduct future studies with longitudinal data.

All of the variables in this study were assessed using self-reports from students. In arrangements with cooperating schools, this ensured sizable samples of students at each school level, but did not capture real-time responses in authentic learning environments, nor multiple reporters' views of the same constructs (e.g., parents' views of their control and support behaviors, parents' reports of students' time management skills). These limitations can and should be corrected in future studies of family engagement with students in the homework process at all grade levels.

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Appendix 1

Table 4 Items used to measured parental homework involvement and students' homework behaviors

Parental homework involvement

Control^a

Me doing homework is very important to my parents.

My parents know if I completed all my tasks.

Before participating in extracurricular activities (e.g., soccer, tennis, swimming, dancing), my parents check if I did all my homework.

My parents will not let me watch TV, or play with my friends... until I have finished homework.

My parents scold and punish me if I don't do all the homework.

Support^a

My parents help me with homework if I ask for assistance.

Generally, my parents ask me if I have questions or need help with my homework.

When I have to do HW, explanations by my parents are very useful.

Students' homework behaviors

Time spent on homework^b

How much time do you usually spend on homework each day, Monday through Friday?

How much time do you usually spend doing homework during the weekend?

Homework time management^c

When I'm doing my homework, I get distracted by anything that is around me.

When I start doing homework, I concentrate and do not think about anything else until I finish it.

Amount of homework completed^d

Usually, how many tasks do you complete from the assigned homework?

^a from 1 (completely false) to 5 (completely true)

^b 1 (less than 30 min), 2 (30 min to 1 h), 3 (1 hour to 1 hour and a half), 4 (1 hour and a half to 2 hours), to 5 (more than 2 h)

^c first item: from 1 (always) to 5 (never); second item; 1 (never) to 5 (always)

^d from 1 (none) to 5 (all)

Appendix Table A

Table 5 Descriptive statistics of the variables in the structural equation model of elementary school students ($n=433$)

	PC1	PC2	PC3	PC4	PC5	PS1	PS2	PS3	TS1	TS2	TM1	TM2	HWC	SL	MT	EL	SS
PC1	-																
PC2	.340**	-															
PC3	.255**	.439**	-														
PC4	.266**	.397**	.448**	-													
PC5	.308**	.315**	.259**	.314**	-												
PS1	.279**	.220**	.155**	.153**	.343*	-											
PS2	.217**	.178**	.130**	.082	.241**	.283**	-										
PS3	.182**	.064	.032	.048	.193**	.227**	.256**	-									
TS1	-.004	.067	-.001	.011	.148**	-.016	.113*	.097*	-								
TS2	.021	.047	-.003	-.007	.022	-.049	.047	.013	.547**	-							
TM1	-.026	-.067	-.049	.033	-.020	.018	-.005	.009	-.017	.080	-						
TM2	.007	-.001	.057	.083	.055	.101*	.078	-.045	-.082	-.040	.424**	-					
HWC	-.037	-.014	-.028	.070	.092	-.030	-.005	.096*	.068	.127**	.280**	.180**	-				
SL	-.095*	-.108*	.018	.076	-.043	-.161**	-.149**	-.053	-.067	-.014	.151**	.185**	.390**	-			
Math	-.061	-.157**	-.045	.057	.004	-.105*	-.161**	-.005	-.123*	-.054	.165**	.204**	.379**	.791**	-		
EL	-.078	-.129**	.037	.117*	-.021	-.125**	-.133**	-.094	-.064	-.030	.199**	.232**	.320**	.734**	.678**	-	
SS	-.038	-.119*	.016	.106*	-.010	-.109*	-.165**	.035	-.087	-.037	.130**	.180**	.394**	.812**	.795**	.723**	-
<i>M</i>	3.83	3.66	4.09	4.24	4.24	3.75	4.02	3.61	3.04	2.80	3.72	3.77	4.70	3.72	3.53	3.56	3.77
<i>SD</i>	1.37	1.41	1.21	1.09	.96	1.41	1.24	1.39	1.09	1.14	1.01	1.06	.61	1.25	1.29	1.40	1.28
<i>Skewness</i>	-.89	-.129	-.78	-.109	-.60	-.73	-.123	-.142	.22	.33	-.54	-.66	-2.45	-.77	-.54	-.56	-.81
<i>Kurtosis</i>	-.49	1.25	-.73	.15	-.88	-.74	.45	1.24	-.83	-.65	.05	-.24	6.67	-.48	-.89	-1.01	-.48

PC1, ..., PC5 (measures of Perceived Parental Control), PS1, ..., PS3 (measures of Perceived Parental Support), TS1 and TS2 (measures of Time Spent on Homework Completion), TM1 and TM2 (measures of Homework Time Management), HWC (measure of Amount of Homework Completed), SL (measure of Spanish Language Achievement), Math (measure of Mathematics Achievement), EL (measure of English Language Achievement), SS (measure of Social Sciences Achievement)

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

Appendix Table B

Table 6 Descriptive statistics of the variables in the structural equation model of junior high school students ($n=716$)

	PC1	PC2	PC3	PC4	PC5	PS1	PS2	PS3	TS1	TS2	TM1	TM2	HWC	SL	MT	EL	SS
PC1	—																
PC2	.238**	—															
PC3	.202**	.484**	—														
PC4	.220**	.506**	.568**	—													
PC5	.347**	.305**	.260**	.335**	—												
PS1	.396**	.354**	.279**	.338**	.377**	—											
PS2	.266**	.222**	.193**	.279**	.334**	.475**	—										
PS3	.299**	.183**	.192**	.221**	.333**	.340**	.451**	—									
TS1	.101**	.151**	.128**	.141**	.144**	.200**	.254**	.138**	—								
TS2	.072	.162**	.151**	.230**	.124**	.115**	.182**	.128**	.564**	—							
TM1	.035	.129**	.055	.116**	.121**	.127**	.146**	.110**	.139**	.147**	—						
TM2	.057	.137**	.099**	.216**	.168**	.198**	.224**	.143**	.183**	.205**	.520**	—					
HWC	.109**	.205**	.172**	.236**	.213**	.249**	.291**	.172**	.416**	.374**	.332**	.393**	—				
SL	-.096*	.031	.114*	.168**	.083*	-.029	.040	.012	.176**	.325**	.248**	.283**	.446**	—			
Math	-.090*	-.017	.064	.122**	.058	-.022	.035	.019	.106**	.235**	.191**	.230**	.414**	.774**	—		
EL	-.068	.002	.106**	.160**	.057	-.039	.029	.042	.127**	.285**	.237**	.260**	.397**	.770**	.718**	—	
SS	-.054	.030	.117**	.193**	.111**	.030	.104**	.068	.148**	.308**	.271**	.294**	.433**	.780**	.710**	.760**	—
<i>M</i>	3.73	3.69	3.78	3.74	3.97	3.54	3.70	3.32	3.27	3.10	3.34	3.31	4.36	5.67	5.57	5.88	5.87
<i>SD</i>	1.28	1.35	1.33	1.30	1.06	1.40	1.40	1.44	1.10	1.29	1.10	1.10	.88	2.14	2.10	2.28	2.27
<i>Skewness</i>	-.80	-.95	-.54	-.70	-.31	-.75	-.80	-.78	-.14	-.02	-.39	-.34	-1.68	-.04	-.09	-.27	-.23
<i>Kurtosis</i>	-.41	.38	-.99	-.83	-1.23	-.60	-.53	-.49	-.71	-1.07	-.27	-.50	2.77	-.66	-.60	-.49	-2.96

PC1, ..., PC5 (measures of Perceived Parental Control), PS1, ..., PS3 (measures of Perceived Parental Support), TS1 and TS2 (measures of Time Spent on Homework Completion), TM1 and TM2 (measures of Homework Time Management), HWC (measure of Amount of Homework Completed), SL (measure of Spanish Language Achievement), Math (measure of Mathematics Achievement), EL (measure of English Language Achievement), SS (measure of Social Sciences Achievement)

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

Appendix Table C

Table 7 Descriptive statistics of the variables in the structural equation model of high school students ($n=534$)

	PC1	PC2	PC3	PC4	PC5	PS1	PS2	PS3	TS1	TS2	TM1	TM2	HWC	SL	MT	EL	SS
PC1	–																
PC2	.416**	–															
PC3	.333**	.526**	–														
PC4	.372**	.566**	.654**	–													
PC5	.489**	.428**	.341**	.375**	–												
PS1	.452**	.320**	.282**	.338**	.503**	–											
PS2	.390**	.267**	.227**	.285**	.311**	.504**	–										
PS3	.362**	.203**	.171**	.195**	.382**	.468**	.438**	–									
TS1	.142**	.168**	.163**	.174**	.197**	.226**	.279**	.169**	–								
TS2	.087*	.179**	.217**	.226**	.185**	.133**	.185**	.075	.510**	–							
TM1	–.025	.047	.029	.091*	.088*	.022	.066	.009	.090*	.125**	–						
TM2	.035	.141**	.116**	.173**	.153**	.079	.109*	–.009	.104*	.179**	.602**	–					
HWC	.125*	.146**	.192**	.237**	.245**	.219**	.207**	.128**	.427**	.336**	.367**	.339**	–				
SL	–.103*	.008	.099*	.139**	.080	–.095*	–.054	–.072	.131**	.323**	.249**	.225**	.411**	–			
Math	–.102*	–.042	.064	.098*	.042	–.108*	–.071	–.047	.092*	.262**	.253**	.170**	.327**	.729**	–		
EL	–.111*	–.016	.063	.087*	.085*	–.116**	–.017	–.051	.099*	.336**	.163**	.136**	.263**	.732**	.666**	–	
SS	–.124**	.032	.096*	.131**	.085*	–.051	.002	–.027	.175**	.393**	.203**	.207**	.336**	.766**	.639**	.732**	–
<i>M</i>	3.08	3.20	3.19	3.15	3.41	2.84	2.83	2.55	3.12	3.04	3.06	3.06	3.86	5.49	4.74	5.97	6.06
<i>SD</i>	1.28	1.34	1.41	1.32	1.17	1.37	1.41	1.31	1.20	1.32	1.12	1.02	1.01	2.23	2.24	2.17	2.35
<i>Skewness</i>	–.12	–.37	.11	.15	.43	–.22	–.23	–.26	–.12	.07	–.19	–.17	–.86	.05	.11	–.09	–.14
<i>Kurtosis</i>	–1.00	–.66	–1.19	–1.20	–.90	–1.11	–1.19	–1.02	–.86	–1.14	–.58	–.44	.05	–.77	–.73	–.70	–.82

PC1, ..., PC5 (measures of Perceived Parental Control), PS1, ..., PS3 (measures of Perceived Parental Support), TS1 and TS2 (measures of Time Spent on Homework Completion), TM1 and TM2 (measures of Homework Time Management), HWC (measure of Amount of Homework Completed), SL (measure of Spanish Language Achievement), Math (measure of Mathematics Achievement), EL (measure of English Language Achievement), SS (measure of Social Sciences Achievement)

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

References

- Bembenutty, H., & White, M. C. (2013). Academic performance and satisfaction with homework completion among college students. *Learning and Individual Differences, 24*, 83–88.
- Bronson, M. B. (2000). *Self-regulation in early childhood: Nature and nurture*. New York: Guilford.
- Carter, R. S., & Wojtkiewicz, R. A. (2000). Parental involvement with adolescents' education: do daughters or sons get more help? *Adolescence, 35*(137), 29–44.
- Chen, J. (2008). Grade level differences: relations of parental, teacher and peer support to academic engagement and achievement among Hong Kong students. *School Psychology International, 29*, 183–198.
- Cleary, T. J., & Chen, P. P. (2009). Self-regulation, motivation, and math achievement in middle school: variations across grade level and math context. *Journal of School Psychology, 47*, 291–314.
- Cooper, H. (Ed.). (1989). *Homework*. New York: Longman.
- Cooper, H. (2001). Homework for all—in moderation. *Educational Leadership, 58*, 34–38.
- Cooper, H., & Valentine, J. C. (2001). Using research to answer practical questions about homework. *Educational Psychologist, 36*, 143–153.
- Cooper, H., Lindsey, J., & Nye, B. (2000). Homework in the home: How student, family, and parenting-style differences relate to the homework process. *Contemporary Educational Psychology, 25*, 464–487.
- Cooper, H., Jackson, K., Nye, B., & Lindsay, J. J. (2001). A model of homework's influence on the performance of elementary school students. *Journal of Experimental Education, 69*, 181–199.
- Cooper, H., Horn, S., & Strahan, D. B. (2005). If only they would do their homework: promoting self-regulation in high school English classes. *The High School Journal, 88*, 10–25.
- Cooper, H., Robinson, J., & Patall, E. (2006). Does homework improve academic achievement? A synthesis of research, 1987–2003. *Review of Educational Research, 76*, 1–62.
- Corno, L. (1994). Student volition and education: Out-comes, influences, and practices. In D. H. Schunk & B. J. Zimmerman (Eds.), *Self-regulation of learning and performance: Issues and educational applications* (pp. 229–254). Hillsdale: Lawrence Erlbaum Associates, Publishers.
- d'Ailly, H. (2003). Children's autonomy and perceived control in learning: a model of motivation and achievement in Taiwan. *Journal of Educational Psychology, 95*, 84–96.
- de Jong, R., Westerhof, K. J., & Creemers, B. P. M. (2000). Homework and student math achievement in junior high schools. *Educational Research and Evaluation, 6*, 130–157.
- Dearing, E., Kreider, H., Simpkins, S., & Weiss, H. B. (2006). Family involvement in school and low-income children's literacy: longitudinal association between and within families. *Journal of Educational Psychology, 98*, 653–664.
- Desforges, C., & Abouchar, A. (2003). *The impact of parental involvement, parental support and family education on pupil achievements and adjustments: A literature review*. Nottingham: Queen's Printer.
- Dettmers, S., Trautwein, U., & Lüdtke, O. (2009). The relationship between homework time and achievement is not universal: evidence from multilevel analyses in 40 countries. *School Effectiveness and School Improvement, 20*, 375–405.
- Dumont, H., Trautwein, U., Lüdtke, O., Neumann, M., Niggli, A., & Schnyder, I. (2012). Does parental homework involvement mediate the relationship between family background and educational outcomes? *Contemporary Educational Psychology, 37*, 55–69.
- Dumont, H., Trautwein, U., Nagy, G., & Nagengast, B. (2013). Quality of parental homework involvement: predictions and reciprocal relations with academic functioning in the reading domain. *Journal of Educational Psychology*. doi:10.1037/a0034100.
- Epstein, J. L. (1988). *Homework practices, achievements, and behaviors of elementary school students*. Baltimore, MD: Johns Hopkins University, Center for Research on Elementary and Middle Schools (Report No. 26).
- Epstein, J. L. (2005). A case study of the partnership schools comprehensive school reform (CSR) model. *The Elementary School Journal, 106*, 151–170.
- Epstein, J. L., & Lee, S. (1995). National patterns of school and family connections in the middle grades. In B. A. Ryan, G. R. Adams, T. O. Gullota, R. O. Weissberg, & R. L. Hampton (Eds.), *The family-school connection: Theory, research, and practice* (pp. 108–154). Thousand Oaks: Sage.
- Epstein, J. L., & van Voorhis, F. L. (2001). More than minutes: teachers' roles in designing homework. *Educational Psychologist, 36*, 181–193.
- Epstein, J. L., & van Voorhis, F. L. (2012). The changing debate: From assigning homework to designing homework. In S. Suggate & E. Reese (Eds.), *Contemporary debates in child development and education* (pp. 263–273). London: Routledge.
- Epstein, J. L., Sanders, M. G., & Simon, B. S. (2009). *School, family, and community partnerships: Your handbook for action* (3rd ed.). Thousand Oaks: Corwin Press.

- Fan, X., & Chen, M. (2001). Parental involvement and students' academic achievement: a meta-analysis. *Educational Psychology Review*, *13*, 1–22.
- Farrow, S., Tymms, P., & Hemderson, B. (1999). Homework and attainment in primary schools. *British Educational Research Journal*, *25*, 323–341.
- Finney, S. J., & DiStefano, C. (2006). Non-normal and categorical data in structural equation modeling. In G. R. Hancock & R. O. Mueller (Eds.), *Structural equation modeling. A second course* (pp. 269–314). Greenwich: Information Age Publishing.
- Fredricks, J. A., & Eccles, J. S. (2002). Children's competence and value beliefs from childhood through adolescence. *Developmental Psychology*, *38*, 519–533.
- Gonida, E. N., & Cortina, K. S. (2014). Parental involvement in homework: relations with parent and student achievement-related motivational beliefs and achievement. *British Journal of Educational Psychology*, *84*, 376–396.
- Grolnick, W. S. (2003). *The psychology of parental control: How well-meant parenting backfires*. Hillsdale: Lawrence Erlbaum Associates.
- Grolnick, W. S., & Slowiaczek, M. L. (1994). Parents' involvement in children's schooling: a multidimensional conceptualization and motivational model. *Child Development*, *65*, 237–252.
- Grolnick, W. S., Ryan, R. M., & Deci, E. L. (1991). Inner resources for school achievement: motivational mediators of children's perceptions of their parents. *Journal of Educational Psychology*, *83*, 508–517.
- Hill, N. E., & Chao, R. K. (2009). *Families, schools, and the adolescent: Connecting research, policy, and practice*. New York: Teachers College Press.
- Hill, N. E., & Tyson, D. F. (2009). Parental involvement in middle school: a meta-analytic assessment of the strategies that promote achievement. *Developmental Psychology*, *45*(3), 740–763.
- Hong, E., & Milgram, R. M. (2000). *Homework: Motivation and Learning Preference*. Westport: Bergin & Garvey.
- Hong, E., Peng, Y., & Rowell, L. L. (2009). Homework self-regulation: grade, gender, and achievement-level differences. *Learning and Individual Differences*, *19*, 269–276.
- Hoover-Dempsey, K. V., & Sandler, H. M. (1997). Why do parents become involved in their children's education? *Review of Educational Research*, *67*, 3–42.
- Hoover-Dempsey, K. V., Bassler, O. C., & Burow, R. (1995). Parents' reported involvement in students' homework: strategies and practices. *The Elementary School Journal*, *95*, 435–450.
- Hoover-Dempsey, K. V., Battiato, A. C., Walker, J. M. T., Reed, R. P., DeJong, J. M., & Jones, K. P. (2001). Parental involvement in homework. *Educational Psychologist*, *36*(3), 195–209.
- Hoover-Dempsey, K. V., Walker, J. M. T., Sandler, H. M., Whetsel, D., Green, C. L., Wilkins, A. S., et al. (2005). Why do parents become involved? Research findings and implications. *The Elementary School Journal*, *106*, 105–130.
- Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: conventional criteria versus new alternatives. *Structural Equation Modeling*, *6*, 1–55.
- Jacobs, J. E., Lanza, S., Osgood, D. W., Eccles, J. S., & Wigfield, A. (2002). Changes in children's self-competence and values: gender and domain differences across grades one through twelve. *Child Development*, *73*, 509–527.
- Karbach, J., Gottschling, J., Spengler, M., Hegewald, K., & Spinath, F. M. (2013). Parental involvement and general cognitive ability as predictors of domain-specific academic achievement in early adolescence. *Learning and Instruction*, *23*, 43–51.
- Levpuscek, M. P., & Zupancic, L. (2009). Math achievement in early adolescence: the role of parental involvement, teacher's behavior and student's motivational beliefs about math. *Journal of Early Adolescence*, *29*, 541–570.
- Lorenz, F., & Wild, E. (2007). Parental involvement in schooling – results concerning its structure and impact on students' motivation. In M. Prenzel & L. Allolio-Näcke (Eds.), *Studies on the quality of schools* (pp. 299–316). Münster: Waxmann.
- Lubbers, M. J., van der Werf, M. P. C., Kuyper, H., & Hendriks, A. A. J. (2010). Does homework behavior mediate the relation between personality and academic performance? *Learning and Individual Differences*, *20*, 203–208.
- Marsh, H. W., Hau, K. T., & Wen, Z. (2004). In search of golden rules: comment on hypothesis-testing approaches to setting cutoff values for fit indexes and dangers of overgeneralizing Hu and Bentler's (1999) findings. *Structural Equation Modeling*, *11*, 320–341.
- Muthén, L. K., & Muthén, B. O. (1998–2007). *Mplus user's guide*. Los Angeles, CA: Authors.
- Nadinloyi, K. B., Hajloo, N., Garamaleki, N. S., & Sadeghi, H. (2013). The study efficacy of time management training on increase academic time management of students. *Procedia Social and Behavioral Sciences*, *84*, 134–138.
- Nolen-Hoeksema, S., Wolfson, A., Mumme, D., & Guskin, K. (1995). Helplessness in children of depressed and nondepressed mothers. *Developmental Psychology*, *31*, 377–387.

- Núñez, J. C., Rosário, P., Vallejo, G., & González-Pienda, J. A. (2013a). A longitudinal assessment of the effectiveness of a school-based mentoring program in middle school. *Contemporary Educational Psychology*, *38*, 11–21.
- Núñez, J. C., Suárez, N., Cerezo, R., Rosário, P., & Valle, A. (2013b). Homework and academic achievement across Spanish Compulsory Education. *Educational Psychology*. doi:10.1080/01443410.2013.817537.
- Núñez, J. C., Suárez, N., Rosário, P., Vallejo, G., Cerezo, R., & Valle, A. (2014a). Teachers' feedback on homework, homework-related behaviors and academic achievement. *The Journal of Educational Research*. doi:10.1080/00220671.2013.878298.
- Núñez, J. C., Vallejo, G., Rosário, P., Tuero, E., & Valle, A. (2014b). Student, teacher, and school context variables predicting academic achievement in Biology: analysis from a multilevel perspective. *Revista de Psicodidáctica*, *19*, 145–171.
- Oubrayrie-Roussel, N., & Safont-Mottay, C. (2011). Adolescent homework management strategies and perceptions of parental involvement. *International Journal About Parents in Education*, *5*, 78–85.
- 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.
- Patall, E. A., Cooper, H., & Robinson, J. C. (2008). Parent involvement in homework: a research synthesis. *Review of Educational Research*, *78*, 1039–1101.
- Pomerantz, E. M., & Eaton, M. M. (2001). Maternal intrusive support in the academic context: transactional socialization processes. *Developmental Psychology*, *37*, 174–186.
- Pomerantz, E. M., Grolnick, W. S., & Price, C. E. (2005). The role of parents in how children approach achievement: A dynamic process perspective. In: A. Elliot and C. Dweck (Eds.), *Handbook of motivation and competence* (pp. 229–278). New York: Guilford.
- Pomerantz, E. M., Wang, Q., & Ng, F. F. (2005). The role of children's competence experiences in the socialization process: a dynamic process framework for the academic arena. In R. Kail (Ed.), *Advances in child development and behavior* (Vol. 33, pp. 193–227). San Diego: Academic.
- Pomerantz, E. M., Moorman, E. A., & Litwack, S. D. (2007). The how, whom and why of parents' involvement in children's academic lives: more is not always better. *Review of Educational Research*, *77*, 373–410.
- Puustinen, M., Lyra, A. L., Metsapëlto, R. L., & Pulkkinen, L. (2008). Children's help seeking: the role of parenting. *Learning and Instruction*, *18*, 160–171.
- Rosário, P., Mourão, R., Baldaque, M., Nunes, T., Núñez, J. C., González-Pienda, J., Cerezo, R., & Valle, A. (2009). Homework, self-regulated learning and math achievement. *Revista de Psicodidáctica*, *14*, 179–192.
- Rosário, P., González-Pienda, J. A., Cerezo, R., Pinto, R., Ferreira, P., Lourenço, A., & Paiva, O. (2010). Efficacy of the program «Testas's (mis)adventures» to promote the deep approach to learning. *Psicothema*, *22*, 828–834.
- Rosário, P., Núñez, J., Valle, A., González-Pienda, J., & Lourenço, A. (2013a). Grade level, study time, and grade retention and their effects on motivation, self-regulated learning strategies, and mathematics achievement: a structural equation model. *European Journal of Psychology of Education*. doi:10.1007/s10212-012-0167-9.
- Rosário, P., Núñez, J. C., Valle, A., Paiva, O., & Polydoro, S. (2013b). Approaches to teaching in High School when considering contextual variables and teacher variables. *Revista de Psicodidáctica*, *18*, 25–45.
- Rosário, P., Núñez, J. C., Trigo, L., Guimarães, C., Fernández, E., Cerezo, R., Fuentes, S., Orellana, M., Santibáñez, A., Fulano, C., Ferreira, A., Figueiredo, M. (2014). Transcultural analysis of the effectiveness of a program to promote self-regulated learning in Mozambique, Chile, Portugal, and Spain. *Higher Education Research and Development*. doi:10.1080/07294360.2014.935932
- Silinskas, G., Lerkkanen, M. K., Tolvanen, A., Niemi, P., Poikkeus, A. M., & Nurmi, J. E. (2012). The frequency of parents' reading-related activities at home and children's reading skills during kindergarten and Grade 1. *Journal of Applied Developmental Psychology*, *33*, 302–310.
- Sheldon, S. B., & Epstein, J. L. (2002). Improving student behavior and school discipline with family and community involvement. *Education and Urban Society*, *35*, 4–26.
- Skaliotis, E. (2010). Changes in parental involvement in secondary education: an exploration study using the longitudinal study of young people in England. *British Educational Research Journal*, *36*, 975–994.
- Skinner, E., Johnson, S., & Snyder, T. (2005). Six dimensions of parenting: a motivational model. *Parenting: Science and Practice*, *5*, 175–235.
- Steinberg, L., Elmen, J. D., & Mounts, N. S. (1989). Authoritative parenting, psychosocial maturity, and academic success among adolescents. *Child Development*, *60*, 1424–1436.
- Stoeger, H., & Ziegler, A. (2008). Evaluation of a classroom-based training to improve self-regulation in time management tasks during homework activities with fourth graders. *Metacognition and Learning*, *3*, 207–230.
- Tam, V. C. (2009). Homework involvement among Hong Kong primary school students. *Asian Pacific Journal of Education*, *29*, 213–227.
- Trautwein, U. (2007). The homework-achievement relation reconsidered: Differentiating homework time, homework frequency, and homework effort. *Learning and Instruction*, *17*, 372–388.

- Trautwein, U., & Koller, O. (2003). The relationship between homework and achievement—still much of a mystery. *Educational Psychology Review*, *15*, 115–145.
- Trautwein, U., & Lüdtke, O. (2009). Predicting homework motivation and homework effort in six school subjects: the role of person and family characteristics, classroom factors and school track. *Learning and Instruction*, *19*, 243–258.
- Trautwein, U., Köller, O., Schmitz, B., & Baumert, J. (2002). Do homework assignments enhance achievement? A multilevel analysis of 7th grade mathematics. *Contemporary Educational Psychology*, *27*, 26–50.
- Trautwein, U., Lüdtke, O., Schnyder, I., & Niggli, A. (2006a). Predicting homework effort: support for a domain-specific, multilevel homework model. *Journal of Educational Psychology*, *98*, 438–456.
- Trautwein, U., Lüdtke, O., Kastens, C., & Köller, O. (2006b). Effort on homework in grades 5 through 9: development, motivational antecedents, and the association with effort on class-work. *Child Development*, *77*, 1094–1111.
- Trautwein, U., Niggli, A., Schnyder, I., & Ludke, O. (2009a). Between-teacher differences in homework assignments and the development of students' homework effort, homework emotions, and achievement. *Journal of Educational Psychology*, *101*(1), 176–189.
- Trautwein, U., Schnyder, I., Niggli, A., Neumann, M., & Lüdtke, O. (2009b). Chameleon effects in homework research: the homework–achievement association depends on the measures used and the level of analysis chosen. *Contemporary Educational Psychology*, *34*, 77–88.
- van Voorhis, F. L. (2004). Reflecting on the homework ritual: assignments and designs. *Theory Into Practice*, *43* (3), 205–212.
- van Voorhis, F. L. (2011). Costs and benefits of family involvement in homework. *Journal of Advanced Academics*, *22*, 220–249.
- Warton, P. M. (2001). The forgotten voices in homework: views of students. *Educational Psychologist*, *36*, 155–165.
- Wigfield, A., Eccles, J. S., Yoon, K. S., Harold, R. D., Arbretton, A. J. A., Freedman-Doan, C., & Blumenfeld, P. C. (1997). Change in children's competence beliefs and subjective task values across the elementary school years: a 3-year study. *Journal of Educational Psychology*, *89*, 451–469.
- Xu, J. (2005). Purposes for doing homework reported by middle and high school students. *The Journal of Educational Research*, *99*, 46–55.
- Xu, J. (2007). Middle-school homework management: more than just gender and family involvement. *Educational Psychology*, *27*, 173–189.
- Xu, J. (2008). Models of secondary school students' interest in homework: a multilevel analysis. *American Educational Research Journal*, *45*, 1180–1205.
- Xu, J. (2010). Predicting homework time management at the secondary school level: a multilevel analysis. *Learning and Individual Differences*, *20*, 34–39.
- Xu, J. (2011). Homework completion at the secondary school level: a multilevel analysis. *The Journal of Educational Research*, *104*, 171–182.
- Xu, J. (2013). Why Do Students Have Difficulties Completing Homework? The Need for Homework Management. *Journal of Education and Training Studies*, *1*, 98–105. doi:10.11114/jets.v1i1.78
- Xu, J., & Corno, L. (2006). Gender, family help, and homework management reported by middle school students. *Journal of Research in Rural Education*, *21*, 1–13.
- Xu, J., & Wu, H. (2013). Self-Regulation of homework behavior: homework management at the Secondary School level. *The Journal of Educational Research*, *106*, 1–13.
- Xu, J., & Yuan, R. (2003). Doing homework: listening to students', parents', and teachers' voices in one urban middle school community. *School Community Journal*, *13*, 25–44.
- Xu, J., Yuan, R., Xu, B., & Xu, M. (2014). Modeling students' time management in math homework. *Learning and Individual Differences*, *34*, 33–42.
- Zimmerman, B. J., & Kitsantas, A. (2005). Homework practices and academic achievement: the mediating role of self-efficacy and perceived responsibility beliefs. *Contemporary Educational Psychology*, *30*, 397–417.

4.2 Trabajo complementario

- V. Rosário, P., Núñez, J. C., Vallejo, G., Cunha, J., Mourão, R., Nunes, T., Suárez, N. (Resubmitted). Is homework feedback worth the teachers' effort? Homework feedback and academic performance. *Journal of Educational Research*.

In spite of the recognized importance of teacher's feedback to student performance, the effects of different types of homework feedback on academic performance have not been extensively studied. The present study analyses the effects of 5 types of homework feedback (i.e., controlling homework completion, clearing homework doubts; correcting homework orally; correcting homework on the blackboard; and collecting and grading homework) provided by 45 teachers of English as a Foreign Language (EFL), using a group randomized design. Once a week for six weeks, teachers provided homework feedback, and at the end of the six weeks students completed an EFL exam as a school performance measure. The results showed that three types of homework feedback impacted positively on students' performance, showing the importance of the teachers' role in the homework process. Implications for practice are also addressed.

**Is homework feedback worth the teachers' effort?
Homework feedback and academic performance.**

Journal:	<i>The Journal of Educational Research</i>
Manuscript ID:	Draft
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Keywords:	Types of homework feedback, Academic performance, English as a Foreign Language (EFL), Homework

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In spite of the recognized importance of teacher's feedback to student performance, the effects of different types of homework feedback on academic performance have not been extensively studied. The present study analyses the effects of 5 types of homework feedback (i.e., *controlling homework completion*, *clearing homework doubts*; *correcting homework orally*; *correcting homework on the blackboard*; and *collecting and grading homework*) provided by 45 teachers of English as a Foreign Language (EFL), using a group randomized design. Once a week for six weeks, teachers provided homework feedback, and at the end of the six weeks students completed an EFL exam as a school performance measure. The results showed that three types of homework feedback impacted positively on students' performance, showing the importance of the teachers' role in the homework process. Implications for practice are also addressed.

Keywords: Types of homework feedback; Academic performance; English as a Foreign Language (EFL); Homework

1. Introduction

Homework is defined as a set of school tasks assigned by teachers to be completed by students outside of school time (Cooper, 2001). A robust research corpus on this educational tool (e.g., Marzano & Pickering, 2007) has indicated a positive association between homework frequency or amount of homework completed and academic performance, however mixed results were found when time spent on homework was used (e.g., Dettmers, Trautwein, & Lüdtke, 2009; Dettmers, Trautwein, Lüdtke, Kunter, & Baumert, 2010; Núñez, Suárez, Cerezo, Rosário, & Valle, 2013; Trautwein, 2007). In fact, the relationship between homework and academic performance is complex (e.g., Trautwein & Köller, 2003), and feedback on homework is a relevant variable to deepen our understanding of this relationship (Núñez et al., 2013; Trautwein, Lüdtke, Schnyder, & Niggli, 2006). For example, some studies have analyzed the impact of feedback on homework completion (Xu, 2011), on managing

homework (e.g., Xu, 2012; Xu & Wu, 2013), on the effort allocated by students (e.g., Trautwein, et al., 2006), and on academic performance (e.g., Elawar & Corno, 1985; Rosário et al., 2008).

In spite of the social and practical relevance of the relationship between feedback, homework and academic achievement, we could only find two studies, conducted three decades ago, analyzing the effects of different types of written feedback provided by teachers on homework and their impact on students' academic performance (see Cardelle & Corno, 1981; Elawar & Corno, 1985). Attempting to contribute to literature, the current study analyzed the relationship between different types of homework feedback provided by teachers and the academic performance of 6th graders in *English as a Foreign Language* (EFL) following a quasi-experimental design conducted in a natural learning environment.

1.1. Homework feedback

Hattie and Timperley (2007) defined learning feedback as the information provided by an educational agent or by the student himself (self) on aspects of performance. It is an important source of information to correct wrong answers (Narciss, 2004) and improve academic performance (e.g., Duijnhouwer, Prins, & Stokking, 2012; Nicol & Macfarlane-Dick, 2006; Shute, 2008). Focusing on homework, Cooper (2001) noted that teachers' feedback may include and combine: (i) written individual comments, pointing out correct and incorrect answers; (ii) grading; (iii) oral or written praise or critique; and (iv) rewards in response to students' work. Walberg and Paik (2000) pointed out homework feedback as "the key to maximizing the positive impact of homework" (p. 9), once teachers can manage the opportunity to reinforce well-done work by students or teach them something new that could help them improve their work.

Some studies corroborate this statement by showing positive results concerning homework feedback effects on students' outcomes. For example, Cardelle and Corno (1981) analyzed the effects of three types of written homework feedback (i.e., praise, critique, critique plus praise), and concluded that student's performance under the condition of critique plus praise proved to be better than under the other two. The synthesis by Walberg, Paschal, and Weinstein (1985) showed that graded homework

had a positive effect on academic achievement. However, subsequent research has indicated some contradictory results. Trautwein, Köller, Schmitz and Baumert (2002), for example, concluded that monitoring homework completion did not predict math achievement. Moreover, Trautwein, Niggli, Schnyder and Lüdtke (2009), when analyzing teachers' adopting a *controlling homework style* (i.e., type of homework feedback that goes beyond monitoring homework because teachers also evaluate students' effort level), found no relationship between providing this type of feedback and the performance of 8th graders in French as a second language. More recently, the study of Núñez et al. (in press) analyzed the relationship between teachers homework feedback and academic achievement with a new approach, and found that homework feedback has an indirect relationship with academic achievement via students' homework behaviors (e.g., amount of homework completed).

Although literature has highlighted the role of teachers feedback on some students' homework behaviors (Núñez et al., in press; Xu, 2012; Xu & Wu, 2013), there is a need to clarify the role of homework feedback on students' performance. The study of the impact of different types of homework feedback on students' academic achievement could add interesting insights to homework research and open new perspectives for educational practice. To our knowledge, no studies have analyzed the effect of different types of homework feedback on academic achievement. Thus the current study investigates homework feedback types attempting to address this gap in homework research.

2. Research purpose

In spite of the recognized importance of teacher feedback on students' learning and performance (e.g., Evans, 2013; Hattie & Timperley, 2007), Voerman, Meijer, Korthagen and Simons (2012) found that the frequency of teacher feedback in classroom is low and most of it is non-specific.

Homework is one of the most common educational tools used by teachers (Cooper, 2001) and teachers' homework feedback may be a main source of specific information that students need to increase the quality of their learning (e.g., Doyle & Barber, 1990; Walberg & Paik, 2000). Nevertheless, the effects of different types of homework feedback on learning and academic performance have not yet been extensively studied. To our knowledge, only the study by Cardelle and Corno (1981) has analyzed the effects of different types of written homework feedback in the learning of a second language (i.e., Spanish). Trautwein et al. (2006) suggested that future studies could include other dimensions of homework feedback (e.g., control of homework completion, grading homework). However, recent studies on homework feedback used a unique measure for this variable (Xu, 2011, 2012; Xu & Wu, 2013), not considering the effect of different types of homework feedback.

Moreover, the research on ESL and on EFL addressing the effects of corrective feedback on students' linguistic accuracy (e.g., Bitchener & Knoch, 2010a, b) has been running predominately laboratory studies and to our knowledge none of the studies addressed homework feedback. Lee (2013) and Lyster, Saito, and Sato (2013) called for new studies focused on ESL and on EFL running in real learning contexts, with the aim of analyzing the relationship between different types of feedback and students' learning.

We intend to fill this gap by analyzing the relationship of different types of homework feedback provided by teachers with school performance within a real learning context.

In order to reach this aim, homework feedback types were designed according to previous studies (e.g., Murphy et al., 1987; Trautwein et al., 2006; Walberg et al., 1985).

Moreover, to assure that the homework feedback types chosen were fitted to Portuguese teachers' homework feedback practices, 15 EFL middle school teachers were asked to indicate the types of homework feedback they usually provide to their students. Finally, five homework feedback types were included in our study, as follows: (1) *Controlling homework completion*; (2) *Clearing homework doubts*; (3) *Correcting homework orally*; (4) *Correcting homework on the blackboard*; and (5) *Collecting and grading homework*. Types 1 and 5 were based on the literature (Murphy et al., 1987; Trautwein et al., 2006; Walberg et al., 1985), and type 2, 3, and 4 were extracted from teachers' answers concerning their practices.

To summarize, our study aims to answer the following questions:

- (a) Is there a relationship between the type of homework feedback provided by teachers and students' academic performance?
- (b) If so, which type (or types) is responsible for this relationship?
- (c) Does students' prior performance affect the relationship between the type of homework feedback provided and students' academic performance?

3. Methods

3.1. Participants

To answer the questions listed above a group-randomized design study was conducted. Specifically, 45 teachers (classes) were randomly assigned to five homework feedback conditions (with nine teachers in each treatment). Each teacher applied a single type of feedback once a week for six weeks. At the end of this period the effects on academic performance in EFL class were analyzed. In order to improve the quality of inferences, our study design initially included student performance as a covariate. Later on the number of feedback sessions yielded has been added as another covariate due to reasons explained in the data analysis (section 3.4).

Nineteen teachers were excluded from the study for different reasons (three were laid off, six did not correctly report the work done or the data requested, and ten did not faithfully follow the feedback administration procedure). Thus, only 26 teachers (20 women and 6 men), between 28 and 54 years of age, fully completed the study. These teachers had between 3 to 30 years of teaching experience ($M = 19$) and taught EFL classes for 553 6th grade students in six public schools in northern Portugal. From these students, 278 (50.3%) were girls and 275 (49.7%) boys between the ages of 10 and 13 ($M = 11.05$; $SD = 0.87$).

In the Portuguese school system the study of EFL is compulsory from 5th grade to 9th grade (middle school). The middle school in the Portuguese system is divided into two stages (first stage 5th and 6th grades, 10 and 11 years old; and the second stage 7th to 9th grade, 12 to 14 years old). Our study was conducted in the 6th grade, last year from first stage in middle school.

EFL classes in 6th grade are delivered twice a week (90 minutes each lesson). Portuguese public schools are not committed with any homework policy (e.g., amount, frequency, and type of homework assigned) and teachers do not receive any specific training on homework.

3.2. Measures

The two academic performance measures used in this study were gathered in the administrative offices of the corresponding schools. Prior performance (used as a pretest) was obtained from students' grades in a final English exam completed at the end of the previous school year (end of June). Final academic performance (used as a post-test) was obtained from the grades earned by students in a final English exam held for this study completed in the end of the study (beginning of November). The exam was made up of 20 questions to evaluate reading comprehension, vocabulary, grammar, translation of sentences from English to Portuguese and vice-versa, and the writing of a short composition (5-10 lines). The duration of this exam was for 45 minutes. Grades in Portuguese compulsory education are from 1 to 5, being 1 and 2 negative, 3 passing, 4 good, and 5 excellent.

3.3. Procedure

Data were gathered in the beginning of the school year (mid-September and the end of October) after obtaining permission from the school head offices. The 6th grade English teachers communicated their intention to participate via email. Among the volunteer teachers, 45 teachers and their students were randomly selected, and distributed randomly among the five feedback conditions (nine teachers per condition). Two weeks before beginning the study, the 45 teachers participated in a 4-hour information meeting explaining in detail the project objectives and research design (e.g., analysis and discussion of the format and content of the English exam to evaluate student performance, information on the frequency, number and type of homework assignments, and the five types of homework feedback). Teachers agreed to assign homework only once a week (in the first class of the week) and to provide homework feedback in the following class (i.e., second and last class of the week). The six

homework assignments were extracted from the English textbook used by the students and were the same for all participants. Two different types of homework were assigned. The first type was made up of reading comprehension, vocabulary, and grammar questions (homework assignments 1, 2, 4, and 5). The second type (homework assignments 3 and 6) was made up of translation of English sentences to Portuguese and vice-versa, and the writing of a short composition in English (5 to 10 lines). At the end of each lesson, the students wrote down their teacher's instructions for the homework assignment in their notebooks and completed it outside of class time.

The researchers practiced extensively with the teachers the administration of the five types of feedback on different homework assignments to assure that all the participants in each condition followed the same and only homework feedback protocol. This information meeting used a combination of theory and practice, open discussion, and role-playing exercises.

In the current study, for each condition, teachers followed the protocol as follows: for feedback condition 1 (*controlling homework completion*), the teacher began the class asking the students whether they had completed the homework assignment (i.e., yes, no) and recorded these data on a homework assignment sheet. For feedback condition 2 (*clearing homework doubts*), the teacher began class answering students' doubts about the homework assignment. In every participating class, students were intentionally encouraged to ask questions intended to clear any doubts about their homework (e.g., Do you have any doubt about the homework tasks?). For feedback condition 3 (*correcting homework orally*) the teacher began the class with an oral homework correction. In this condition, teachers proactively read the homework assigned and corrected verbally all the tasks or questions (i.e., the teacher read each of the questions and gave the answer aloud, explaining all the mistakes and errors made by students). For feedback condition 4 (*correcting homework on the blackboard*), the teacher began the class by writing on the board and explaining the answers to all of the homework questions. At the end of each explanation, and regarding each question, teachers explicitly asked the class: "Do you have any questions or doubts?" For feedback condition 5 (*collecting and grading homework*), the teacher began classes by handing out individually corrected and graded homework assignments to students. Students were encouraged to read the notes and the teacher explicitly asked the class: "Does anyone have questions or doubts regarding homework?"

To assure the reliability of the measurements (i.e., whether teachers used the feedback condition assigned and followed the protocol), three research assistants were present at the beginning of each class. For 15 minutes, the research assistants took notes on the type of feedback provided by teachers using a diary log. The level of overall agreement among the research assistants was estimated using Fleiss's Kappa statistic (Fleiss, 1981). According to Landis and Koch (1977), the reliability among the research assistants could be rated as good ($\kappa = .746$; $p < .001$).

Data from teachers who did not follow the protocol for the assigned homework feedback condition were not included in the current study. Finally, after all homework feedback sessions, students completed a final English exam as a measure of academic performance (post-test).

3.4. Data analysis

Each of the five feedback types was to be administered by an identical number of teachers (nine). However, as mentioned above, at the end of the study the administration of feedback types did not remain balanced because nineteen teachers were excluded from the study (e.g., some teachers did not follow the feedback administration procedure). Thus, while the quantity of treatments (six homework feedback sessions) was not taken into account during the initial planning of the study design as a variable of interest, it was considered in the analysis of the results as a control variable. Additionally, note that the number of homework feedback sessions provided by teachers within each type was not evenly distributed, so it is not possible to guarantee that these variables were independent. Thus, it is not possible to state whether this special covariate (i.e., number of feedback sessions) was affected by the treatment itself. The effect of the teachers nested within the treatment levels was also controlled for, but within the design (cluster randomized design).

Furthermore students' prior performance was controlled, since that variable can influence the relationship between homework and academic achievement (Trautwein, et al., 2002; Trautwein, Schnyder, Niggli, Neumann, & Lüdtke, 2009).

Since this study used an independent variable (feedback type), a dependent variable (academic performance post-feedback), and two covariates (number of feedback sessions administered and performance prior to feedback), the statistical treatment of the data was carried out using analysis of covariance (ANCOVA).

Data analysis followed a two-stage strategy. In the first stage, we established whether prior performance (pretest) significantly explained academic performance in the post-test (which led to testing whether the regression slopes were null). If the result was positive, then it would not be necessary to include any covariate in the model, and fitting an ANOVA model would be enough. On the other hand, if the result was negative, it led to a second stage in order to verify whether the regression slopes were parallels (that is, to demonstrate whether the relationship between prior and final performance was similar across the different types of feedback). If the parallelism assumption was accepted, then paired comparisons between the adjusted feedback type variable measures (i.e., purged of covariate correlations) were run using the method based on the false discovery rate (FDR) developed by Benjamini and Hochberg (1995) (BH). This procedure satisfactorily controls the rate of false positives and at the same time maximizes the power of the test.

Data were analyzed using SAS version 9.4 (SAS, 2013). The hypotheses referring to nullity and parallelism of the regression slopes were tested using SAS PROC MIXED with the solution proposed by Kenward and Roger (2009). As shown in Table 2, the variances were heterogeneous. PROC MIXED allows the use of a linear model that relaxes the assumption of constant variance (for details, see Vallejo, Ato, & Fernández, 2010; Vallejo & Ato, 2012). The post-hoc contrasts were done using the ESTIMATE expression in SAS PROC MIXED and the BH/FDR option in SAS PROC MULTITEST.

4. Results

4.1. Descriptive statistic

Table 1 shows the descriptive statistics relating to the homework feedback type variable, as well as the covariates prior performance and number of homework feedback sessions yielded. Note that the number of students receiving homework feedback type 5 was low compared with those receiving feedback types 2 and 4.

Insert Table 1 about here

4.2. Analysis of covariance

4.2.1. Null regression curve test

To determine whether prior performance (pretest) significantly explained academic performance in the post-test, a type III sum of squares model without an intercept was created. This model included feedback type (A) and interactions of feedback type with the covariates prior performance (X_1) and homework feedback sessions given (X_2); that is, $A \times X_1$ and $A \times X_2$. The information obtained in this analysis allowed us to consider regression slopes for each level of the feedback type variable and evaluate its nullity and, to a certain extent, its parallelism. In summary, the technique attempted to determine whether covariates modified the interaction between feedback type and final performance. Table 2 shows the test results for this question for two model effects: the principal effect (A) and secondary effects ($A \times X_1$ and $A \times X_2$).

Insert Table 2 about here

The results obtained show that all regression coefficients involving the prior performance covariate were statistically significant ($p < .001$) and very similar among the levels of the feedback type variable (between $p = .864$ and $p = .964$). Thus, we conclude that the slopes were not null. A strong similarity was also observed between the regression coefficients, which suggests that the number of homework feedback sessions, with the exception of the coefficient corresponding to level 2 of the feedback type variable ($b_{A2 \times S} = .15$), was also statistically significant ($p = .011$).

4.2.2. Parallel regression slope test

To test the hypothesis of regression slope parallelism for the covariates prior performance (X_1) and number of feedback sessions (X_2) on final academic performance, the interaction components $A \times X_1$ and $A \times X_2$ of Model A shown in Table 3 are of particular interest.

If the hypothesis had been rejected, the non-parallel slope ANCOVA model would have been accepted as valid. In our case, this hypothesis was not rejected ($F(4, 160) = .62; p = .646$ and $F(4, 144) = 2.20; p = .071$), although the interaction between number of homework feedback sessions and type of feedback turned out to be marginally non-significant. Thus, we provisionally adopted the ANCOVA model that

used equal slopes to describe the influence of the covariates on homework feedback type. Note that the variance component of the students who received the homework feedback type 1 was approximately five times the variance of the students receiving the type 5. To control for the heterogeneity of the data, the GROUP expression in SAS PROC MIXED was used with the solution proposed by Kenward-Roger to adjust degrees of freedom (Kenward & Roger, 2009). Note also that the variance component referring to teachers nested within the feedback types was not statistically significant ($z = .15; p = .44$), so from here on, we will proceed with the single-level ANCOVA model. These results indicate that differences between homework feedback types do not depend on the teacher that provides them.

Insert Table 3 about here

Table 3 also shows information regarding the fit of other ANCOVA models with identical slopes: Model B and Model C. According to the results of the first of the two models created, there was no evidence that the types of homework feedback differed in terms of controlling or not controlling for the number of homework feedback sessions provided by the teachers (X_2), ($F(1, 373) = .16; p = .689$). Note that the ANCOVA model with equal regression slope that left out the number of homework feedback sessions (Model C) showed the best fit to our data and was also more parsimonious. The model with the smallest information criteria, Akaike information criteria (AIC) and Bayesian information criteria (BIC) in our case, is the model that best fits the data.

The ANCOVA model with equal slopes is shown in Figure 1. The essential characteristic that gives its name to the model is worth noting: separate regression lines for each type of feedback and approximately parallel slopes among the homework feedback types. Figure 1 also allows us to detect the presence of two more or less homogeneous subsets of means that barely differed from each other and were thus considered equal from a statistical standpoint. These subsets encompassed, on the one hand, the first two levels of the homework feedback type variable, and on the other hand, the three last levels of the variable. The equal regression slope ($b = .882$) between prior performance and final performance, averaging all levels of homework feedback type, was statistically significant ($t(467) = 36.86; p < .001$).

Insert Figure 1 about here

4.2.3. Comparisons between the adjusted homework feedback type means

The common slope ($b = .882$) was used to calculate the final performance means adjusted to the effect of the prior performance covariate, then multiple comparisons between adjusted means were performed. Purged of the correlation with the prior performance covariate, the adjusted final performance means were $A_1 = 3.14$; $A_2 = 3.11$; $A_3 = 3.44$; $A_4 = 3.88$; and $A_5 = 4.03$.

Given that the presence of two homogeneous subsets of means was previously detected, the family of pairwise comparisons that appear in Table 4 was tested. To control for the probability of making one or more type I errors at the chosen level of significance ($\alpha = .05$) for the specified family or group of contrasts, assuming heterogeneity, the ESTIMATE expression in SAS PROC MIXED was used, as was the BH/FDR option in SAS PROC MULTITEST. As indicated in the last column of Table 4, the procedure detected statistically significant differences ($p < .05$) in five of the six contrasts analyzed (see Figure 2 as well).

Insert Table 4 and Figure 2 about here

5. Discussion of results

This study attempted to analyze whether the relationship between academic performance and homework feedback varies depending on the type of homework feedback provided by the teacher. The findings are discussed according to the questions presented above.

5.1. Types of teachers feedback and academic performance

As Model C (see Table 3) shows, the differences in type of teachers homework feedback, once controlled for the effect of the pretest, were statistically significant [$F(4, 153) = 2.83$; $p = .027$]. This finding suggests that differences found in student performance as a function of the type of homework feedback provided goes beyond what would reasonably be expected to happen by chance. Moreover, taking into

consideration the positive value of the coefficients shown in Table 3, the data suggests that student's performance improved as feedback type changed from type 1 to type 5 (see also Figure 2). The comparisons between adjusted means suggest that the differences between the five feedback types are not all of the same magnitude. In fact, controlling the error rate for comparison family using the FDR procedure, the presence of two homogeneous subsets of treatment means adjusted to the pretest and no differences from each other were identified. The first subset encompassed homework feedback types 1 and 2, while the second accounted for homework feedback types 3, 4, and 5. As shown in Table 4, significant differences were found between adjusted treatment's means for both subsets (feedback 1 and 2 versus feedback 3, 4, and 5).

What are the commonalities and the differences between these two subsets of feedback types that could help explaining findings? Homework feedback type 1 and 2 did not originate differences in school performance. One possible explanation could be that neither of these two types of homework feedback provides specific information about the errors made, to help students improve their learning (Hattie & Timperley, 2007). In feedback type 2, teachers only addressed difficulties mentioned by the students, so some errors may have not been considered and corrected by the teachers. The second family includes homework feedback types 3, 4, and 5. Our data indicate that there were no statistically significant differences in post-test performance among the three types of feedback (intra-group comparisons) (see Table 3). In each of these three conditions (feedback types 3, 4, and 5) all homework content was reviewed and corrected by the teacher. In these three types of homework feedback, students experienced opportunities to analyze teachers' feedback and to verify their errors, which may help to explain our findings and those of previous studies (see Cardelle & Corno, 1981; Elawar & Corno, 1985).

Peterson and Irving (2008), for example, when analyzed students' conception of feedback concluded that students believe that having their reports graded is a "clearer and more honest" (p. 246) type of feedback. These authors also refer that good grades generate a tangible evidence of students' work for parents, which may also generate another feedback session (e.g., praise) given by parents and peers. It is possible that students understand graded homework as more worthwhile when compared with other types of homework feedback. This idea can be supported by studies that found a positive association between homework effort and achievement (e.g., Trautwein et al.,

2006; Trautwein, Schnyder, et al., 2009). Moreover, Walberg et al. (1985) supported that graded homework has a powerful effect on learning. However, Trautwein, Niggli et al. (2009) stressed that graded homework could have a negative impact whenever experienced as over controlling, as "...students may feel tempted to copy from high-achieving classmates to escape negative consequences" (p. 185). These findings (Trautwein et al., 2006; Trautwein, Niggli, et al., 2009; Trautwein, Schnyder, et al., 2009), aligned with ours, suggest the relevance of studying homework feedback in depth.

We also note that the effect of teachers' homework feedback on performance was affected by the degree of prior performance, but not by the number of feedback sessions (i.e., the number of feedback sessions was only marginally non-significant as a secondary factor, not as the principal factor). In order to make a coherent interpretation of the results, the model that adequately describes our data by using model selection approaches was selected. Comparing log-likelihood values clearly rejects the ANOVA model, indicating the need to adjust the performance scores obtained at the conclusion of the experiment for differences in performance prior to feedback among clusters. If the covariate adjustment had not been used, it would have drawn an erroneous conclusion with respect to the practical significance of the research results.

5.2. Limitations of the study and future research

This study is a preliminary examination of the relationship between five types of teachers' homework feedback and performance in EFL class. Therefore, there are some limitations that must be addressed.

First, participating teachers were assigned to one and only one of five different homework feedback conditions, but nineteen of them were excluded for not adhering to the protocol as planned. In result, the number of teachers in each condition remained unbalanced, especially for feedback condition number 5, which should be taken into consideration when analyzing conclusions. We acknowledged the difficulty of carrying out experimental studies in authentic teaching and learning environments. Nevertheless, we decided to address the call by Trautwein et al. (2006), and investigate homework feedback as ecologically valid as possible in the natural learning environment of teachers and students. Future studies should find a way to combine an optimal variable control model and the authentic learning environment.

Second, in spite of the control of the researchers over the type of homework feedback provided under each condition, teachers did not always follow the same strategies in the administration of each feedback type (e.g., prompts, recasts, indirect feedback) (e.g., see Ammar & Spada, 2006; Bitchener & Knoch, 2010a; Shute, 2008), which could compromise the degree of generalization of our results. However, the way the application of feedback was designed and the control provided by nesting the variable teacher within the treatment design offers a sufficient guarantee of the generalization of the results.

Third, a mixed type of homework feedback (i.e., combining different types of homework feedback) was not considered in the current study as an additional level of the independent variable. In this regard, literature of corrective feedback in EFL or ESL classrooms (e.g., Lee, 2013; Lyster et al., 2013) suggest that the varied use of teacher feedback might be even more efficient than the use of just one feedback type. In fact, some of the excluded teachers from the current study highlighted the merit of combined feedback conditions. The following quotation of one of those teachers offers a good insight on this idea: "I was 'assigned' to feedback condition 5 [collecting and grading homework], but grading and noting the homework for every homework is too demanding, as I have five more 6th grade classes to teach. So, although believing that giving individualized feedback is better for my students, I couldn't do it in all the six homework assignments as required. In some feedback sessions I gave another type of feedback, like correcting orally the homework." (M24). Thus, future studies should consider the possibility of analyzing the impact of different combinations of homework feedback types and control for the strategies used by the teacher when providing homework feedback. Moreover, future research could investigate which variables (e.g., the number of students per class, the number of different grade levels teachers are teaching or the number of classes teachers teach, different level of students' expertise in class, but also the aspects related with the career as freezing salaries, reduced health, and retirement costs) better predict teachers' options concerning homework feedback types.

Fourth, the fact that in our study the differences found were small, suggests the importance of examining the type of homework assigned and the interpretation or use of homework feedback by the students. Future studies could analyze the hypothesis that student's behavior towards teacher homework feedback (e.g., how students perceive

their teachers' homework feedback; what students do with the homework feedback information delivered by teachers) mediates the effect of homework on student learning and performance. In fact, the way students deal with the homework feedback received could be an important aspect to explain the impact of feedback on students' homework performance and academic achievement. Future studies could also consider, for example, conducting more large-scale studies (i.e., with optimal sample sizes) aiming at analyzing how student variables (e.g., cognitive, motivational, and affective) mediate the relationship between teacher homework feedback type and students' behaviors, learning and academic performance.

Furthermore, future works could also consider conducting qualitative research to analyze teachers' conceptions of homework feedback. Investigating teachers' conceptions of homework feedback may help to identify other homework feedback practices run in authentic learning environments, and may help to understand the reasons why teachers provide certain types of homework feedback. These informations could be useful to improve homework feedback measures for future quantitative studies.

Finally, our research included only sixth year English teachers. It would be interesting to find out whether our findings replicate in other grade levels or in a different subject.

5.3. Conclusions and implications for practice

According to Walberg and Paik (2000), feedback is "the key to maximizing the positive impact of homework" (p. 9). However, little attention has been paid to the impact of this variable in homework. The results of this preliminary study were obtained in class, a real learning environment context, which suggests that their external validity should be high. The data revealed that, whenever feedback offers individual and specific information to the student (e.g., homework correction, graded homework), the impact on school performance is higher, even being provided only during 6 weeks. Our data indicate that the time and effort the teacher dedicates to evaluating, presenting, and discussing homework with students is worth the effort. Findings stress the importance of teachers' role in the homework process. Thus, we believe that teachers, directly, and students, indirectly, would benefit, from teacher's training on effective homework feedback practices. Some authors have claimed for the importance of teacher training

for preservice and inservice teachers focusing on homework (i.e., purposes of homework, homework feedback type, amount of homework assigned, schools homework policies) (e.g., Epstein & Van Voorhis, 2012; Núñez et al., in press). For example, Elawar and Corno (1985) had already noticed the need for training teachers to change their written homework feedback practices. Moreover, according to Sadler (1989) students also need to be trained to interpret teacher's feedback properly in order to enhance their learning behaviors. Our study suggests that teachers should not only be able to provide an effective homework feedback but also to help their students in how to interpret and use the information offered.

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References

- Ammar, A., & Spada, N. (2006). One size fits all? Recasts, prompts and L2 learning. *Studies in Second Language Acquisition*, 28(4), 543–574. doi: 10.1017/S0272263106060268.
- Benjamini, Y., & Hochberg, Y. (1995). Controlling the False Discovery Rate: a practical and powerful approach to multiple testing. *Journal of the Royal Statistical Society, Series B*, 57, 289–300.
- Bitchener, J., & Knoch, U. (2010a). Raising the linguistic accuracy level of advanced L2 writers with written corrective feedback. *Journal of Second Language Writing*, 19, 207–217. doi:10.1016/j.jslw.2010.10.002.
- Bitchener, J., & Knoch, U. (2010b). The contribution of written corrective feedback to language development: A ten month investigation. *Applied Linguistics*, 31, 193–214.
- Cardelle, M., & Corno, L. (1981). Effects on second language learning of variations in written feedback on homework assignments. *TESOL Quarterly*, 15, 251-261.
- Cooper, H. (2001). *The battle over homework: Common ground for administrators, teachers, and parents* (2nd ed.). Thousand Oaks, CA: Sage Publications.

- Dettmers, S., Trautwein, U., & Lüdtke, O. (2009). The relationship between homework time and achievement is not universal: evidence from multilevel analyses in 40 countries. *School Effectiveness and School Improvement, 20*(4), 375-405. doi: 10.1080/09243450902904601.
- Dettmers, S., Trautwein, U., Ludtke, O., Kunter, M., & Baumert, J. (2010). Homework Works if Quality Is High: Using Multilevel Modeling to Predict the Development of Achievement in Mathematics. *Journal of Educational Psychology, 102*(2), 467-482. doi: 10.1037/a0018453.
- Doyle, M., & Barber, B. (1990). *Homework as a learning experience. What research says to the teacher* (3rd ed.). Washington, DC: National Education Association.
- Duijnhouwer, H., Prins, F., & Stokking, K. (2012). Feedback providing improvement strategies and reflection on feedback use: Effects on students' writing motivation, process, and performance. *Learning and Instruction, 22*, 171-184. doi:10.1016/j.learninstruc.2011.10.003.
- Elawar, M.C., & Corno, L. (1985). A factorial experiment in teachers' written feedback on student homework: Changing teacher behavior a little rather than a lot. *Journal of Educational Psychology, 77*(2), 162-173.
- Epstein, J., & Van Voorhis, F. (2012). The changing debate: From assigning homework to designing homework. In S. Suggate & E. Reese (Eds.), *Contemporary debates in child development and education* (pp. 263-273). London: Routledge.
- Evans, C. (2013). Making Sense of Assessment Feedback in Higher Education. *Review of Educational Research, 83*(1), 70-120. doi: 10.3102/0034654312474350.
- Fleiss, J.L. (1981). *Statistical Methods for Rates and Proportions* (2nd ed.). New York: John Wiley & Sons, Inc.
- Hattie, J., & Timperley, H. (2007). The Power of feedback. *Review of Educational Research, 77*(1), 81-112. doi: 10.3102/003465430298487.
- Kenward, M. G., & Roger, J. H. (2009). An improved approximation to the precision of fixed effects from restricted maximum likelihood. *Computational Statistics and Data Analysis, 53*, 2583-2595.
- Landis, J. R., & Koch, G. G. (1977). The measurement of observer agreement for categorical data. *Biometrics, 33*, 159-174.
- Lee, I. (2013). Research into practice: Written corrective feedback. *Language Teaching, 46*, 108-119. doi: 10.1017/S0261444812000390.

- Lyster, R., Saito, K., & Sato, M. (2013). Oral corrective feedback in second language classrooms. *Language Teaching*, 46, 1-40. doi: 10.1017/S0261444812000365.
- Marzano, R., & Pickering, D. (2007). The case for and against homework. *Educational Leadership*, 64(6), 74-79.
- Murphy, J., Decker, K., Chaplin, C., Dagenais, R., Heller, J., Jones, R., & Willis, M. (1987). An Exploratory Analysis of the Structure of Homework Assignments in High Schools. *Research in Rural Education*, 4(2), 61-71.
- Narciss, S. (2004). The Impact of Informative Feedback and Self-efficacy on Motivation and Achievement in Concept Learning. *Experimental Psychology*, 51(3), 214-228. doi: 10.1027/1618-3169.51.3.214.
- Nicol, D., & Macfarlane-Dick, D. (2006). Formative assessment and self-regulated learning: A model and seven principles of good feedback practice. *Studies in Higher Education*, 31(2), 199-218. doi: 10.1080/03075070600572090.
- Núñez, J. C., Suárez, N., Cerezo, R., Rosário, P., & Valle, A. (2013). Homework and academic achievement across Spanish Compulsory Education. *Educational Psychology*. doi: 10.1080/01443410.2013.817537.
- Núñez, J. C., Suárez, N., Rosário, P., Vallejo, G., Cerezo, R., & Valle, A. (in press). Teachers' feedback on homework, homework-related behaviors and academic achievement. *The Journal of Educational Research*. doi:10.1080/00220671.2013.878298
- Peterson, E., & Irving, S. (2008). Secondary school students' conceptions of assessment and feedback. *Learning and Instruction*, 18, 238-250. doi:10.1016/j.learninstruc.2007.05.001.
- Rosário, P., Baldaque, M., Mourão, R.; Núñez, J.C., González-Pianda, J.; Valle, A., & Joly, M. (2008). Homework, self-efficacy and Math Achievement. *Revista Semestral da Associação Brasileira de Psicologia Escolar e Educacional (ABRAPEE)*, 12(1), 23-35.
- Sadler, D. (1989). Formative assessment and the design of instructional systems. *Instructional Science*, 18(2), 119-44.
- SAS Institute, Inc. (2013). *SAS/STAT® 13.1 User's Guide*. Cary, NC: SAS Institute, Inc.
- Shute, V. (2008). Focus on Formative Feedback. *Review of Educational Research*, 79(1), 153-189. doi: 10.3102/0034654307313795.

- 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., & Köller, O. (2003). The relationship between homework and achievement – Still much of a mystery. *Educational Psychology Review, 15*(2), 115-145.
- Trautwein, U., Köller, O., Schmitz, B., & Baumert, J. (2002). Do Homework Assignments Enhance Achievement? A Multilevel Analysis in 7th-Grade Mathematics. *Contemporary Educational Psychology, 27*, 26-50.
- 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.
- Trautwein, U., Niggli, A., Schnyder, I., & Lüdtke, O. (2009). Between-teacher differences in homework assignments and the development of students' homework effort, homework emotions, and achievement. *Journal of Educational Psychology, 101*(1), 176–189. doi: 10.1037/0022-0663.101.1.176.
- Trautwein, U., Schnyder, I., Niggli, A., Neumann, M., & Lüdtke, O. (2009). Chameleon effects in homework research: The homework-achievement association depends on the measures used and the level of analysis chosen. *Contemporary Educational Psychology, 34*(1), 77–88. doi:10.1016/j.cedpsych.2008.09.001.
- Vallejo, G., & Ato, M. (2012). Robust tests for multivariate factorial designs under heteroscedasticity. *Behavior Research Methods, 44*, 471–489.
- Vallejo, G., Ato, M., & Fernández, M., P. (2010). A robust approach for analyzing unbalanced factorial designs with fixed levels. *Behavior Research Methods, 42*, 607–617. doi:10.3758/BRM.42.2.607.
- Voerman, L., Meijer, P., Korthagen, F., & Simons, R. (2012). Types and frequencies of feedback interventions in classroom interaction in secondary education. *Teaching and Teacher Education, 28*, 1107-1115. doi: 10.1016/j.tate.2012.06.006.
- Walberg, H. J., & Paik, S.J. (2000). Effective educational practices. International Bureau of education. *Educational practices series – 3, 9*. Retrieved from <http://www.ibe.unesco.org>.
- Walberg, H. J., Paschal, R. A. & Weinstein, T. (1985). Homework's powerful effects on learning. *Educational Leadership, 42*, 76-79.

- Xu, J. (2011). Homework completion at the secondary school level: A multilevel analysis. *The Journal of Educational Research*, *104*, 171–182. doi: 10.1080/00220671003636752.
- Xu, J. (2012). Predicting students' homework environment management at the secondary school level. *Educational Psychology*, *32*(2), 183-200. doi:10.1080/01443410.2011.635639.
- Xu, J., & Wu, H. (2013). Self-Regulation of Homework Behavior: Homework Management at the Secondary School Level. *The Journal of Educational Research*, *106*(1), 1-13. doi: 10.1080/00220671.2012.658457.

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Table 1. Descriptive statistics of the variable (feedback type) and covariates (prior performance and number of times feedback is provided).

Variable		N	Min.	Max.	M	SD
Prior performance		553	2	5	3.55	.92
Final performance		553	2	5	3.57	.97
Number of sessions		6	1	6	4.43	1.62
Feedback type		5	1	5	3.18	1.20
Feedback_1	Pretest	85	2	5	3.36	.88
	Post-test	85	1	5	3.27	.99
Feedback_2	Pretest	65	2	5	3.34	.87
	Post-test	65	2	5	3.26	.94
Feedback_3	Pretest	104	2	5	3.42	.93
	Post-test	104	2	5	3.52	.97
Feedback_4	Pretest	264	2	5	3.68	.96
	Post-test	264	2	5	3.73	.97
Feedback_5	Pretest	35	2	5	3.74	.78
	Post-test	35	2	5	3.83	.78

Note. N = total number of subjects; Min = minimum value; Max = maximum value; SD = standard deviation; M = mean; Feedback_1 = controlling homework completion; Feedback_2 = clearing homework doubts; Feedback_3 = correcting homework orally; Feedback_4 = correcting homework assignment on the blackboard; Feedback_5 = collecting and grading homework; Pretest = performance before feedback; post-test = performance after feedback.

Table 2. Estimators of interaction parameters obtained in the first modeling stage after creating a regression model without an intercept.

Effect	Estimate	StdErr	DF	T Value	Pr > t
[A =1.00]	-.04	.34	538	-.11	.915
[A =2.00]	-.39	.42	538	-.92	.360
[A =3.00]	.64	.24	538	2.67	.008
[A =4.00]	.71	.24	538	2.96	.003
[A =5.00]	.41	.27	538	1.53	.127
[A =1.00] × Prior performance	.96	.10	538	10.56	<.001
[A =2.00] × Prior performance	.96	.09	538	10.47	<.001
[A =3.00] × Prior performance	.87	.06	538	15.37	<.001
[A =4.00] × Prior performance	.86	.033	538	26.37	<.001
[A =5.00] × Prior performance	.94	.063	538	14.92	<.001
[A =1.00] × Number of sessions	-.02	.03	538	.59	.552
[A =2.00] × Number of sessions	.15	.06	538	2.56	.011
[A =3.00] × Number of sessions	-.03	.04	538	-.76	.446
[A =4.00] × Number of sessions	-.03	.04	538	-.85	.398
[A =5.00] × Number of sessions	-.04	.04	538	-.85	.395

Note. [A = 1,...,5] = types of feedback given to subjects; StdErr = standard error.

Table 3. Results of fitting three ANCOVA models and one ANOVA model during the second stage of the modeling strategy.

	Model A			Model B			Model C			ANOVA model		
Fixed effects	DF	F Value	Pr > F	DF	F Value	Pr > F	DF	F Value	Pr > F	DF	F Value	Pr > F
	Num Den			Num Den			Num Den			Num Den		
<i>A</i>	4, 162	1.92	.109	4, 183	2.81	.027	4, 159	2.85	.027	4, 150	6.99	< .001
X_1	1, 242	846.74	< .001	1, 465	1338.89	< .001	1, 467	1345.16	< .001			
X_2	1, 252	.54	.464	1, 373	.16	.689						
$A \times X_1$	4, 160	.62	.646									
$A \times X_2$	4, 144	2.20	.071									
Cov Parm	Estimat	Z Value	Pr > Z	Estimat	Z Value	Pr > Z	Estimat	Z Value	Pr > Z	Estimat	Z Value	Pr > Z
UN (1)	.43	6.41	< .001	.42	6.46	< .001	.42	6.48	< .001	.98	6.52	< .001
UN (2)	.31	5.57	< .001	.34	5.60	< .001	.34	5.66	< .001	.88	5.66	< .001
UN (3)	.28	7.14	< .001	.28	7.16	< .001	.28	7.17	< .001	.94	7.14	< .001
UN (4)	.26	11.42	< .001	.26	11.45	< .001	.26	11.46	< .001	.94	11.47	< .001
UN (5)	.08	4.01	< .001	.08	4.09	< .001	.09	4.11	< .001	.62	4.12	< .001
T/A	.00	.15	0.44									
Fit Statist	AIC	BIC		AIC	BIC		AIC	BIC		AIC	BIC	
Value	900.1	921.9		889.8	911.3		875.0	896.6		1539.5	1549.9	

Note. *A* = feedback type; X_1 = previous grade; X_2 = number of feedback sessions; UN (1, 2, 3, 4, 5) = variance of each feedback type; T/A = teachers nested within the feedback type variable; DF_{Num} = degrees of Freedom numerator; DF_{Den} = degrees of freedom denominator.

Table 4. Pairwise comparisons between the feedback types based on ANCOVA BH/FDR that controlled for prior performance.

Levels	Estimate	StdErr	df	tValue	Probt	RAW_P	fdr_p
A1-A3	-.19	.09	161	-2.14	.03	.034	.050
A1-A4	-.18	.08	120	-2.29	.02	.02	.050
A1-A5	-.22	.09	119	-2.61	.01	.01	.050
A2-A3	-.17	.09	126	-1.95	.05	.05	.053
A2-A4	-.16	.08	91	-2.07	.04	.04	.050
A2-A5	-.21	.09	99	-2.41	.02	.02	.050

Note. StdErr = standard error; [A = 1, ..., 5] = types of feedback given to students; significant differences in bold.

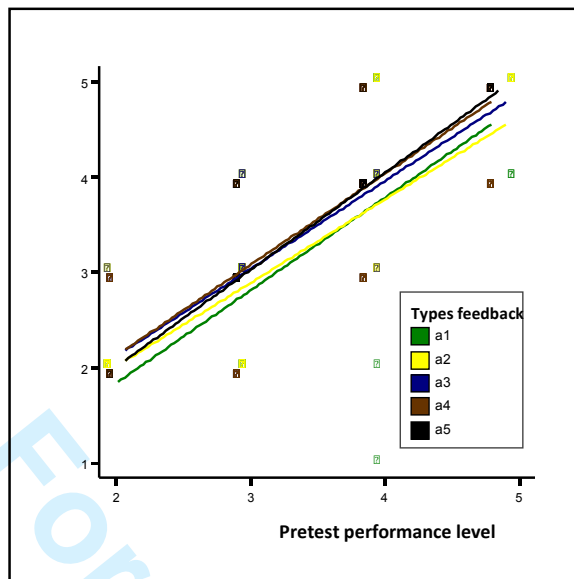


Figure 1. ANCOVA model with equal slopes

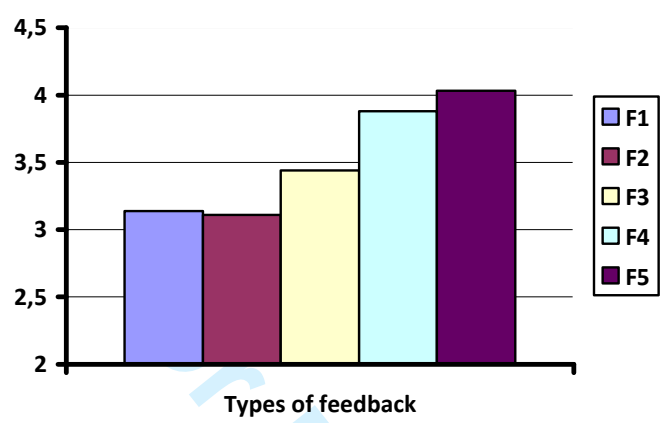


Figure 2. Graphical representation of the mean performance among students who received different types of teacher feedback (F₁ to F₅).

V. Discusión de resultados

Seguidamente se describe una síntesis de los resultados más importantes obtenidos en los cuatro estudios que han dado lugar a publicaciones y en el trabajo complementario que se encuentra en revisión para ser publicado. Los resultados se comentan agrupados de acuerdo con la implicación en los deberes de los tres agentes implicados en el proceso: alumnos, profesores y padres.

5.1. Implicación del alumno en los deberes

Uno de los objetivos importantes de este trabajo ha sido estudiar la relación entre la implicación del alumno en los deberes (cantidad de deberes realizados, tiempo dedicado a los deberes y aprovechamiento del tiempo dedicado), y el rendimiento académico. Además, interesó conocer si esa relación varía en función de la edad y el género de los estudiantes. Seguidamente, se sintetizan los resultados obtenidos en los diferentes estudios.

5.1.1. Cantidad de deberes realizados

Como se indicó en la contextualización de este trabajo, a la vez que los datos aportados por ciertas investigaciones avalan una fuerte y positiva relación entre cantidad de deberes realizados y rendimiento académico (e.g., Cooper, 1989; Cooper et al, 2006; Cooper & Valentine, 2001; Epstein & Van Voorhis, 2001; Trautwein et al., 2002), en otras investigaciones se obtuvo que esta correlación es mayor a medida que los estudiantes avanzan de curso (Cooper, Jackson, Nye, & Lindsay, 2001; Zimmerman & Kitsantas, 2005). Una de las razones esgrimidas para explicar este hecho fue el motivo por el que los profesores de diferentes etapas educativas prescriben deberes (Muhlenbruck, Cooper, Lindsay & Nye, 2000). Sea cual sea la explicación, lo cierto es que la relación entre cantidad de deberes y rendimiento académico parece depender, entre otros factores, de la edad de los estudiantes, de la calidad de los deberes prescritos o el procedimiento utilizado para medir el rendimiento.

En la presente investigación se analizó esta relación en varios estudios (publicación en *Educational Psychology*, publicación en *Journal of Educational Research* y publicación en *Metacognition and Learning*), obteniendo en todos los casos evidencia clara de que cuantos más deberes se realizan mayor es el rendimiento académico obtenido. En los tres estudios se obtuvieron datos de estudiantes desde 5º de Primaria hasta 4º de ESO. En los dos primeros estudios se analizaron los datos controlando el efecto de la edad, pero sin estimar las potenciales diferencias. En el último estudio, se amplió el tamaño muestral y se estimó la relación entre cantidad de deberes realizados y rendimiento académico para tres etapas educativas por separado

(Primaria, primer ciclo de ESO, segundo ciclo de ESO). En todos los análisis, la relación obtenida fue positiva y significativa (con una media de 10% de varianza explicada). No obstante, cabe indicar que en los tres estudios la edad fue relevante. No obstante, los resultados encontrados en el último estudio, cuando se estimó el efecto para cada grupo de edad, mostraron que si bien la relación era positiva en los tres casos, la magnitud de la relación decrece a medida que la edad de los alumnos es mayor. Así, mientras que en Primaria la cantidad de varianza explicada fue de un 16%, en primer ciclo de ESO fue de 13,7%, y en segundo ciclo de ESO tan solo de un 6,25%. Estos datos, a la vez que confirman en parte lo obtenido en la literatura previa (en la que la relación es positiva), también discrepan con ella, pues en nuestro estudio la fuerza de la relación decrece con la edad y en los estudios pasados la intensidad de la relación es creciente.

En nuestros estudios también se observó que con el paso de los cursos disminuye la cantidad de deberes que los alumnos realizan, lo cual concuerda con los datos ofrecidos por estudios previos (e.g., Bryan & Burstein, 2004; Cooper, Lindsay, & Nye, 2000; Hong et al., 2009; Rosário, Mourao, et al., 2009; Xu, 2004). Asimismo, también se hallaron diferencias de género, en cuanto a que las chicas afirman realizar más deberes que los chicos, lo que coincide con lo reportado por otros trabajos (e.g., Rosário, Mourao, Núñez, González-Pienda, & Valle, 2006; Wagner et al., 2007; Xu, 2006, 2007, 2010a; Younger & Warrington, 1996).

5.1.2. *Tiempo dedicado a los deberes*

La literatura existente ha mostrado discrepancias respecto de la relación entre el tiempo dedicado a los deberes y el rendimiento académico. Mientras que en algunos meta-análisis (e.g., Cooper, 1989; Cooper et al., 2006; Cooper & Valentine, 2001; Walberg, 1991) se informa de una relación positiva entre ambas variables, en otros estudios se observó una relación débil, nula o negativa (e.g., De Jong et al., 2000; Tam, 2009; Trautwein, 2007; Trautwein et al., 2002; Trautwein, Schnyder, et al., 2009).

Los estudios mencionados diferían en la edad de los estudiantes, por lo que ésta podría ser una variable parcialmente responsable de dichas discrepancias. Por ello, en esta Tesis Doctoral se pretendió aportar más información sobre esta relación recogiendo datos de diferentes edades en un mismo estudio (5° de Primaria hasta 4° de ESO). Los resultados obtenidos (estudios publicados en *Educational Psychology* y *Journal of Educational Research*), después de controlar los efectos de la edad y el género, mostraron que la relación entre el tiempo dedicado a los deberes y el rendimiento académico era negativa (a mayor tiempo empleado en la realización de los deberes menor es el rendimiento obtenido). Estos resultados, que concuerdan con los obtenidos en otras investigaciones previas, fueron interpretados aludiendo a que quizás el problema estaba en cómo de eficaces eran los estudiantes en la gestión del tiempo utilizado en la realización de los deberes. Tenía sentido pensar que cuanto peor es la gestión del tiempo mayor cantidad de tiempo será necesario para realizar un número determinado de deberes. Sin embargo, en el path model de estos estudios no se observó

relación negativa significativa entre la gestión del tiempo de trabajo y el tiempo empleado. Por el contrario, el efecto de la gestión del tiempo fue directamente sobre la cantidad de deberes realizados.

Estos resultados nos llevaron a pensar que la edad podría jugar un papel relevante en esta relación y que no era suficiente con controlar su efecto. Por este motivo, y con el fin de resolver este interrogante, se diseñó un nuevo estudio (publicado en *Metacognition and Learning*) en el que uno de los objetivos fue abordar esta cuestión. Para ello se recogieron datos de 1683 estudiantes de las edades anteriormente indicadas. El análisis del modelo se realizó por separado para tres grupos de alumnos: Educación Primaria (5º y 6º curso de EP), primer ciclo de ESO (1º y 2º curso) y segundo ciclo de ESO (3º y 4º curso). Al analizar los datos de este modo, se observó que la relación entre tiempo dedicado a los deberes y rendimiento académico difiere según la etapa educativa en la que se encuentren los alumnos: negativa para Primaria, nula aunque positiva y cercana a la significación para primer ciclo de ESO, y positiva para segundo ciclo de ESO. Esto nos indica que no solo la edad es una variable importante en esta relación sino que la condiciona notablemente. Al igual que en los dos primeros estudios se acudió al uso de estrategias eficaces de gestión del tiempo para explicar estos resultados. Se hipotetizó que el cambio de signo de la relación desde negativa (en Primaria) a positiva (en segundo ciclo de ESO) se podría deber, al menos en parte, a que las habilidades de gestión del tiempo en Primaria son escasas, mientras que en segundo ciclo de ESO dichas competencias son mayores y las utilizan con mayor eficacia. Sin embargo, esta hipótesis no es segura, pues al ajustar los modelos no se observó la necesidad de incluir un efecto de gestión del tiempo sobre la cantidad de tiempo invertido, lo cual debería ocurrir principalmente para la muestra de segundo ciclo de ESO. También es cierto que la gestión del tiempo decrece a medida que son mayores los estudiantes. En consecuencia, se consideró necesario seguir investigando sobre este tema.

Por último, los resultados de este trabajo con una gran muestra de estudiantes mostraron que la cantidad de tiempo dedicado a los deberes es ligeramente mayor con el paso de los cursos. Estos resultados son lógicos, aunque habría que tomarlos con cautela pues en los dos primeros estudios las diferencias entre curso no resultaron estadísticamente significativas. Finalmente, respecto a la variable género, se observó que las chicas dedican más tiempo a los deberes que los chicos, en la línea de otros hallazgos previos (Trautwein, 2007; Wagner, Schober, & Spiel, 2007).

5.1.3. Aprovechamiento del tiempo dedicado a los deberes

La literatura científica se había ocupado profusamente de estudiar la relación entre la cantidad de deberes realizados, el tiempo dedicado a los mismos y el rendimiento académico. Sin embargo, hace pocos años que se empieza a investigar sobre la gestión o aprovechamiento del tiempo dedicado a realizar los deberes. En esta Tesis Doctoral hemos incluido el estudio de esta variable y su relación con el tiempo dedicado a los deberes, la cantidad de deberes realizados y otras variables incluidas en los diferentes

modelos causales. Los resultados obtenidos con diferentes muestras indicaron que se trata de la variable de implicación en los deberes que más predice el rendimiento académico de entre las que hemos estudiado. Y esta relación es más fuerte cuanto mayor edad tienen los estudiantes. Sin embargo, también se observó que el aprovechamiento del tiempo dedicado a los deberes decrece ligeramente a medida que los alumnos asisten a cursos superiores.

5.2. Implicación del profesor en los deberes

Otro objetivo importante de esta Tesis Doctoral fue estudiar la influencia del feedback (sobre los deberes escolares) del profesor, tal como es percibido por el alumno, sobre la implicación del alumno en los deberes (cantidad de deberes realizados, tiempo dedicado a los deberes y aprovechamiento del tiempo dedicado), y sobre su rendimiento académico. Los resultados obtenidos relativos a este objetivo se corresponden con el estudio publicado en *Journal of Educational Research* y con el trabajo complementario realizado que se encuentra en proceso de revisión. Seguidamente, se sintetizan los datos más importantes.

5.2.1. Feedback del profesor, implicación del alumno en los deberes y rendimiento académico

En línea con los datos aportados por otros estudios previos (e.g., Corno & Xu, 2004; Katz et al., 2010; Paschal et al., 1984; Trautwein & Lüdtke, 2009; Trautwein, Lüdtke, Kastens, & Köller, 2006; Trautwein, Niggli, et al., 2009; Walberg, 1991; Xu, 2008, 2011; Xu & Wu, 2013), los resultados obtenidos en el trabajo publicado en *Journal of Educational Research* muestran una asociación positiva entre la percepción de feedback y la cantidad de deberes realizados. Los alumnos que perciben mayor cantidad de feedback por parte de sus profesores respecto de los deberes realizados son aquéllos que realizan mayor cantidad de deberes de los que les prescriben. Asimismo, se obtuvo también relación positiva entre recibir feedback de los profesores y el aprovechamiento del tiempo empleado en la realización de los deberes. Al igual que en el caso anterior, a mayor cantidad de feedback percibido, mejor es la gestión del tiempo empleado en esa tarea. Esto podría explicar el hecho de que la recepción de feedback no afecte a la cantidad de tiempo empleado en realizar deberes; es decir, la mayor cantidad de deberes realizados en presencia de feedback se debe, más que a la cantidad de tiempo, a una buena gestión del mismo.

Por tanto, parece evidente la relevancia de que los profesores aporten feedback a sus alumnos respecto de los deberes prescritos. En este estudio se comprobó, en suma, que si el alumno recibe feedback de sus profesores, éste se implica más en la realización de los mismos (más cantidad de deberes hace y mejor aprovecha el tiempo empleado) y mayor es el rendimiento académico obtenido.

Sin embargo, a pesar de la importancia que parece tener el aporte de feedback por parte del profesor sobre la realización de deberes, como en otros estudios (Katz et al., 2010), los resultados obtenidos en esta investigación muestran que la percepción del alumno de feedback del profesor decrece a medida que los alumnos asisten a cursos superiores. Aunque es posible que esto sea debido a que los profesores entienden que los alumnos deben ser progresivamente más responsables de sus deberes y autónomos, o que cada vez disponen de mayores habilidades y conocimientos para gestionar mejor su conducta en este contexto, estos datos suponen una llamada de atención al profesorado de Educación Secundaria (Xu & Wu, 2013), con el propósito de que no abandonen la promoción de buenos hábitos de estudio de sus alumnos en los cursos superiores.

5.2.2. *Tipos de feedback en relación con los deberes y su relación con el rendimiento académico*

Vista la relevancia del feedback del profesor en el comportamiento de los estudiantes a la hora de la realización de los deberes escolares y, consecuentemente, en el rendimiento académico obtenido finalmente, la siguiente pregunta que nos hicimos fue: ¿cualquier tipo de feedback es igualmente relevante? La hipótesis que subyacía era que los diferentes tipos de feedback que pudiera dispensar el profesor podrían llevar a una distinta implicación del estudiante en la realización de los deberes.

Para ello se diseñó un estudio que figura en esta Tesis Doctoral como trabajo complementario (en proceso de revisión para su publicación) en el cual se han estudiado cinco modalidades de feedback del profesor: 1) controlar la realización de deberes; 2) resolver dudas respecto de los deberes; 3) corregir los deberes oralmente; 4) corregir los deberes en la pizarra; y 5) recoger y calificar los deberes.

Los resultados obtenidos mostraron diferencias estadísticamente significativas en el rendimiento respecto de los diferentes tipos de feedback. De hecho, el rendimiento académico de los alumnos ha sido mejor cuando el tipo de feedback ha pasado de ser de tipo 1 a tipo 5. Sin embargo, la diferencia entre los distintos tipos de feedback no es en todos los casos de la misma magnitud. Ha habido diferencias significativas entre el bloque de tipos de feedback 1 y 2 y el de tipos de feedback 3, 4 y 5. Entre los tipos de feedback 1 y 2 no ha habido diferencias con el rendimiento académico, quizá porque ninguno de estos dos tipos de feedback proporciona información sobre los errores cometidos, lo cual podría haber ayudado a mejorar el aprendizaje de los alumnos (Pomerantz, Grolnick, & Price, 2005). Tampoco ha habido diferencias significativas con el rendimiento académico entre los tipos de feedback 3, 4 y 5. En estas tres condiciones de feedback, el contenido de los deberes es revisado y corregido por el profesor. Los estudiantes tienen la oportunidad de analizar el feedback de los profesores y corregir los errores, lo cual ayuda a explicar la ausencia de diferencias entre los tres tipos de feedback. Estos datos corroboran los obtenidos por otros trabajos (Cardelle & Corno, 1981; Elawar & Corno, 1985). No obstante, en nuestro estudio también se tuvo en cuenta el efecto moderador que pudiera tener la cantidad de sesiones de feedback

aportada a los alumnos, observándose que la tendencia de los resultados anteriormente descritos era la misma independientemente de la cantidad de feedback.

En definitiva, los datos aportados por los dos trabajos que han estudiado el feedback del profesor mostraron que la prescripción de deberes debe estar seguida de feedback y que la mejor forma de aportarlo es cuando incorpora información sobre los errores cometidos y las estrategias a seguir para hacerlos correctamente.

5.3. Implicación parental en los deberes

Finalmente, también nos interesó estudiar la relevancia de la implicación de los padres en el contexto de los deberes escolares. La revisión realizada mostró que existía amplia información sobre las formas de implicación parental en etapas escolares medias, pero pocos datos al respecto en Primaria. Por ello, se diseñó un estudio de corte fenomenográfico (publicado en *Psicothema*) con el fin de obtener información sobre cómo entienden los padres de esta etapa escolar su implicación en las tareas escolares de sus hijos y qué hacen para llevarla a cabo. En base a esta información, y a la disponible de las edades superiores, se elaboró un modelo de ecuaciones estructurales (publicado en *Metacognition and Learning*) en el que se analizó el efecto de dos tipos de implicación parental (control y apoyo), identificables en los tres niveles escolares (Primaria, primer ciclo de ESO y segundo ciclo de ESO), sobre la implicación de los alumnos en los deberes (cantidad de deberes realizados, tiempo dedicado y aprovechamiento del tiempo), y en el rendimiento académico. A continuación, se aporta una síntesis de los resultados obtenidos.

5.3.1. Tipos de implicación parental en Educación Primaria

Con este estudio se pretendió responder a las siguientes cuestiones: ¿Cómo conceptualizan los padres de alumnos de cuarto curso su implicación en los deberes escolares de los hijos? y ¿qué hacen los padres para implicarse? Para acceder a esta información se empleó la técnica de la entrevista fenomenográfica, de modo que la información ha sido analizada desde la perspectiva de los participantes y no del investigador.

Del análisis de las entrevistas a los padres, se obtuvieron tres tipos de implicación parental (*qué*) (*promoción de autonomía, control del aprendizaje, e incentivo del aprendizaje*), con sus tres formas de implicación o estrategias correspondientes (*cómo*) (*subsidiariedad, colaboración, y control de las emociones*).

Promoción de autonomía–subsidiariedad (aspectos *qué* y *cómo* de la implicación parental) fueron definidos por los padres como una oportunidad para desarrollar el sentido de independencia de sus hijos a la hora de hacer los deberes, lo cual conlleva por su parte ayuda (pero no la realización de las tareas de los hijos).

Control del aprendizaje–colaboración, se entendió como aquellas conductas que permiten a los padres controlar el nivel de contenido dominado por los hijos, además del proceso de aprendizaje seguido y las dificultades experimentadas, para lo que los padres ven necesario la voluntad de ayudar a sus hijos a estudiar, a organizar el ambiente de estudio y a enseñarles estrategias que les sean útiles en su desempeño. Finalmente, *Incentivo del aprendizaje–control de emociones* fue definido como la implicación como un facilitador del éxito académico en la medida que implica acciones o conductas de los padres para ayudar a afrontar las emociones negativas de los hijos durante la realización de los deberes escolares. En resumen, los resultados señalaron que los padres de estudiantes de Primaria conceptualizan la implicación en los deberes como una herramienta útil y efectiva para promover el éxito académico de sus hijos. El incentivo y la motivación ante el estudio, además del control y la monitorización de las actividades de aprendizaje que instan a los alumnos a rendir mejor en el colegio, son los aspectos señalados por los padres principalmente. De acuerdo con estas tres categorías, los participantes señalaron una serie de comportamientos abiertos (enseñanza de estrategias para superar las dificultades y afrontar la continuación de la tarea) como evidencia de su implicación. Subrayaron la idea de que es muy importante para los alumnos que se desarrolle la habilidad de trabajo autónomo.

Finalmente, en este trabajo se concluyó que los argumentos esgrimidos por los padres y madres en relación con las características de la implicación parental en la realización de los deberes de los hijos en Primaria no son sustancialmente diferentes de lo observado por otros investigadores en Secundaria (see, Lorenz & Wild, 2007; Pomerantz et al., 2007).

5.3.2. *Implicación parental en Primaria y Secundaria y su efecto en la implicación del alumno en los deberes y en su rendimiento académico*

En base a los resultados observados en el anterior estudio, se seleccionaron control y apoyo como las dos formas más prominentes de implicación de los padres en las tres etapas educativas consideradas. Por tanto, el último objetivo de este trabajo ha sido el análisis del efecto de dos diferentes tipos de implicación parental (control y apoyo) sobre la implicación del alumno en los deberes (cantidad de deberes realizados, tiempo dedicado y aprovechamiento del tiempo dedicado), y sobre el rendimiento académico, según la edad (Primaria, primer ciclo de ESO, segundo ciclo de ESO) y el género de los estudiantes. Se elaboró para ello un modelo de relaciones causales.

En síntesis, los resultados más importantes derivados del ajuste de este modelo causal podrían ser expresados de la siguiente forma:

1. En términos generales, la implicación parental en el contexto de la realización de deberes, como también ocurrió con la implicación del profesor, decrece a medida que los estudiantes ascienden de curso.

2. El efecto de la implicación parental sobre la implicación de los estudiantes en los deberes varía en función del curso en el que se encuentre el estudiante. En términos generales, en la muestra de alumnos de Primaria no existe relación significativa. Por el contrario, en primer ciclo de ESO y segundo ciclo de ESO existe efecto significativo de la implicación parental sobre la implicación del estudiante (aunque la relación es distinta según de qué variable se trate).
3. En ninguna de las tres etapas educativas consideradas en esta investigación la implicación parental percibida influye directamente sobre la cantidad de deberes realizados, sino que su efecto es a través del tiempo invertido en realizar los deberes y la gestión que se hace de ese tiempo: tanto en primer como en segundo ciclo de ESO, cuanto mayor es la implicación parental percibida más tiempo se invierte en realizar los deberes y mejor gestión se hace del mismo.
4. El efecto de los dos tipos de implicación parental considerados (control y apoyo) sobre la implicación de los estudiantes en la realización de los deberes (cantidad de deberes realizados, tiempo dedicado y aprovechamiento del tiempo) es diferente dependiendo de la etapa educativa.
5. Mientras que ambos tipos de implicación parental tienen un efecto positivo sobre la conducta de implicación de los alumnos en los deberes (salvo en Primaria que el efecto es nulo), el efecto es distinto cuando se considera su relación con el rendimiento académico.
6. En relación con lo anterior, en concordancia con otros trabajos que han señalado la fuerza de esta relación, los resultados de este estudio mostraron que la relación del control parental con el rendimiento es negativa en las tres etapas, tal y como ha sido en estudios previos (Dumont et al., 2013; Karbach et al., 2013), mientras que es positiva en el caso del apoyo parental, también en concordancia con otros trabajos (Cooper et al., 2000; Dumont et al., 2012; Pomerantz, Grolnick, & Price, 2005) .
7. Cuando se relacionó el género del estudiante con los diferentes tipos de implicación parental, se observó que los chicos perciben más control parental que las chicas, pero no se encontraron diferencias de género en cuanto a apoyo parental.

VI. Conclusiones e Implicaciones Educativas

Del análisis de los resultados de los trabajos que componen esta Tesis Doctoral extraemos las **CONCLUSIONES** que se presentan a continuación.

1. *Hacer deberes es mejor que no hacerlos*

A la luz de los resultados obtenidos en las diferentes muestras analizadas, parece claro que cuantos más deberes hacen los alumnos, de los que les prescriben sus profesores, mejor es su rendimiento académico. Este hallazgo, que está bastante de acuerdo con múltiples estudios llevados a cabo previamente, nos permite pensar que pese a toda la polémica que ha rodeado a estas tareas en los últimos años, su realización resulta beneficiosa de cara al rendimiento académico. No hemos tratado cuál es la cantidad idónea de deberes ni qué cantidad de deberes se asigna, sino cuántos hacen los alumnos de entre los que les prescriben sus profesores. No obstante, es posible inferir de nuestras muestras de estudio que dado que los resultados señalan que cuantos más deberes hacen, mejor rinden, la cantidad de deberes que se les pone no es excesiva, pues en ese caso la relación se convertiría en negativa.

2. *Más tiempo no siempre es mejor*

Junto con la cantidad de deberes, otra variable que resultaba de interés en nuestra investigación fue el tiempo dedicado a los deberes. La cuestión era: ¿Cuánto más tiempo se dedique a los deberes mejor? Los datos aportados por la investigación pasada eran muy confusos y de escasa unanimidad. Los datos aportados por nuestra investigación han mostrado que para el análisis de esta pregunta es conveniente tener en cuenta la edad de los estudiantes. Cuando se consideró la muestra sin diferenciar por cursos, los resultados mostraron que el tiempo dedicado a los deberes mantiene una relación negativa con el rendimiento académico (es decir, cuanto más tiempo dedican los alumnos a realizar sus deberes, peor es su rendimiento académico). Sin embargo, cuando se analizó la muestra dividida en tres niveles educativos (Primaria, primer ciclo de ESO y segundo ciclo de ESO) el tiempo dedicado a los deberes presentó una relación diferente con el rendimiento académico según la edad de los alumnos: relación negativa en la muestra de Primaria, nula en la muestra de primer ciclo de ESO y positiva en el caso de los alumnos mayores (segundo ciclo de ESO). Por tanto, “no siempre dedicar más tiempo a hacer los deberes se encuentra asociado con un mayor rendimiento académico”. ¿Qué hace que la relación entre tiempo dedicado a los deberes y rendimiento académico sea negativo en Primaria y positivo en el segundo ciclo de ESO?, La investigación futura debería estudiar en profundidad la calidad del tiempo dedicado en los cursos superiores.

3. La clave está en aprovechar el tiempo

Como se ha dicho, dado que hacer deberes es mejor que no hacerlos y que, sin embargo, no siempre dedicarles más tiempo es mejor, puede que la clave esté en cómo se utiliza el tiempo que se invierte en realizar los deberes. Los resultados de nuestros estudios han mostrado que la variable aprovechamiento del tiempo dedicado a los deberes resulta ser la que más predice el rendimiento académico de las tres variables mencionadas, aunque parece que este aprovechamiento decrece a medida que pasan los cursos. Sin embargo, el efecto del aprovechamiento del tiempo varía con la edad de los estudiantes. En el último estudio se comprobó que la relación con el rendimiento académico resulta positiva en la muestra de primer y segundo ciclo de ESO, pero nula en la de Primaria. Quizá esta relación nula se deba a que se trata de alumnos que debido a su temprana edad carecen de estrategias eficaces que les permitan aprovechar el tiempo dedicado a los deberes de modo tan efectivo como en cursos superiores. Si esto fuera así, lo que urge es el diseño de intervenciones contextualizadas que promuevan en el estudiante habilidades de trabajo y estrategias de gestión del tiempo de estudio. Tales intervenciones deberían incluir a los tres actores de esta obra: alumnos, padres y profesores.

4. La relación entre curso académico y aprovechamiento del tiempo es inversa

Otro de los resultados que se ha derivado de nuestros trabajos es la disminución del aprovechamiento del tiempo dedicado a los deberes desde los últimos cursos de Educación Primaria hasta los últimos de Educación Secundaria. Lejos de aprovechar mejor el tiempo, suponiendo que alumnos de mayor edad están dotados de mejores estrategias de estudio y trabajo, lo desaprovechan más que sus compañeros de menor edad. La explicación que quizá subyace a este controvertido resultado es que la Educación Secundaria se desarrolla coincidiendo con la etapa de mayores cambios físicos y psicológicos que experimentan los jóvenes, la adolescencia. Durante este período las relaciones sociales cobran importancia relegando a la familia y a los estudios a un segundo plano. Los padres comienzan a dejar más libertad a los jóvenes y en esta situación surge la procrastinación: “ya lo haré mañana, ya estudiaré después”. Además, las nuevas tecnologías presentes en todos los ámbitos empiezan a ser protagonistas en la vida de los jóvenes suponiendo un distractor más que puede disminuir considerablemente la calidad del tiempo dedicado a los deberes.

5. ¡Profesor, si prescribes deberes debes aportar feedback significativo; sino, mejor no los prescribas!

Los resultados de nuestro estudio mostraron que cuanto mayor es el feedback aportado por los profesores en relación con los deberes, mayor es también el aprovechamiento del tiempo dedicado a los deberes, la cantidad de deberes realizados y el rendimiento académico. Sin embargo, el panorama es muy diferente cuando consideramos la otra cara de la relación: cuanto menos feedback del profesor perciben los alumnos, menos aprovechan el tiempo dedicado a la realización de los deberes, menor es la cantidad de deberes realizados y, quizás como consecuencia de todo esto, menor el rendimiento

académico. Posiblemente, lo que ocurre es que cuando el alumno percibe poco control por parte del profesor y recibe escasa ayuda ante las dudas respecto a los deberes prescritos, éste deja de implicarse significativamente en la realización de los deberes, yendo más al resultado que al proceso y, en ocasiones, conformándose con copiarlos de algún compañero. No se perciben como una oportunidad para aprender, sino como carga extra que le impide realizar actividades personalmente más motivantes. La investigación futura debería abordar esta problemática.

6. *No cualquier tipo de feedback es igualmente efectivo*

Una vez conocida la pertinencia de proporcionar feedback a los alumnos, por sus efectos positivos sobre la implicación del estudiante y su rendimiento, la siguiente cuestión que nos planteamos fue si todos los tipos de feedback, o seguimiento de los deberes realizados, influyen de igual modo en la implicación y en el logro académico. Los resultados obtenidos indicaron que el rendimiento académico de los alumnos es mejor a medida que el tipo de feedback o seguimiento que reciben de los profesores va evolucionando desde simplemente *controlar la realización de los deberes* hasta *recoger y calificar los deberes*. Por tanto, esta investigación evidencia la importancia de que los profesores no solo prescriban deberes a los alumnos sino que lleven cuenta de su realización y les proporcionen feedback para que los alumnos perciban la importancia y utilidad de su implicación y les sirva de guía a la hora de afrontar futuras tareas. Cuanto más elaborado sea el tipo de feedback y más información proporcione a los alumnos, mejores resultados académicos se derivarán de él.

7. *Implicación parental sí, pero depende de qué tipo*

Finalmente, los resultados obtenidos en esta investigación sobre el efecto de la percepción de implicación parental sobre la implicación de los alumnos en los deberes y el rendimiento académico han sido diferentes según la edad o curso de los alumnos y según el tipo de implicación considerada (control y apoyo). Salvo en la muestra de Primaria, la implicación parental (tanto control como apoyo) tiene efecto positivo sobre la implicación de los hijos en los deberes: a mayor implicación parental percibida mayor implicación de los estudiantes (más cantidad de deberes realizados, más tiempo dedicado a los deberes, mejor aprovechamiento del tiempo dedicado). No obstante, también se ha obtenido que la relación entre implicación parental y rendimiento académico es distinta dependiendo de si se trata de control o apoyo; negativa en el caso de control y positiva si es de apoyo. Se concluyó, entonces, que ante resultados negativos de los hijos lo que no conviene es la implicación parental de más control y, por el contrario, sí de más apoyo. Lo más razonable será averiguar las razones del bajo rendimiento del estudiante e intentar ayudarle poniendo en marcha estrategias que impliquen más apoyo cognitivo y emocional (ayuda con estrategias de estudio y de manejo de las emociones y motivación) que el simple control (incrementará la ansiedad y disminuirá la competencia percibida del estudiante). Obviamente, son necesarios programas de intervención específicos con padres y madres en los que se incida directamente en el uso y eficacia de dichas estrategias, pero también es preciso contar

con programas de carácter más holista en donde se trabaje de modo conjunto e interactivo con alumnos, padres y profesores (e.g., *Center on School, Family and Community Partnerships*, Epstein, Sanders, & Sheldon, 2009).

VII. Conclusions and Educational Implications

From the analysis of the results of these studies, some conclusions were drawn.

1. Doing homework is better than not doing it

In the light of the results obtained in the different samples analyzed, it seems clear that the more homework assignments students do, the better is their academic performance. This finding, which is quite in accordance with prior research, allows concluding that, despite all the controversy that has surrounded homework in recent years, doing homework is beneficial for academic performance. We did not address the amount of homework, nor the quantity of homework assigned, but rather, of the homework assigned by their teachers, how much the students actually do. Nevertheless, it can be inferred from our findings that, as the results show that the more homework students do, the more they achieve, the amount of homework assigned is not excessive because, in that case, the relation would be negative.

2. More time is not always better

Along with the amount of homework, another variable of interest in our investigation was the time spent on homework. Our starting question was: the more time spent on homework, the better? The data provided by past research were mixed and not unanimous. The data from our investigation have shown that in order to analyze this issue, the students' age should be taken into account. When considering the sample without differentiating by grade (first- and second-grade studies), the results indicated that the time spent on homework has a negative relation with academic performance (i.e., the more time spent on homework, the poorer is academic performance). However, when analyzing the sample divided into three school levels (elementary, junior high school, and high school) the time spent on homework presented a different relation with academic achievement depending on the age of the students: a negative relation was found in the sample of elementary school, null in the sample of junior high school, and positive in the case of older students (high school). Therefore, "spending more time on homework is not always associated with greater academic achievement". What makes the relation between time spent on homework and academic achievement negative in elementary school and positive in high school? Future research should study in depth the quality of this time in higher grades.

3. The key is time management

As mentioned, as it is better to do homework than not to do it, but spending more time is not always better; hence, the key may be in how the time spent on homework

is used by students. The results of our studies have shown that homework-time management is the variable that best predicts academic performance of the three above-mentioned variables, although it seems that time management decreases as students pass from one grade to the next. However, the effect of homework-time management varies with the students' age. In the last study, it was verified that the relation with academic achievement is positive for the sample of junior high school and of high school, but null for elementary school. This null relation may be due to the lower age of the students, as they lack efficacious strategies that would allow them to optimize the time spent on homework as effectively as in higher grades. If this were the case, it is urgent to design contextualized interventions that promote students' working skills and time-management strategies. Such interventions should include all three actors of this play: students, parents, and teachers.

4. The relation between academic grade and time management is inverse

Another result derived from our works is the decrease of homework-time management starting in the last grades of Primary Education until the last grades of Secondary Education. Assuming that older students have better study and work strategies, far from managing time better, they waste time more than their younger classmates. The explanation that may underlie this controversial result is that Secondary Education coincides with the stage of the greatest physical and psychological changes experienced by youth, adolescence. During this period, social relations gain importance, and the family and studies are relegated to the background. Parents begin to allow youngsters more freedom and, in this situation, procrastination arises: "I'll do it tomorrow, I'll study later". Moreover, the new technologies present in all areas are protagonists in the youngsters' lives, becoming one more distractor that can dramatically reduce the quality of the time spent on homework.

5. Teacher, if you assign homework, you should provide significant feedback; otherwise, better not to assign any!

The results of study showed that the more feedback provided by the teachers about the quality of the homework, the better homework time is managed, the more homework is done, and the better academic achievement is. However, the panorama is very different when considering the other side of the relationship: the less teacher feedback perceived by the students, the worse homework-time management is, the less homework is done and, perhaps as a result of all this, the lower the academic achievement is. Possibly, what happens is that when students perceive little control by the teacher and receive little help to solve their doubts about the homework assignment, they start disengaging significantly from homework, focusing more on the result than on the process, and sometimes settling for copying the homework from their classmates. Homework is not perceived as an opportunity to learn, but as an extra burden that prevents them from carrying out activities that are personally more motivating. Future research should address this problem.

6. Not any kind of feedback is equally effective

After determining the pertinence of providing feedback to the students due to its positive effects on student engagement and achievement, our next question we asked was whether all kinds of feedback, or follow-up of homework completed, influence student engagement and academic achievement equally. To address this question, we designed a quasi-experimental study consisting of providing one of five types of feedback by several teachers to different groups of students. The results obtained indicated that students' academic achievement improves as the kind of follow-up they receive from the teachers evolves from controlling whether or not they do their homework to collecting and scoring the homework. Therefore, this investigation shows the importance of the teachers not only assigning homework to the students but also controlling its accomplishment and providing feedback so that the students perceive the importance and utility of their engagement, and so it will guide them when dealing with future homework. The more elaborate the type of feedback and the more information provided to the students, the better the academic outcomes derived.

7. Parental involvement, yes, but it depends on what kind

Lastly, the results obtained in this investigation on the effect of the perception of parental involvement in students' engagement in homework and academic achievement were different depending on the students' age and grade and also on the type of involvement considered (control and support). Except for the sample of elementary school, parental involvement (both control and support) has a positive effect on children's engagement in homework: the greater the parental involvement perceived, the greater the students' engagement (more time spent on homework, better time management, and more homework done). Nevertheless, it was also observed that the relation between parental involvement and academic achievement was different depending on whether it is control or support: negative for of control and positive for support. It was therefore concluded that, in the face of children's negative outcomes, parental involvement consisting of more control is unsuitable, and in contrast, more support is appropriate. The most reasonable thing to do would be to determine the reasons for the student's low achievement and to try to implement strategies implying more cognitive and emotional support (helping with study strategies and emotional management and motivational strategies) rather than simply control (which will make the student more anxious and decrease his/her perceived competence). Obviously, specific intervention programs for fathers and mothers are needed in which the use and efficacy of such strategies are taught directly, but it is also necessary to have programs of a more holistic nature in which to work conjointly and interactively with students, parents, and teachers (e.g., *Center on School, Family and Community Partnerships*, Epstein, Sanders, & Sheldon, 2009).

Referencias

- Arrizabalaga, M. (2013). Europa sí hace los deberes. *ABC*. Retrieved from <http://www.abc.es/20120930/familia-educacion/abci-europa-hace-deberes-201209271240.html>
- Bembenutty, H., & White, M. C. (2013). Academic performance and satisfaction with homework completion among college students. *Learning and Individual Differences, 24*, 83-88. DOI:10.1016/j.lindif.2012.10.013
- Bempechat, J. (2004). The motivational benefits of homework: A social-cognitive perspective. *Theory in Practice, 43*, 189–196. DOI:10.1207/s15430421tip4303_4
- Bempechat, J., & Shernoff, D. J. (2012). Parental influences on achievement motivation and student engagement. In S. L. Christenson, A. L. Reschly and C. Wylie (eds.), *Handbook of research on student engagement* (pp. 315-342). New York: Springer. DOI: 10.1007/978-1-4614-2018-7_15
- Bennett, S., & Kalish, N. (2006). *The case against homework*: Crown.
- Boekaerts, M. (1999). Self-regulated learning: where are today. *International Journal of Educational Research, 31*, 445-458. DOI:10.1016/S0883-0355(99)00014-2
- Bryan, T., & Burstein, K. (2004). Improving homework completion and academic performance: Lessons from special education. *Theory into Practice, 43*, 214-219. DOI: 10.1353/tip.2004.0030
- Bryan, T., Nelson, C., & Mathur, S. (1995). Homework: A survey of primary students in regular, resource, and self-contained special education classrooms. *Journal of Learning Disabilities, 27*, 85-90.
- Cardelle, M., & Corno, L. (1981). Effects on second language learning of variations in written feedback on homework assignments. *TESOL Quarterly, 15*, 251-261.
- Chen, J. (2008). Grade level differences: Relations of parental, teacher and peer support to academic engagement and achievement among Hong Kong students. *School Psychology International, 29*, 183-198. DOI: 10.1177/0143034308090059
- Chen, C., Stevenson, H.V. (1989). Homework: A cross-cultural examination. *Child Development, 60*, 551-561.
- Cheung, S. K., & Leung-Ngai, J. M. Y. (1992). Impact of homework stress on children's physical and psychological well-being. *Journal of the Hong Kong Medical Association, 44*, 146–150.
- Conner, J., Pope, D., & Galloway, M. (2009). Success with less stress. *Educational Leadership, 67*, 54–58.
- Cooper, H. (1989). *Homework*. New York: Longman. DOI: org/10.1037/11578-000
- Cooper, H. (2001a). *The battle over homework: Common ground for administrators, teachers and parents*. : Thousand Oaks, CA: Sage Publications. DOI:10.4135/9781483329420 |
- Cooper, H. (2001b). Homework for all—in moderation. *Educational Leadership, 58*, 34-38.

- Cooper, H., Jackson, K., Nye, B. A., & Lindsay, J. J. (2001). A model of homework's influence on the performance evaluations of elementary school students. *Journal of Experimental Education*, 69, 181-199. DOI: 10.1080/00220970109600655
- Cooper, H., Lindsay, J., & Nye, B. (2000). Homework in the home: How student, family, and parenting-style differences relate to the homework process. *Contemporary Educational Psychology*, 25, 464-487. DOI:10.1006/ceps.1999.1036
- Cooper, H., Robinson, J., & Patall, E. (2006). Does homework improve academic achievement? A synthesis of research, 1987-2003. *Review of Educational Research*, 76, 1-62. DOI: 10.3102/00346543076001001
- Cooper, H., & Valentine, J. C. (2001). Using research to answer practical questions about homework. *Educational Psychologist*, 36, 143-153 DOI:10.1207/S15326985EP3603_1
- Corno, L. (2000). Looking at homework differently. *Elementary School Journal*, 100, 529-548.
- Corno, L., & Xu, J. (2004). Homework as the job of childhood. *Theory into Practice*, 43, 227-233. DOI: 10.1207/s15430421tip4303_9
- Coutts, P. M. (2004). Meanings of homework and implications for practice. *Theory into Practice*, 43, 182-187. DOI: 10.1207/s15430421tip4303_3
- De Jong, R., Westerhof, K. J., & Creemers, B. P. M. (2000). Homework and student math achievement in junior high schools. *Educational Research and Evaluation*, 6, 130-157. DOI:10.1076/1380-3611(200006)6:2;1-E;F130
- Deci, E. L., & Ryan, R., M. (2002). *Handbook of self-determination research*. New York: University of Rochester Press.
- Dettmers, S., Lüdtke, O., Trautwein, U., Kunter, M., & Baumert, J. (2010). Homework works if homework quality is high: Using multilevel modeling to predict the development of achievement in mathematics. *Journal of Educational Psychology*, 102, 467-482. DOI: org/10.1037/a0018453
- Dettmers, S., Trautwein, U., & Lüdtke, O. (2009). The relationship between homework time and achievement is not universal: Evidence from multilevel analyses in 40 countries. *School Effectiveness and School Improvement*, 20, 375-405. DOI:10.1080/09243450902904601
- Dumont, H., Trautwein, U., Lüdtke, O., Neumann, M., Niggli, A., & Schnyder, I. (2012). Does parental homework involvement mediate the relationship between family background and educational outcomes? *Contemporary Educational Psychology*, 3, 55-69. DOI: 10.1016/j.cedpsych.2011.09.004
- Dumont, H., Trautwein, U., Nagy, G., & Nagengast, B. (2013). Quality of Parental Homework Involvement: Predictors and Reciprocal Relations With Academic Functioning in the Reading Domain. *Journal of Educational Psychology*, 106, 144-161. DOI: 10.1037/a0034100
- Eccles, J., Adler, T. F., Futterman, R., Goff, S. B., Kaczala, C. M., Meece, J. L., & Midgely, C. (1983). Expectancies, values, and academic choice: Origins and changes. In J. Spence (Ed.), *Achievement and achievement motivation* (pp. 75-146). San Francisco: Freeman.

- Eccles, J., & Wang, M. T. (2012). Part I Comentary: So what is student engagement anyway? In S. L. Christenson, A. L. Reschly and C. Wylie (eds.), *Handbook of research on student engagement* (pp. 133-145). New York: Springer. DOI: 10.1007/978-1-4614-2018-7_6
- Elawar, M. C., & Corno, L. (1985). A factorial experiment in teachers' written feedback on student homework: Changing teacher behavior a little rather than a lot. *Journal of Educational Psychology*, 77, 162-173. DOI: org/10.1037/0022-0663.77.2.162
- Else-Quest, N. M., Hyde, J. S., & Hejmadi, A. (2008). Mother and child emotions during mathematics home-work. *Mathematical Thinking and Learning*, 10, 5-35. DOI:10.1080/10986060701818644
- Epstein, J. L. (1988). *Homework practices, achievements, and behaviors of elementary school students*. Baltimore, MD.: The Johns Hopkins University Press.
- Epstein, J. L. (1995). School/family/community partnerships: Caring for the children we share. *Phi Delta Kappan*, 76, 701-712. DOI: 10.1177/003172171009200326
- Epstein, J. L., Sanders, M. G., & Sheldon, S. B. (2009). *School, Family and Community Partnerships. Your handbook of action* (3rd ed.): Thousand Oaks, CA: Corwin Press.
- Epstein, J. L., & Van Voorhis, F. L. (2001). More than minutes: Teachers' roles in designing homework. *Educational Psychologist*, 36, 181-193. DOI: 10.1207/S15326985EP3603_4
- Epstein, J. L., & Van Voorhis, F. L. (2012). The changing debate: From assigning homework to designing homework. In S. Suggate & E. Reese (Eds.), *Contemporary debates in child development and education* (pp. 263-273). London: Routledge.
- Fan, Q. (2013). *Parents' perceptions and practices in homework: Implications for school-teacher-parent partnerships*. Unpublished doctoral dissertation University of Illinois, Chicago, IL.
- Fernández-Alonso, R., Suárez-Álvarez, J., & Muñoz, J. (2014). Tareas escolares en el hogar y rendimiento en matemáticas: Una aproximación multinivel con estudiantes de enseñanza primaria. *Revista de Psicología y Educación*, 9, 15-29.
- Fredricks, J. A., Blumenfeld, P. C., & Paris, A. (2004). School engagement: Potential of the concept, state of the evidence. *Review of Educational Research*, 74, 59-109. DOI: 10.3102/00346543074001059
- Fuligni, A. J., & Hardway, C. (2006). Daily variation in adolescents' sleep, activities, and psychological well-being. *Journal of Research on Adolescence*, 16, 353-378. DOI: 10.1111/j.1532-7795.2006.00498.x
- Galloway, M., Conner, J., & Pope, D. (2013). Nonacademic effects of homework in privileged, high-performing high schools. *The Journal of Experimental Education*, 81, 490-510. DOI: 10.1080/00220973.2012.745469
- Harris, L. R. (2011a). Secondary teachers' conceptions of student engagement: Engagement in learning or in schooling? *Teaching and Teacher Education*, 27, 376-386. DOI:10.1016/j.tate.2010.09.006

- Harris, L., R. (2011b). Phenomenographic perspectives on the structure of conceptions: The origins, purposes, strengths, and limitations of the what/how and referential/structural frameworks. *Educational Research Review*, 6, 109-124. DOI:10.1016/j.edurev.2011.01.002
- Henderson, M. (1996). *Helping your student get the most out of Homework*. Washington, DC: Washington, DC: National Education Association.
- Hill, N. E., Castellino, D. R., Landsford, J. E., Nowling, P., Dodge, K. A., Bates, J. E., & Pettit, G. S. (2004). Parent academic involvement as related to school behavior, achievement, and aspirations: Demographic variations across adolescence. *Child Development*, 75, 1491-1509.
- Hill, N. E., & Taylor, L. C. (2004). Parental school involvement and children's academic achievement: Pragmatics and issues. *Current Directions in Psychological Science*, 13, 161-164. DOI: 10.1111/j.1467-8624.2004.00753.x
- Homework white paper - Challenge Success (2012). *Changing the conversation about homework from quantity and achievement to quality and engagement*. Retrieved from Challenge Success website, <http://www.challengesuccess.org/portals/0/docs/ChallengeSuccess-Homework-WhitePaper.pdf>.
- Hong, E., Peng, Y., & Rowell, L. L. (2009). Homework self-regulation: Grade, gender, and achievement-level differences. *Learning and Individual Differences*, 19, 269-276. DOI:10.1016/j.lindif.2008.11.009
- Hoover-Dempsey, K. V., Bassler, O. C., & Burow, R. (1995). Parents' reported involvement in students' homework: Strategies and practices. *Elementary School Journal*, 95, 435-450.
- Hoover-Dempsey, K. V., Battiato, A. C., Walker, J., M.T., Reed, R. P., DeJong, J. M., & Jones, K. P. (2001). Parental Involvement in Homework. *Educational Psychologist*, 36, 195-209.
- Ibáñez, I. (2012). Los deberes escolares: Un poderoso aliado para el aprendizaje y la formación. *Revista Digital de la Universidad de Padres Online*, 18. Retrieved from http://revista.universidaddepadres.es/index.php?option=com_content&view=article&id=1459&Itemid=1255
- Kaplan, C. L. (2005). *Perceptions and practices of homework in Mexican immigrant families*. Unpublished doctoral dissertation, University of Illinois, Chicago, IL.
- Karbach, J., Gottschling, J., Spengler, M., Hegewald, K., & Spinath, F. M. (2013). Parental involvement and general cognitive ability as predictors of domainspecific academic achievement in early adolescence. *Learning and Instruction*, 23, 43-51. DOI:10.1016/j.learninstruc.2012.09.004
- Katz, I., Kaplan, A., & Buzukashvily, T. (2011). The role of parents' motivation in students' autonomous motivation for doing homework. *Learning and Individual Differences*, 21, 376-386. DOI:10.1016/j.lindif.2011.04.001
- Katz, I., Kaplan, A., & Gueta, G. (2010). Students' needs, teachers' support, and motivation for doing homework: A cross-sectional study. *The Journal of Experimental Education*, 78, 246-267. DOI:10.1080/00220970903292868

- Kiewra, K.A.; Kauffman, D.F.; Hart, K.; Scoular, J.; Brown, M.; Keller, G.; and Tyler, B. (2009) "What Parents, Researchers, and the Popular Press Have to Say About Homework," *scholarlypartnershipsedu*: Vol. 4: Iss. 1, Article 7. Available at: <http://opus.ipfw.edu/spe/vol4/iss1/7>
- Kohn, A. (2006). Abusing research: The study of homework and other examples. *Phi Delta Kappan*, 88, 9-22. DOI: 10.1177/003172170608800105
- Kralovec, E., & Buell, J. (2000). *The end of homework: How homework disrupts families, overburdens children and limits learning*. Boston, MA: Beacon Press Books.
- Larson, R., & Richards, M. H. (1991). Boredom in the middle school years. *American Journal of Education*, 99, 418-443.
- Linnenbrink, E. A., y Pintrich, P. (2002). Motivation as an enabler for academic success. *School Psychology Review*, 31, 313-327.
- Lorenz, F., & Wild, E. (2007). Parental involvement in schooling-results concerning its structure and impact on students' motivation. In M. Prenzel & L. Allolio-Näcke (Eds.), *Studies on the quality of schools* (pp. 299-316). Münster: Waxmann.
- Marton, F. (1981). Phenomenography - Describing conceptions of the world around us. *Instructional Science*, 10, 177-200. DOI: 10.1007/BF00132516
- Marton, F. (1986). Phenomenography – A research approach to investigating different understanding of reality. *Journal of Thought*, 21, 28-49.
- Marton, F. & Pong, W.Y (2005) On the unit of description in phenomenography. *Higher Education Research & Development*, 24, 335-348. DOI: 10.1080/07294360500284706
- McMillan, J. H., & Schumacher, S. (2001). *Investigación Educativa. Una introducción conceptual* (5th ed.). Madrid: Pearson.
- Mora, M., Aunión, J.A. (2012, 2 de abril). Rebelión contra los deberes para casa. (2012). El País. Retrieved from http://sociedad.elpais.com/sociedad/2012/04/02/vidayartes/1333390053_270755.html
- Mourão, R. (2009). *Etapas processuais do trabalho de casa e efeitos auto-regulatórios na aprendizagem do inglês: um estudo com diários de TPC no 2º ciclo de ensino basico*. Tesis presentada en Universidade do Minho, Braga.
- Murillo, F. J., & Martínez-Garrido, C. (2013). Incidencia de las tareas para casa en el rendimiento académico. Un estudio con estudiantes iberoamericanos de Educación Primaria. *Revista de Psicodidáctica*, 18, 157-178. DOI: <http://dx.doi.org/10.1387/RevPsicodidact.6156>
- Muhlenbruck, L., Cooper, H., Nye, B., & Lindsay, J. J. (2000). Homework and achievement: explaining the different strengths of relation at the elementary and secondary school levels. *Social Psychology of Education*, 3, 295-317. DOI:10.1023/A:1009680513901
- OCDE. (2010). *Mathematics Teaching and Learning Strategies in PISA*. Retrieved from <http://www.oecd.org/edu/school/programmeforinternationalstudentassessmentpisa/mathematicsteachingandlearningstrategiesinpisa.htm>

- Paschal, R. A., Weinstein, T., & Walberg, H. J. (1984). The effects of homework on learning: A quantitative synthesis. *Journal of Educational Research*, 78, 97-104. DOI:10.1080/00220671.1984.10885581
- Patall, E. A., Cooper, H., & Robinson, J. C. (2008). Parent involvement in homework: A research synthesis. *Review of Educational Research*, 78, 1039-1101. DOI: 10.3102/0034654308325185
- Pintrich, P. R., & de Groot, E. V. (1990). Motivational and self-regulated learning components of classroom academic performance. *Journal of Educational Psychology*, 82, 33-40.
- Pomerantz, E. M., & Eaton, M. M. (2001). Maternal intrusive support in the academic context: Transactional socialization processes. *Developmental Psychology*, 37, 174-186.
- Pomerantz, E. M., & Grolnick, W. S. (2009). Toward a clear and inclusive conceptualization of parental control: Reply to the commentaries. *Child Development Perspectives*, 3, 176-177. DOI: 10.1111/j.1750-8606.2009.00102.x
- Pomerantz, E. M., Grolnick, W. S., & Price, C. E. (2005). The role of parents in how children approach achievement. In A. J. Elliot & C. S. Dweck (Eds.), *Handbook of Competence and Motivation* (pp. 259-278): The Guilford Press.
- Pomerantz, E. M., Moorman, E. A., & Litwack, S. D. (2007). The how, whom and why of parents' involvement in children's academic lives: More is not always better. *Review of Educational Research*, 77, 373-410. DOI: 10.3102/003465430305567
- Pope, D. C. (2001). *Doing school: How we are creating a generation of stressed out, materialistic, and miseducated students*. New Haven, CT: Yale University Press.
- Regueiro, B., Suárez, N., Valle, A., Núñez, J. C., & Rosário, P. (2015). La motivación e implicación en los deberes escolares a lo largo de la escolaridad obligatoria. *Revista de Psicodidáctica*, 20, 47-63.
- Reschly, A. L., & Christenson, S. L. (2009). Parents as partners for fostering students' learning outcomes. In R. Gilman, E. S. Huebner, & M. J. Furlong (Eds.), *Handbook of positive psychology in schools* (pp. 257-272). New York: Routledge.
- Rosário, P., Costa, M., Núñez, J. C., González-Pienda, J. A., Solano, P., & Valle, A. (2009). Academic procrastination: Associations with personal, school and family variables. *Spanish Journal of Psychology*, 12, 118-127. DOI:10.1017/S1138741600001530
- Rosário, P., Mourao, R., Baldaque, M., Nunes, T., Núñez, J. C., González-Pienda, J. A., & Valle, A. (2009). Tareas para casa, autorregulación del aprendizaje y rendimiento en matemáticas. *Revista de Psicodidáctica*, 14, 179-192. DOI: <http://dx.doi.org/10.1387/RevPsicodidact.721>
- Rosário, P., Mourão, R., Núñez, J. C., González-Pienda, J. A., & Solano, P. (2006). Escuela-Familia: ¿Es posible una relación recíproca y positiva? *Papeles de Psicólogo*, 27, 171-179.

- Rosário, P., Mourao, R., Núñez, J. C., González-Pienda, J. A., & Valle, A. (2006). SRL and EFL homework: gender and grade effects. *Academic Exchange Quarterly*, *10*, 135-140.
- Rosário, P., Núñez, J. C., Valle, A., Paiva, O., & Polydoro, S. (2013). Enfoques de enseñanza en bachillerato en función de variables contextuales y del docente. *Revista de Psicodidáctica*, *18*, 25-46.
- Ryan, E. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of motivation, social development, and well-being. *American Psychologist*, *55*, 68-78.
- Sallee, B., & Rigler, N. (2008). Doing out homework on homework: How does homework help? *English Journal*, *98*, 46-51.
- Schultz, M. D. (1999). Parental involvement in low-income and minority children's education. (Doctoral Dissertation, State University of New York at Stony Brook, 1999). *Dissertation Abstracts International*, *61*, 549.
- Shernoff, D. J., & Vandell, D. L. (2007). Engagement in after-school program activities: Quality of experience from the perspective of participants. *Journal of Youth and Adolescence*, *36*, 891-903. DOI:10.1007/s10964-007-9183-5
- Suárez, N. (2010). *Tareas para casa y rendimiento académico*. Tesina de Licenciatura, Universidad de Oviedo, Oviedo.
- Tam, V. C. (2009). Homework involvement among Hong Kong primary school students. *Asian Pacific Journal of Education*, *29*, 213-227. DOI:10.1080/02188790902859004
- 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., & Köller, O. (2003). The relationship between homework and achievement—still much of a mystery. *Educational Psychology Review*, *15*, 116-155. DOI: 10.1023/A:1023460414243
- Trautwein, U., Köller, O., Schmitz, B., & Baumert, J. (2002). Do homework assignments enhance achievement? A multilevel analysis in 7th grade mathematics. *Contemporary Educational Psychology*, *27*, 26-50. DOI:10.1006/ceps.2001.1084
- Trautwein, U., & Lüdtke, O. (2009). Predicting homework motivation and homework effort in six school subjects: The role of person and family characteristics, classroom factors and school track. *Learning and Instruction*, *19*, 243-258. DOI:10.1016/j.learninstruc.2008.05.001
- Trautwein, U., Lüdtke, O., Kastens, C., & Köller, O. (2006). Effort on homework in grades 5 through 9: Development, motivational antecedents, and the relationship with effort on classwork. *Child Development*, *77*, 1094-1111. DOI:10.1111/j.1467-8624.2006.00921.x
- 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

- Trautwein, U., Niggli, A., Schnyder, I., & Lüdtke, O. (2009). Between-teacher differences in homework assignments and the development of students' homework effort, homework emotions and achievement. *Journal of Educational Psychology, 101*, 176-189. DOI:10.1037/0022-0663.101.1.176
- Trautwein, U., Schnyder, I., Niggli, A., Neumann, M., & Lüdtke, O. (2009). Chameleon effects in homework research: The homework–achievement association depends on the measures used and the level of analysis chosen. *Contemporary Educational Psychology, 34*, 77-88. DOI:10.1016/j.cedpsych.2008.09.001
- Valle, A., Núñez, J.C., Cabanach, R., Rodríguez, S., Rosário, P., & Inglés, C. (2013). Motivational profiles as a combination of academic goals in higher education. *Educational Psychology*. DOI:10.1080/01443410.2013.819072
- Van Voorhis, F. L. (2011). Adding families to the homework equation: A longitudinal study of mathematics achievement. *Education and Urban Society, 43*, 313-338. DOI: 10.1177/0013124510380236
- Vatterott, C. (2007). *Becoming a middle level teacher: Student focused teaching of early adolescents*. New York, NY: McGraw-Hill.
- Vila, D. (2012). A vueltas con los deberes. *Revista electrónica de la mutualidad general de funcionarios civiles del estado*(222//2012). Retrieved from http://www.muface.es/revista/i222/educacion_vuelta_deberes.html
- Wagner, P., Schober, B., & Spiel, C. (2007). Time students spend working at home for school. *Learning and Instruction, 18*, 309-320. DOI:10.1016/j.learninstruc.2007.03.002
- Walberg, H. J. (1991). Does homework help? *The School Community Journal, 1*, 13-15.
- Walker, J. M. T., Hoover Dempsey, K. V., Whetsel, D. R., & Green, C. (2004). *Parental involvement in homework: A review of current research and its implications for teachers, after school program staff, and parent leaders*. Cambridge, MA.: Harvard Family Research Project.
- Warton, P. M. (2001). The forgotten voices in homework: Views of students. *Educational Psychologist, 36*, 155-165. DOI:10.1207/S15326985EP3603_2
- Wigfield, A., Eccles, J. S., Yoon, K. S., Harold, R. D., Arbreton, A., Freed-man-Doan, C., et al. (1997). Changes in children's competence beliefs and subjective task values across the elementary school years: A three-year study. *Journal of Educational Psychology, 89*, 451–469. DOI:10.1037/0022-0663.89.3.451
- Wilder, S. (2013). Effects of parental involvement on academic achievement: a meta-synthesis. *Educational Review, 66*, 1-21. DOI: 10.1080/00131911.2013.780009.
- Xu, J. (2004). Family help and homework management in urban and rural secondary schools. *Teachers College Record, 106*, 1786-1803. DOI:10.1111/j.1467-9620.2004.00405.x
- Xu, J. (2006). Gender and homework management reported by high school students. *Educational Psychology, 26*, 73-91. DOI:10.1080/01443410500341023
- Xu, J. (2007). Middle-School Homework Management: More than just gender and family involvement. *Educational Psychology, 27*, 173-189. DOI: 10.1080/01443410601066669

- Xu, J. (2008). Validation scores on the homework management scale for middle school students. *The Elementary School Journal*, *109*, 82-95. DOI: 10.1086/592368
- Xu, J. (2010a). Gender and homework amangement reported by African American students. *Educational Psychology*, *30*, 755-770. DOI: 10.1080/01443410.2010.506673
- Xu, J. (2010b). Predicting homework distraction at the secondary school level: A multilevel analysis. *Teachers College Record*, *112*, 1937-1969.
- Xu, J. (2010c). Predicting homework time management at the secondary school level: A multilevel analysis. *Learning and Individual Differences*, *20*, 34-39. DOI:10.1016/j.lindif.2009.11.001
- Xu, J. (2011). Homework completion at the secondary school level: A multilevel analysis. *The Journal of Educational Research*, *104*, 171-182. DOI:10.1080/00220671003636752
- Xu, J., & Corno, L. (1998). Case studies of families doing third grade homework. *Teachers College Record*, *100*, 402-436.
- Xu, J., & Corno, L. (2003). Family help and homework management reported by middle school students. *Elementary School Journal*, *103*, 503-518.
- Xu, J., & Corno, L. (2006). Gender, family help, and homework management reported by middle school students. *Journal of Research in Rural Education*, *21*, 1-13.
- Xu, J., & Wu, H. (2013). Self-Regulation of Homework Behavior: Homework Management at the Secondary School Level. *The Journal of Educational Research*, *106*, 1-13. DOI:10.1080/00220671.2012.658457
- Younger, M., & Warrington, M. (1996). Differential achievement of girls and boys at GCSE: Some observations from the perspective of one school. *British Journal of Sociology of Education*, *17*, 299-313. DOI: 10.1080/0142569960170304
- Zimmerman, B. J. (2001). Theories of self-regulated learning and academic achievement: An overview and analysis. En B. J. Zimmerman y D. H. Schunk (Eds.), *Self-regulated learning and academic achievement: Theoretical perspectives* (pp. 1-37). Mahwah, NJ: Erlbaum.
- Zimmerman, B. J., & Kitsantas, A. (2005). Students' perceived responsibility and completion of homework: The role of self-regulatory beliefs and processes. *Contemporary Educational Psychology*, *30*, 397-417.