Cognitive performance and academic achievement: How do family and school converge?

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Abstract  Children enter the school system with different educational experiences, leaving also with different levels of learning and school results. In this study, we intend to understand the impact of family and school on children’s cognitive performance and academic achievement during elementary education. The sample consists of 406 Portuguese children, from preschool and the 1st cycle of Basic Education, aged from 4 to 10 years old. Through full structural equation model, it was observed that the latent variable family (parents’ schooling and socioeconomic level) and the latent variable school (community and type of school) have a significant impact on academic achievement. However, only family presents a significant impact on cognitive performance. These data suggest that the impact of school on intelligence quotient is not expressive in early academic years, where family present higher explanation of the variance. © 2017 European Journal of Education and Psychology. Published by Elsevier España, S.L.U. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/).

PALABRAS CLAVE
Familia; Escuela; Desempeño cognitivo; Rendimiento académico; Inteligencia

Desempeño cognitivo y rendimiento académico: ¿cómo confluyen familia y escuela?

Resumen  Los niños ingresan en el Sistema Educativo con diferentes experiencias escolares, alcanzando también diferentes niveles de aprendizaje y resultados escolares. En este estudio, nuestra pretensión es comprender el impacto de la familia y de la escuela en el desempeño cognitivo y el rendimiento académico de los niños durante la educación primaria. La muestra se compone de 406 niños portugueses de preescolar y del 1° ciclo de Educación Primaria, con edades comprendidas entre los 4 y los 10 años. Por medio de modelo completo de ecuaciones estructurales, se observa que la variable latente familia (nivel de escolaridad y nivel

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Introduction

The concept of intelligence (structure and evaluation) is still debated among experts; however, it gains some consensus in research as a significant predictor of quality of learning (Almeida, Guisande Primi, & Lemos, 2008; Spinath, Spinath, Harlaar, & Plomin, 2006; Sternberg, 2012; Sternberg, Grigorenko, & Bundy, 2001; Strenze, 2007) and is considered, par excellence, a variable that differentiates levels of academic achievement (Deary, Strand, Smith, & Fernandes, 2007; Lemos, Almeida, & Colom, 2011; Primi, Ferrão, & Almeida, 2010). However, this relationship is not stable over time, as there is a gradual decrease of correlation coefficients as schooling advances, suggesting the importance of other variables, namely socio-familial (Freitas, Simões, Alves, & Santana, 2012; Nisbet et al., 2012).

Studies on cognitive development and on teaching and learning processes refer to a significant relationship between family involvement and academic success of children, and consequently to their school trajectory (Alvarez et al., 2015; Alves, Gomes, Martins, & Almeida, 2016; Eslava, Deaño, Alfonso, Conde, & García-Senorán, 2016; Fernández-Zabala, Goñi, Camino, & Zulaika, 2016; Kloosterman, Notten, Tolsma, & Kraaykamp, 2011; Lugo-Gil & Tamis-LeMonda, 2008; Mistry, Benner, Biesanz, Clark, & Howes, 2010; Regueiro et al., 2015). In this regard, the level of parental education stands out, which seems to differentiate educational strategies and how parent and child interact (Bracken & Fischel, 2008; Eslava et al., 2016; Martínez, Martínez, & Pérez, 2004; Oxford & Lee, 2011; Rindermann, Flores-Mendoza, & Mansur-Alves, 2010). Recent investigations indicate that the mother's academic qualifications emerge as a better predictor of cognitive performance (Gutman, Sameroff, & Cole, 2003). Studies of the Senna project in Brazil have shown the impact of socio-familial variables on children’s academic motivation (Santos & Primi, 2014). Still, within the family, there is evidence that the family's socioeconomic status influences the academic performance of children, with the most prominent influence being in childhood (Alves et al., 2016; Rindermann et al., 2010). Studies have shown that higher socioeconomic conditions are associated with better cognitive performance of children, since such conditions allow greater access to spaces and playful, educational and cultural materials (Alves et al., 2016; Bradley & Corwyn, 2002; Burger, 2010; Cabrera, Shannon, & Tamis-LeMonda, 2007; Lemos et al., 2011; Strenze, 2007). On other hand, lack of assets and an overcrowded house can limit the availability of educational resources for children, having a negative effect on later school learning processes (Ainscow et al., 2010; Downey, 2001; Goux & Maurin, 2005).

One topic in the debate is the role of school in the cognitive development of children and in overcoming cognitive difficulties. Some authors state that children from families with lower socioeconomic and cultural resources experience greater school difficulties, facing school with a more limited vocabulary and numeracy skills. These difficulties and discrepancies that benefit children from the most favored social strata tend to persist during subsequent school years (Burger, 2010; Magnuson, Meyers, Ruhm, & Waldfogel, 2004), especially if early interventions to overcome the same difficulties are not implemented (Burger, 2010). This notion of the stability of school difficulties refers us to the reproductive role of the school, evidencing that social inequalities turn into school inequalities that, in turn, perpetuate the former inequalities. Sullivan (2001) adds that school can contribute to social reproduction (according to Bourdieu's theory of cultural and social reproduction), considering that school curricula value abilities very much associated with the cultural capital of the higher social classes. However, recently, studies have shown that schooling can lessen the impact of deprivation on children's progress. Nevertheless, school systems have no control over some factors that limit their impact (Ainscow et al., 2010). It is likely that the impact of schooling will occur in the form of modest improvements for disadvantaged children, rather than essential life modifications. Even so, there is reason for optimism, as these possible positive impacts are worth the effort (Ainscow et al., 2010).

In recent decades, school emerges as a privileged context for the psychosocial development of the young people, in particular for their cognitive and learning development. Thus, society and families believe and invest in it at progressively younger ages, and it is assumed that its impact on children’s cognitive, social and affective development grows as their schooling increases (Ceci, 1991; Cliffordson & Gustafsson, 2008; Gustafsson, 2001; Stelzl, Merz, Ehlers, & Remer, 1995). This variable “school effect” (Coleman, 1966) is crucial in the case of promoting success among students from more disadvantaged socio-cultural backgrounds. When comparing schools and levels of learning/outcomes for the most disadvantaged students, the school they attend has a significant weight in academic achievement (Heyneman, 1986). The same author stresses that the quality of the school and its teachers is one of the most decisive factors for learning. In a meta-analysis, 28 factors that influence learning were identified, where the teacher emerges as the factor...
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