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Preschoolers' motor skills and their relation to parental activities and beliefs: comparisons by socio-economic status

Habilidades motrices y su relación con las actividades y creencias parentales en preescolares; comparaciones por nivel socio-económico

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Abstract

The purpose of the present study is to analyze the relationship between preschoolers' gross and fine motor skills, parent reported frequency of motor activities, and parental beliefs about motor development in different socio-economic contexts. Seventy-five parents and their children from low and high socio-economic status participated in the study. The frequency with which parents engaged in motor activities with their children and their beliefs about motor development were assessed using a questionnaire; children's motor skills were assessed using the fine and gross motor skill subscales from the Battelle Developmental Inventory (BDI-2). Results show that parents report that they consider the development of fine- as more important than gross motor skills. Children from Low SES performed better on the gross motor skill assessment than their higher SES counterparts, however, performance did not differ by SES on the fine motor skill assessment. We conclude that the development of motor skills in preschool does not appear to be associated to parental beliefs or to parent reported frequency of motor activities; however, we did find differences by SES on children's performance.

Keywords

Motor development; preschool; psychomotricity; parental beliefs; socio-economic status.

Resumen

El objetivo de esta investigación es analizar cómo se relacionan las habilidades motrices gruesas y finas en preescolares, la frecuencia de actividades motrices reportadas por los padres y las creencias sobre el desarrollo motor en diferente Nivel Socio-Económico (NSE). Participaron 75 padres de familia y sus respectivos hijos de NSE bajo y alto. La frecuencia con que realizan actividades motrices con sus hijos y sus creencias sobre el desarrollo motor se registraron por medio de un cuestionario; las habilidades motrices se evaluaron con las sub-escalas de motricidad fina y gruesa del Inventario de Desarrollo Battelle (BDI-2). En los resultados los padres afirmaron otorgar mayor importancia al desarrollo de la motricidad fina que al desarrollo de la motricidad gruesa. Los niños de NSE bajo obtuvieron una puntuación más alta en motricidad gruesa que sus pares de NSE alto, sin embargo no se encontraron diferencias entre las puntuaciones de motricidad fina entre ambos grupos. Concluimos que el desarrollo de las habilidades motrices en preescolar no parece estar asociado a las creencias de los padres ni a la frecuencia con que suelen realizar actividades motrices con sus hijos; sin embargo existen diferencias por NSE en el desempeño de los menores.

Palabras Clave

Desarrollo motor; preescolar; psicomotricidad; creencias parentales; nivel socio-económico.

Introduction

Motor skills are fundamental for human development. These skills allow children to know their body, their capacities, their limits; explore their surroundings and perform feats that go from kicking a ball to painting a work of art. During the preschool years, movement and play propiciate the development of physical abilities in addition to learning in other áreas such as language and vocabulary, knowledge of their environment in addition to strengthening their autonomy (Arufe-Giráldez, 2020). Motor development in early age evolves at home, being the child's parents who are responsible for providing the necessary stimulation for the child to reach his or her maximum motor potential (Freitas, Gabbard, Caçola, Montebelo & Santos, 2013). When referring to basic motor skills that children need to acquire during their early years, Castillo (2013) mentions that these should be: catching, running, throwing, hitting a ball with a bat, running fast and jumping rope, the author underscores that these abilities set the foundation for specific movement actions from which children benefit. During first infancy children should acquire the movement patterns which allow for the construction of new movement options and the correct development of motor skills and basic abilities, it is important to take advantage of this sensitive period, with particularities that do not exist in any other stage in life. During children's physical development, movement and locomotion, stability and balance, manipulation, throwing and receiving as motor skills are involved (Miranda, Jeffers, Duarte, & Rey, 2019). It is during this stage that children develop their gross motor skills, that is, wide movements that involve all the muscles of the body and fine motor skills which implicate coordinated movements of the hand (Berruezo, 2000). Psychomotor development refers to the acquisition of body skills by means of intrinsec and extrinsec interactions that are observed in the child during infancy and that will convert hi mor her into a person with locomotor-manipulative power. The goal of acquiring these skills is that the person gains autonomy and the capacity to interact with the world as well as the power to transform it (Osorio, Cortés, Herrera & Orozco, 2017).

There are several factors that are related to motor skills in preschool such as a) the

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frequency with which parents engage in motor activities at home (Rodrigues, Raraiva & Gabbard, 2005), b) parental beliefs regarding the importance of motor development milestones, and c) socioeconomic status (Bustamante, Caballero Cartagena, Enciso Sarria, Salazar Távora, Teixeira e Seabra, Garganta de Silva, & Ribeiro Maia, 2008; Liu, Hoffman, & Hamilton, 2015; Rizzoli-Córdoba et al., 2015).

It has been hypothesized that during first infancy, the home educational environment and the activities with which parents stimulate their children's motor development has a direct effect on their motor skills (Rodrigues, et al., 2005), however, contradictory findings have emerged; for example, Abott, Bartett, Kneale Fanning, and Kramer (2000) analyzed the relationship between global home environment measures (maternal responsiveness, acceptance, organization, didactic material, etc.) and five-to-eight-month-old babies and did not find significant relations; Miquelote, Santos Caçola, Montebelo and Gabbard, (2012) found a predictive relationship among aspects of the home environment such as daily activities and availability of play material and nine-to-fifteen-month-old babies' performance on motor skill assessments. In Mexico, Osorio, Torres-Sánchez, Hernández, López Carrillo, and Schnaas (2010) assessed aspects of parent reported home stimulation practices such as mother-child interaction, positive reinforcement, and the establishments of limits and their 36-month-old children's gross and fine motor skills; the authors found a positive relationship between home stimulation practices and performance on children's motor skills. It is important to mention that these studies did not specifically inquire about motor activities carried out by parents, but instead, they operationalized home stimulation with the results of an instrument (HOME) that assesses its general aspects, thus, the question remains of which types and frequency of home motor activities carried out by parents have an impact on children's skills.

It is of interest to consider the child's context, society tends to form its members from distinct family, cultural, community and institutional perspectives which are then reflected in values, ideology, attitudes and demands which may, in turn, translate into development opportunities, that is, according to the environment in which the child is

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raised, he or she will have different opportunities to acquire experiences which will then turn into knowledge that will contribute to strengthening their skills. All of which, society and family belief relevant for the acquisition of knowledge that will set the foundation to establish the person's guidelines, in summary, learning is key to integral development (Zapata & Restrepo, 2013).

In addition, researchers have found that activities carried out by parents with their children such as encouraging him or her to run (gross motor) or to play with clay (fine motor) as well as the frequency with which they are practiced, is related to beliefs and expectations about the importance of motor development milestones of parents of 1 and 2-year olds (Gomes, Fonseca, Vinolas Prat, de Castro Magalhães, & de Souza Morais, 2017) and up to 66 months (Silva, Flôres, Corrêa, Cordovil, & Copetti, 2017). These studies, however, did not assess children's motor skills, therefore, it is important to contribute information of the relationship between paternal home motor activities, beliefs and children's motor skills.

Several studies show that socio-economic status (SES) has an effect on young children's motor development. For example, Díaz, Bacallao, Vargas-Machuca and Aguilar (2017) found that children from rural areas, born to mothers with low education level, and who belong to families that are unable to meet their basic needs obtain low scores on motor and language development assessments. The delay may be increased with the number of risk conditions. In the United States of America, Liu et al., (2015) found that low SES children performed significantly more poorly on visuo-motor coordination and locomotion tasks compared to their higher SES peers; in Mexico, Rizzoli-Córdoba et al., (2015) found that the percentage of children under five years of age with delayed gross motor development tends to decrease with age while the percentage of children under five years of age with delayed fine motor development tends to increase with age in children who are registered in social assistance for health programs (PROSPERA) most of who are from low SES backgrounds.

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Some studies analyze the differences in home motor activities, the frequency with which parents carry them out with their children and beliefs reported by parents from different SES backgrounds (Leiva & Valdés, 2016). These differences are related to factors such as parental education and knowledge of the motor development milestones (Rodríguez-Garcés, & Muñoz-Soto, 2017) as well as access to materials used for motor stimulation (hoops, balls, sports club subscription) (Miquelote, et al., 2012; Recart & Mathiesen, 2002). However, Freitas et al., (2011) found that while availability of space and accessories to promote motor development was related to SES, the activities carried out by parents with their children were unrelated to SES but showed a relationship to children's age. Results from these studies suggest that children from low SES background may be disadvantaged with respect to children from families with greater purchasing power with regards to the opportunities to use materials that promote physical activity and motor development (Bustamante et al., 2008), but they also provide evidence that independently of SES parents carry out motor activities that favor these skills.

The goal of the present study was to analyze: a) whether there is a difference in the frequency with which parents from low and high SES report that they engage their children in gross and fine motor activities at home; b) whether there is a difference by SES in parental beliefs about the development of gross and fine motor skills; c) whether there is a difference between low and high SES preschool children's gross and fine motor skills; and d) whether parent reported beliefs and frequency with which they engage their children in home motor activities are related to preschoolers' gross and fine motor skills.

Method

All procedures for the present study were approved by the Research Ethics Committee from the Faculty of Medicine at the Autonomous University of Chihuahua.

Participants

Seventy-five children enrolled in preschool in the city of Chihuahua took part in the study; 39 recruited from two public preschools (17 girls, 22 boys; M age = 52.18 months, SD = 6.94; range = 36-66 months) and 36 recruited from three private preschools (16 girls, 20 boys; M age = 51.05 months, SD = 9.70; range = 37-70 months).

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Procedure

Before inviting the preschools to participate, authorization from the Educational Services of the State of Chihuahua was requested; once approved, a was sent to the preschool directors, once they agreed to take part in the study, the informed consent form and questionnaires were sent home, in order to ensure confidentiality, parents returned the informed consent and questionnaires in a sealed envelope. Children were assessed only when their parents or tutors authorized participation and they voluntarily agreed to take part in the activities.

Measurement instruments

The present study is part of a large scale research project for which children completed 10 measures including literacy, math and the gross and fine motor skill subscales. The time required to complete the assessments was approximately 1 hour which was completed in two thirty-minute sessions carried out on different days within a single week.

Gross and Fine Motor Subscales from the Battelle Developmental Inventory. Motor skills were assessed with the Gross and Fine Motor Subscales from the Battelle Developmental Inventory Second Edition BDI-2. The Battelle Developmental Inventory is a standardized test that can be completed by children aged 0 to 8 years. Reliability indices for the scale are higher than .85 on all subscales, and has been used for studies assessing child development.

The gross and fine motor subscales are adequate for assessing children aged 0 to 6 years. The gross motor subscale is composed of a total of 45 items that include for example, asking the child to throw a ball, to jump on one foot, go up and down stairs. The fine motor sub-scale is composed of 30 items including asking the child to use scissors to cut a piece of paper, tie a knot, and to place large beads on a string. Each item is punctuated with 0, 1, or 2, according to the child's performance.

Parent questionnaire. The questionnaire was designed specifically for this research, it is composed of 2 sections: the first section includes 11 questions about parental beliefs with respect to the development of gross and fine motor skills during the preschool years;

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parents responded on a Likert type scale ranging from “unimportant” to “extremely important.” The second section is made up of 20 items and inquires about the frequency with which parents engage their children in gross and fine motor activities; parents responded on a Likert type scale which ranges from “rarely or never” to “most days of the week.” The specific items are shown in Tables 1 and 2.

Data Analyses

To analyze whether there are differences on parental beliefs about motor development and on the frequency with which parents engage their children in home motor activities by SES, mixed analyses of variance were used; multivariate analysis of covariance MANCOVA was used to analyze children's performance on the gross and fine motor subscales. Finally, bivariate correlations were used to analyze the relationship between parental beliefs, frequency with which parents engage their children in motor activities and children's motor skills.

Results

The sample included 75 preschool children, 39 children from low SES background (17 girls; M age = 52.18 months, SD = 6.94; range = 36-66 months) and 36 children from high SES background (16 girls; M age = 51.05 months, SD = 9.70; range = 37-70 months) from the city of Chihuahua. No differences were found between the mean age of the two groups $t(73) = 0.57, p > .05, d = .13$. Nor were there differences on the proportion of boys and girls in both groups, $\chi^2(1) = 0.02, p > .05, \text{Cramer's } V = .02$.

Parents in the Low SES group reported a significantly lower level of education compared to parents in the high SES group. Eighty percent of the fathers in the low SES group reported secondary school or less as their highest level of education, in contrast to fathers in the high SES group 80% of whom reported having obtained a university degree, $\chi^2(6) = 43.63, p < .001, \text{Cramer's } V = .92$. Seventy percent of the mothers in the low SES group reported having obtained a highschool diploma or less as their highest level of education, while 80% of the mothers in the high SES group reported having obtained a university degree, $\chi^2(4) = 35.27, p < .001, \text{Cramer's } V = .80$.

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Tables 1 and 2 show the descriptive statistics and reliability of the parent questionnaires with respect to the frequency with which they engage their children in gross and fine motor activities at home, and on parental beliefs about the importance of gross and fine motor development milestones.

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Table 1. Descriptive statistics and reliabilities of the parent questionnaire on the frequency with which they engage their children in home motor activities by SES.

	<i>Low SES</i>		<i>High SES</i>	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Gross Motor Activities	2.12	0.77	1.94	0.72
Reliability	.80		.82	
I teach my child to identify the left and right side of his or her body.	2.28	1.47	2.31	1.24
I teach my child how to climb.	2.00	1.47	1.97	1.48
I encourage my child to play on swings, teeter totters, and slides.	2.62	1.23	2.66	0.89
I teach my child to ride a bicycle or a tricycle.	2.44	1.43	2.17	1.11
I try to get my child to do activities that help with balance: jumping on one foot, walking on a straight line.	2.28	1.52	1.92	1.18
I teach my child to jump the rope.	1.21	1.42	0.64	0.99
I encourage my child to mimic various postures, walk as various animals.	1.38	1.41	1.19	1.28
I encourage my child to run.	3.35	0.87	3.05	0.92
My child participates in extracurricular sports activities.	0.82	1.23	1.17	1.52
I encourage my child to dance to the rhythm of the music.	3.31	0.95	2.97	1.08
I encourage my child to walk on his or her toes.	1.64	1.44	1.28	1.36
Fine Motor Activities	2.53	0.85	2.37	0.73
Reliability	.78		.79	
I teach my child to hold the pencil correctly	2.87	1.24	2.92	1.08
We cut with scissors.	2.28	1.30	2.44	1.00
We play with clay.	1.92	1.29	2.50	1.05
We draw and/or paint.	3.10	0.97	3.19	0.71
I teach my child to open and close screw cap containers.	2.74	1.50	2.33	1.33
I teach my child to button his or her clothes.	3.00	1.34	2.50	1.32

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We separate small objects with our hands.	2.03	1.51	2.05	1.28
I teach my child to buckle his or her shoelaces.	2.28	1.59	1.03	1.30
Gross and fine motor activities.	2.33	0.75	2.16	0.67
Global Reliability	.88		.88	

Note. La reliability is Cronbach's alfa. Parents responded to the question: *Please indicate how often you do the following activities with your child* on a Likert type scale: 0 = rarely or never, 1 = once a month, 2 = once a week, 3 = several days a week, 4 = most days of the week.

Table 2. Descriptive statistics and reliabilities of the parent questionnaire on beliefs about motor development by SES.

	<i>Low SES</i>		<i>High SES</i>	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Gross Motor	2.50	0.94	2.87	0.83
Reliability	.86		.88	
Stand on one foot with no support.	2.25	1.18	2.53	1.08
Jump forwards with his or her feet together.	3.03	1.19	2.78	1.05
Climb stairs alternating his or her feet.	2.58	1.05	2.89	1.09
Walk over a line on the floor.	2.35	1.23	2.75	1.08
Identify left and right.	2.22	1.32	3.39	0.73
Fine Motor	2.80	0.81	2.97	0.68
Reliability	.86		.89	
Unbutton and untie shoelaces.	2.50	0.81	2.52	0.84
Draw geometric figures.	2.84	1.07	2.86	0.93
Use scissors to cut.	2.89	0.98	3.22	0.83
Eat with fork or spoon (without help).	3.11	1.07	3.50	0.65
Touch the index finger with the	2.41	1.14	3.06	0.98

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thumb.				
Tie shoelaces.	2.84	1.21	2.66	0.86
Global motor beliefs	2.53	0.85	2.92	0.72
Global Reliability.	.93		.93	

Note. Note. La reliability is Cronbach's alfa. Parents responded to the question: *Please indicate how important it is to you that your child be able to do the following activities before Grade 1* on a Likert type scale: 0 = unimportant, 1 = neither unimportant nor important, 2 = important, 3 = very important, 4 = extremely important.

Frequency with which parents engage their children in home gross and fine motor activities reported by low and high SES parents.

To analyze whether there were significant differences by SES on parent-reported frequency with which they engage their children in gross and fine motor activities at home, a Mixed 2(SES high vs low) x 2(home motor activities: gross vs fine) Analysis of Variance was performed (see Table 3). Results show that parents in both high and low SES groups report engaging their children more frequently on fine than on gross motor activities at home (see Figure 1).

Table 3. Inferential statistics for the analyses of parent-reported frequency of engaging their children in motor activities at home by SES.

	<i>F</i> (1, 73)	η^2_p
Socio-Economic Status (SES)	1.05	.03
Gross and fine motor activities	38.91***	.35
SES x Activities	0.03	.00

****p*<.001

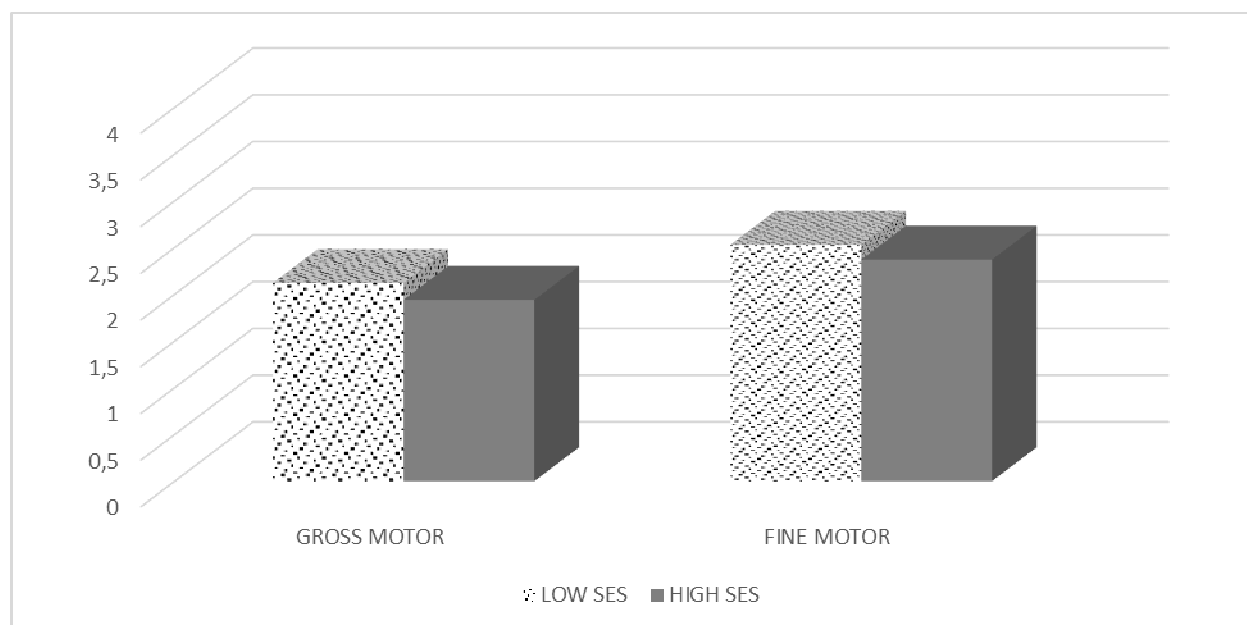


Figure 1. Results of parent-reported frequency of engaging their children in home motor activities by socio-economic status.

Parent-reported beliefs with respect to the importance of the development of gross and fine motor skills by SES.

To analyze whether there were significant differences in parent-reported beliefs about the importance of gross and fine motor skills development milestones by SES, a Mixed 2(SES: low vs high) by 2(beliefs: gross vs fine) Analysis of Variance was performed. Results (Table 4) show that parents in both high and low SES groups believe the development of fine motor skills to be more important than the development of gross motor skills (see Figure 2).

Table 4. Inferential statistics from the analysis of parent-reported beliefs with respect to the development of gross and fine motor skills by SES.

	$F(1, 67)$	η_p^2
Socio-economic status (SES)	1.75	.03
Parent-reported beliefs on the development of gross and fine motor skills	10.36**	.13
SES x beliefs	1.98	.03

** $p < .01$

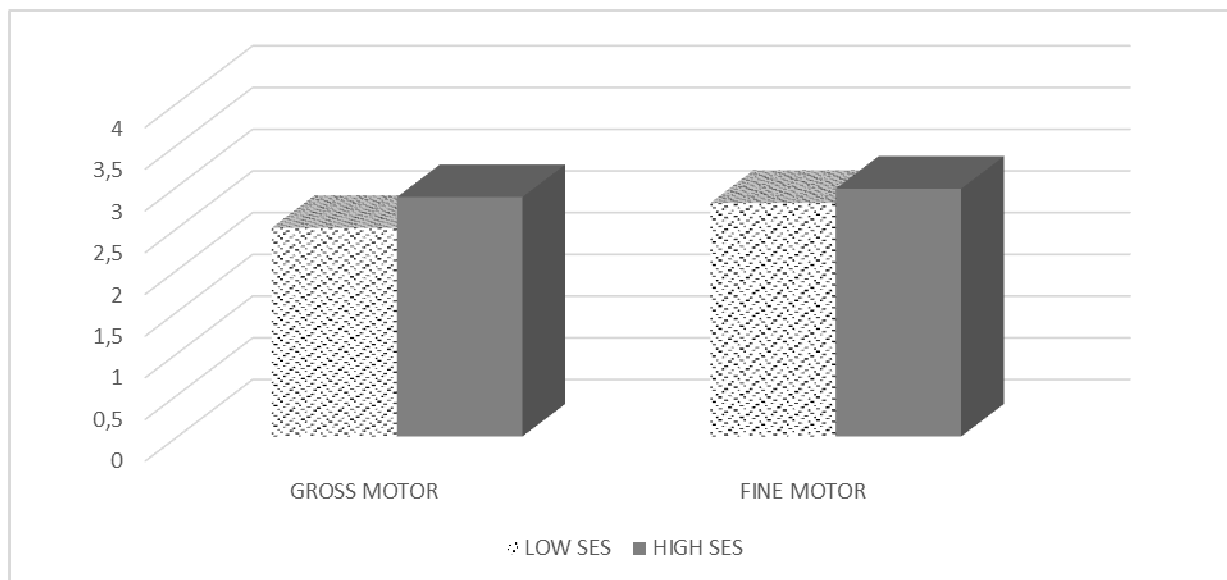


Figure 2. Parent-reported beliefs with respect to the development of gross and fine motor skills by SES.

Gross and fine motor skills in low and high SES preschool children.

Table 5 shows the means and standard deviations from the Battelle Developmental Inventory's gross and fine sub-scale for both SES groups.

To analyze whether there were differences in child performance on gross and fine motor skills by SES a Multivariate Analysis of Covariance¹ with SES as a between-subjects factor and age as a covariate was performed; the MANCOVA was followed up by univariate ANOVAS.

Overall results showed significant differences in performance by SES, $F(2, 63) = 15.64, p=.000, \eta^2_p = .33$; the effect of age was significant $F(2, 63) = 25.79, p = .000, \eta^2_p = .45$. Results from the univariate ANOVAs showed that low SES children obtained significantly higher scores on gross motor skills than their high SES peers $F(1, 64) = 29.85, p=.000, \eta^2_p = .32$; however, no significant differences in performance were found by SES on fine motor skills (SES low vs high), $F(1, 64) = 3.37, p = .071, \eta^2_p = .05$.

Table 5. Results for the gross and fine subscales by SES.

Battelle Developmental Inventory subscales	Low SES		High SES	
	M	SD	M	SD
Gross Motor	81.76	5.03	75.58	6.52
Reliability	.82		.86	
Fine Motor	48.00	7.76	43.79	8.28
Reliability	.88		.90	

Note. Reliability is Cronbach's alfa.

Relationship between parent-reported beliefs, frequency of home motor activities, and children's gross and fine motor skills.

¹The percentile bootstrap method was used in order to minimize bias due to a) lack of normality in the variables, and b) small sample size (Vallejo, Cuesta, Fernández, & Herrero, 2006; Vallejo, Fernández, & Livacic-Rojas, 2010).

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To determine whether there is a relationship between parent-reported beliefs, frequency of home motor activities, and preschool children's gross and fine motor skills, bivariate correlations were analyzed by SES (see Table 6).

No relationship was found between parent-reported frequency of home gross and fine motor skills and children's performance was found in either SES group; child performance in both groups was uncorrelated with parent-reported beliefs about motor skills development. However, in both SES groups, parent-reported frequency of engaging their children in gross motor activities was significantly positively correlated with parent-reported beliefs about the development of gross motor skills.

In both SES groups, parents who reported engaging their children more frequently on gross motor activities also reported engaging their children on fine motor activities at home; likewise, in both groups, a significant, positive correlation was found between parent-reported beliefs about the importance of gross and fine motor skills.

Table 6. Bivariate correlations, low SES ($n = 31-39$) below the diagonal; high SES ($n = 34 - 36$) above the diagonal.

	Battelle GM	Battelle FM	Activ. GM	Activ. FM	Creencias GM	Creencias FM	Edad
Battelle GM	–	.71**	-.13	-.01	.05	.07	.69**
Battelle FM	.56**	–	-.19	-.15	-.07	-.11	.43*
Act. GM	.13	.23	–	.71**	.39*	.14	-.09
Act. FM	.19	.30	.72**	–	.14	.03	.12
Beliefs GM	-.17	-.11	.36**	.18	–	.79**	-.04
Beliefs FM	-.16	-.06	.22	.13	.88**	–	.04

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Edad	.68**	.43**	.25	.28	.08	-.04	_
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Nota: GM = gross motor, MF = fine motor, * $p < .05$, ** $p < .01$

Discussion

The present study had four main goals, to analyze whether there are significant differences in a) parent-reported frequency of engaging their children in gross and fine motor activities by SES; b) parent-reported beliefs about the importance of gross and fine motor skills development milestones by SES; c) child performance on gross and fine motor skills by SES; and whether parent-reported beliefs, the frequency of engaging their children in gross and fine motor home activities are related to child performance on gross and fine motor skills assessments.

We found that parents in both SES groups report engaging their children more frequently on fine motor activities at home, and consider the development of fine motor skills as more important than gross motor skills. Considering that the assessed children were recruited from preschools, our results may be related to the type of activities and tasks that are emphasized in the preschool environment, for example, teachers may leave children homework that involves fine motor skills such as cutting and drawing, thus, parents reported engaging their children more frequently on these types of activities. However, the correlations between parent-reported beliefs on the importance of the development of fine motor skills and the reported frequency of engaging their children in fine motor activities at home, were not significant in either group, this implies that more research on the relationship among these variables, and the impact of preschool homework on the frequency and type of activities that parents engage their children in is necessary (Smith, Robbins, Stagman, & Mathur, 2013).

Likewise, another reason for which parents reported engaging their children more frequently on fine rather than on gross motor home activities could be, as reported by Coronado (2011), that the home environment or space is not always adequate for engaging children on gross motor activities, that is, because homes may not have sufficient space, and playing outside on the street is not viable due to security issues, and taking their children to public parks, although ideal, requires a greater amount of time.

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Our results show that parent-reported frequency of engaging their children in gross motor home activities are positively correlated to parental beliefs about the importance of the development of gross motor skills, in this way, those parents who consider the development of gross motor skills as important report engaging their children more frequently on these types of activities and viceversa. These results are important in light of findings by Lindsay, Wallington, Muñoz, and Greany, (2018) who refer that it is possible that some parents do not worry about engaging their children on gross motor activities because they do not relate them directly with learning, and instead, they relate them with sports, which are commonly perceived as something secondary or because they consider other activities such as videogames or the use of electronic gadgets as an equally favorable way of spending time together. The results from our study may lay the foundation for future intervention studies in which parents are provided with information regarding the benefits of engaging their children in gross motor activities at home and observe whether there is an effect on the frequency with which parents report engaging their children in such activities.

In the same sense, Gomes et al., (2017) found a significant relationship between parental beliefs and reported frequency of home gross and fine motor activities, their findings are inconsistent with our results in which the only relationship that was found was between parent-reported frequency of engaging their children in home gross motor activities and their beliefs on the importance of the development of these skills, this inconsistency in results could be due to the age range studied; the data collected by Gomes et al., corresponded to children aged 12 to 24 months, while our study included children with an average age of 52 months who are in a different developmental stage with demands and difficulties proper of the preschool level, for example, holding a pencil, cutting, which may make parents focus more on these activities, while the reverse occurs with the gross motor activities (run, jump) which have already been acquired at this age, and only those parents who are aware of the importance of a continued stimulation of these skills engage their children on these activities more frequently.

With regards to children's performance, low SES participants obtained significantly higher scores on gross motor skills than their high SES peers; however, no significant

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differences were encountered by SES on fine motor skills. These results stand in contrast to data from previous studies (Leyva & Valdés, 2016; Liu et al., 2015; Valdés Arriaga & Spencer Contreras, 2011) who report that high SES children performed better than low SES children on assessments of motor skills; the authors refer that children from low SES background lack adequate stimulation which affects their psychomotor development; in contrast, findings by Farkas and Corthorn (2012) affirm that more informed, concerned parents who stimulate and interact more with their children counteract the effect of SES and promote a better development in their children; in their study, Wilk, Clark, Maltby, Smith, Tucker, and Gililand (2018) refer that parental level of education is an important factor, given that those parents who report highschool as their highest level of education engage their children more in motor activities than those parents who report lower levels of education.

In the present research no relationship was found between the parent-reported frequency of engaging their children in home motor activities and child performance. Previous studies (e.g., Osorio et al., 2010) highlight a significant relationship between home stimulation and children's performance on motor skill assessments, however, the HOME inventory was used as a global measure of home stimulation differing greatly from the questionnaire used in the present study. It is possible that motor skills are related to constant global stimulation (Osorio et al., 2010) and not to the parent-reported frequency of engaging their children in motor activities or with parental beliefs. More research is necessary to determine whether there is variability with respect to the developmental stages in which motor skills are more sensitive to an increase in home stimulation.

Conclusions

The present study integrated four variables that have been considered separately in the literatura: parental beliefs about motor development, parent-reported frequency of engaging their children in motor activities at home, child performance on motor skills and socio-economic status. We found that parental beliefs about motor development are related to the frequency with which parents report engaging their children on home motor activities, and that these variables do not show differences by SES. Neither parental beliefs nor reported frequency of engaging their children in home motor activities were found related with child

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performance. Performance on gross motor skill however did show differences by SES, being the low SES participants who obtained higher scores. However, these results suggest that it is necessary to investigate more on parent-reported beliefs about the importance of the development of motor skills and frequency with which parents engage their children in motor activities, as well as other factors that could favor the development of motor skills in preschool children (school activities). Finally, the effect of parenting practices on the development of motor skills is proposed as a future research line (Grijalva, 2015), parenting practices may differ by SES and/or the environment in which children are raised (Osorio et al., 2017). It is important to acknowledge that the sample size of the present study was a limitation, thus it is important to replicate the present study in larger samples.

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