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## THE RELATIONS BETWEEN FAMILY CONTEXTUAL FACTORS AND ACADEMIC ACHIEVEMENT: SECOND-ORDER META-ANALYSIS

**Abstract:** The present study is an attempt to give a holistic and bigger picture of the relations between family contextual factors and academic achievement by employing second-order meta-analysis to synthesize results from first-order meta-analyses. Thirteen first-order meta-analyses included in this study represent more than one thousand culturally diverse studies and cover 70 years of scholarship from 1950 to 2020. The findings revealed that the strength of the relationship between family contextual factors and achievement was at a medium level. The moderator analyses showed that family SES represented a stronger relationship with student achievement than parental behaviors such as parental involvement or expectations. We found no significant differences among other moderators, such as the academic subject domain, culture, quality assessment, report types, and year range.

**Keywords:** family contextual factors, socioeconomic status, parental behaviors, academic achievement, second-order meta-analysis.

### 1. Introduction

The current large body of research on academic achievement has shown that factors affecting the academic achievement of students have been discussed for several decades (Harwell, Maeda, Bishop, & Xie, 2017; Liu, Peng, & Luo, 2020; Pinguart & Ebeling, 2020; Sirin, 2005; White, 1982). This may be explained by the critical role of academic achievement as an indicator of students' learning status and a predictor of their lifelong improvement (Lubinski, Benbow, & Kell, 2014). Since Coleman et al. (1966) reported on equality of educational opportunity, scholars have tried to explain the factors affecting academic achievement by considering family socioeconomic status (SES), school-related factors, or parental behaviors. Studies focused on SES and academic achievement have found a positive relationship between those two critical variables and have reported different results for the role of SES in academic achievement (Selvitopu & Kaya, 2021). Many scholars have also examined school-related factors such as teacher quality or material resources and have shown different results in various contexts (Darling-Hammond, 2000; Liu, Bonk, Magjuka, Lee, & Su, 2005). Other studies reported that parental behaviors predicted more of the variance in academic achievement than school-related factors and SES (Kim, Cho, & Song, 2019; Letourneau, Duffett-Leger, Levac, Watson, & Young-Morris, 2013).

In this study, we attempted to give a holistic and bigger picture of the relations between family contextual (FCFs hereafter) factors and academic achievement by considering related FCFs with achievement in four different dimensions: a) family SES, b) parental expectations, c) parental styles and d) parental involvement. We also divided FCFs into two categories to conduct meta-analyses: a) family SES and b) parental behaviors.

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## 2. Family SES and Academic Achievement

The first category of FCFs consisted of family SES-achievement relations. Many researchers focusing on academic achievement have considered family SES (Family income, parents' occupation and education as suggested by Glass, 1976) as a key variable (Liu et al., 2020; Letourneau et al., 2013) since it is perceived as a strong predictor of academic achievement (Harwell et al., 2017). The growing body of independent research has shown that there is certainly a relationship between family SES and achievement, but the findings on the strength of the relationship are not entirely consistent (Sirin, 2005; von Stumm, 2017; White, 1982). Inconsistent results may occur from the contexts (geographical location, economic, cultural differences, etc.) or the types of SES measures. For instance, Heyneman and Loxley (1983) conducted their study in an underdeveloped country and found that school resources were more predictive of achievement than family inputs. Similarly, Kim, Cho, & Song (2019) also found a weaker but strengthening SES-achievement relationship over time in East Asian countries in his recently published systematic review. Types of mostly used SES measures are family income (Bae & Wickrama, 2015; Blums, Belsky, Grimm, & Chen, 2017), parents' education and occupation (Kusaeri, Aditomo, Ridho, & Fuad, 2018; Nesbitt, Baker-Ward, & Willoughby, 2013), and home resources (Long & Pang, 2016; Tan, 2015), which may also show considerable differences in the strengths of SES-achievement relations. White's (1982) and Sirin's (2005) meta-analyses provided evidence that the SES-achievement relationship may be related to the type of SES measures. Because of these different results, researchers have tended to carry out meta-analyses or meta-synthesis with larger samples in various contexts to better understand the relationship between family SES and achievement.

## 3. Parental Behaviors and Academic Achievement

The second category includes parental behaviors (PBs) and achievement relations. Parents may influence student achievement positively through their multiple behaviors, such as supporting development, involving school meetings or stating obtainable expectations. Researchers, attempting to examine the relations between PBs and achievement within the scope of this study, have focused on behaviors such as parental expectations, parenting styles and parental involvement. From parental expectations to encouraging parenting styles or involvement, the literature consistently supports the notion that there is a positive relationship between PBs and student achievement (Daucourt, Napoli, Quinn, Wood, & Hart, 2021; Kim & Hill, 2015; Pinguart & Kausar, 2018; Vasquez, Patall, Fong, Corrigan, & Pine, 2016). However, the strength of the relationship differs since the definitions and interpretations of those behaviors may vary in different contexts of the studies conducted and children's developmental stages. For example, parents' realistic and obtainable expectations for their children who are in the adolescent period have a significant positive effect on their future academic achievement, even when controlling for other variables such as earlier parent expectations or prior achievement (Froiland & Davison, 2014). The meta-analytic work of Pinguart & Ebeling (2020) on the relationship between parental expectations and achievement concluded that parents should communicate positive educational expectations to their children since it seemed more effective than checking homework or staying in contact with teachers.

Parenting styles also have critical roles in student achievement since parents vary greatly in their parenting styles, as well as the ways they become involved in their children's lives (Pomerantz, Moorman, & Litwack, 2007). The widely cited Baumrind (1966) model offered three parenting styles: a) an authoritative style (directing the child's activities in a rational, issue-oriented manner), b) an authoritarian style (attempting to shape, control, and evaluate the behavior and attitudes of the child with an absolute standard), and c) a permissive style (affirmative manner towards the child's impulses, desires, and actions). The literature consistently reports a stronger relationship between authoritative style and achievement. In their systematic literature review, Masud, Thurasamy, & Ahmad (2015) found the authoritative style to be the most effective parenting style in enhancing achievement. Another culture-oriented meta-analysis conducted by Pinguart & Kausar (2018) found stronger associations between authoritative parenting and achievement in Western countries and highlighted the key role of

authoritative style by recommending authoritative parenting across the globe. They also found a negative relationship between authoritarian parenting and achievement in Hispanic families.

Parental involvement and achievement relation is also a largely studied subject, and the findings generally reveal a significant relationship between parental involvement and achievement (Dotterer & Wehrspann, 2016; Gubbins & Otero, 2016). The findings of the conducted meta-analyses also support that relationship (Erdem & Kaya, 2020; Hill & Tyson, 2009). Researchers, trying to specify the picture of what types of parental involvement are predictive of achievement, have studied parental involvement as school-based (activities and behaviors parents engage in at school) and home-based (parents' effort to promote their children's learning) involvement and found different results (Boonk, Gijsselaers, Ritzen, & Brand-Gruwel, 2018). While some studies showed a positive and higher impact of home-based involvement on academic achievement (Castro et al., 2015; Wilder, 2014), others revealed a less or no relationship with school-based parental involvement (Boonk et al., 2018; Johnson & Hull, 2014).

#### 4. The Purpose of the Study

Researchers have conducted many studies considering the relations between SES, school factors, parental factors, and academic achievement individually, or some of them followed meta-analytical procedures with a narrow context by focusing on parental expectations and achievement or parental involvement and achievement. Thus, the study findings have given smaller pictures of the aforementioned relations. The present study is an attempt to give a holistic and bigger picture of the relations between FCFs and academic achievement by employing second-order meta-analysis to synthesize results from first-order meta-analyses examining the FCFs affecting the academic achievement of students.

The specific objectives of our second-order meta-analysis are to;

1. ascertain the strength of the relationship between FCFs and academic achievement and
2. clarify which FCFs are more influential on academic achievement.

#### 5. Method

Second-order meta-analysis has two important advantages: a) it allows estimation of the amount of true variance across mean effect sizes, and b) it allows us to compute the reliability of the differences between meta-analyses in mean effect sizes (Schmidt & Oh, 2013). Thus, it also enables researchers to summarize the published findings of meta-analyses and provides broader insights (Cooper & Koenka, 2012). In this study, 13 first-order meta-analyses on FCFs and achievement relations represent more than one thousand culturally diverse studies and cover 70 years of scholarship from 1950 to 2020. FCFs related to student achievement exhibit great diversity. Thus, we conducted a second-order meta-analysis to obtain a holistic and larger picture of the relations between FCFs and academic achievement by synthesizing results from first-order meta-analyses.

##### 5.1. Information sources and search procedure

A search of meta-analyses synthesizing results from a range of studies that examine relations between FCFs (family SES, parental behaviors) and academic achievement published up to December 2021 was performed using four databases (ERIC, Scopus, Web of Science, PsycNet). Search terms in abstracts included combinations of relevant keywords, namely, ('achievement' OR 'success' OR 'academic achievement' OR 'student outcome' OR 'student achievement') AND ('meta-analysis' OR 'review' OR 'meta-analytic' OR 'systematic review').

##### 5.2. Eligibility criteria and study selection

The primary meta-analyses were eligible if they

- a) considered FCFs as a predictor of academic achievement,

- b) reported effect size data such as Pearson *r*, Hedge’s *g*, Fisher’s *z* or Cohen’s *d* that can be converted to a common metric,
- c) were written in Turkish or English,
- d) were published between 2010 and 2021,
- e) sampled K-12 students,
- f) reported academic achievement as the main outcome,
- g) included studies conducted in survey models,
- h) were published as articles,
- i) got at least 23 points from the Quality Assessment Scale.

We excluded meta-analyses if they a) were qualitative reviews, b) examined the same or similar set of primary studies, c) focused on the effect of intervention programs on achievement, d) included higher education samples, and e) were doctoral dissertations or working group reports.

### 5.3. Overlap

Using a study more than once in the second-order meta-analysis overstates its sample size and the number of events, falsely leading to greater precision in the analysis (Lunny, Pieper, Thabet, & Kanji, 2021). We checked the overlapping degree of primary studies to avoid overstating and considered it below the 25% rule as recommended by Cooper & Koenka (2012). Table 1 presents the results of the overlap analysis.

**Table 1.** Excluded meta-analyses with high degrees of overlap

Excluded	Included	Predictor
Castro et al. (2015)	Kim & Hill (2015)	Parental involvement
Jeynes (2015)	Kim & Hill (2015)	Parental involvement
Tan, Lyu, & Peng, (2020)	Kim & Hill (2015), Ates (2021)	Parental involvement
Tan, Peng & Lyu (2019), Tan (2017)	Ates (2021)	Parental involvement
Erdem & Kaya (2020)	Pinquart & Kauser (2018)	Parenting styles
Pinquart (2016)		

Meta-analyses included in this study showed overlapping degrees between 10% and 20%, and we excluded meta-analyses showing high degrees of overlap, as seen in Table. Figure 1 represents a detailed flow chart of the study selection process.

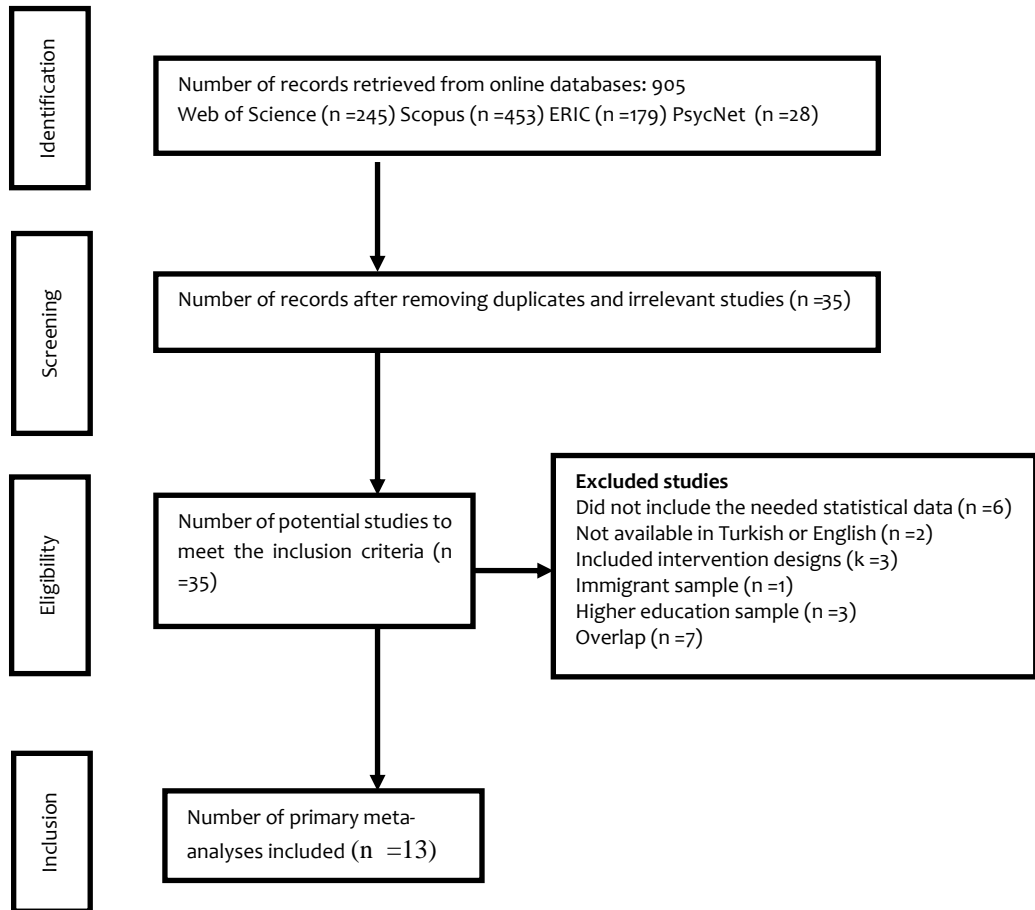


Figure 1. Flowchart of the study selection process

#### 5.4. Coding Process

We developed a coding scheme to write down the typical characteristics of the primary meta-analyses. The coding scheme included information about author(s), publication year, type of FCFs, the domain of academic achievement, cultural context of the study, quality level, publication bias, types of primary studies, effect size, and sample size of the studies. The typical characteristics of the 13 meta-analyses included in this study are presented in Table 2.

**Table 2.** Characteristics of meta-analyses included in the second-order meta-analysis

Study	k	ES	LL	UL	Culture	Report	Outcome	Academic domain	Quality	Bias	Year Range
Scherer & Siddiq (2019)	11	.21	.18	.24	Global	Mixed	Family SES	ICT Literacy	Medium	Yes	2014-2017
won Kim (2019)	19	.24	.23	.25	East Asian	Article	Family SES	Mixed	Medium	No	Before 2017
Kim, Cho, & Song (2019)	20	.17	.01	.34	US (AA)	Article	Family SES	Mixed	Medium	Yes	1994-2013
Harwell, Maeda, Bishop, & Xie (2017)	297	.24	.22	.24	US	Mixed	Family SES	Mixed	High	No	1950-2010
Liu, Peng, & Luo (2020)	78	.24	.21	.28	China	Mixed	Family SES	Mixed	Medium	No	1979-2017
Daucourt et al. (2021)	68	.13	.09	.17	Global	Mixed	Home Math Environment	Math	High	No	Before 2020
Pinquart & Ebeling (2020)	169	.03	.28	.32	Global	Mixed	Parental expectations	Mixed	Medium	Unknown	Before 2019
Vasquez et al. (2016)	21	.12	.07	.16	Global	Mixed	Parental autonomy support	Mixed	Medium	No	Before 2012
Kim & Hill (2015)	34	.14	.10	.18	Global	Mixed	Father involvement	Mixed	Medium	Yes	1980-2013
Kim & Hill (2015)	47	.15	.11	.18	Global	Mixed	Mother involvement	Mixed	Medium	Yes	1980-2013
Ates (2021)	53	.39	.11	.58	Global	Mixed	Parental involvement	Mixed	Medium	No	2004-2020
Pinquart & Kauser (2018)	219	.18	.16	.20	Global	Mixed	Authoritative parenting	Mixed	Medium	No	Before 2016
Sarier (2016)	21	.27	.17	.34	Turkey	Mixed	Family SES	Mixed	Medium	No	2000-2015
Sarier (2016)	12	.28	.07	.51	Turkey	Mixed	Parental behavior	Mixed	Medium	No	2000-2015
won Kim (2020)	15	.12	.09	.16	East Asian	Article	Parental involvement	Mixed	High	No	1990-2017

ICT = Information and Communication Technology, AA=Asian American

5.4.1. *FCFs:* We considered FCFs in four different dimensions: a) Family SES (Family income, parents' occupation and education), b) Parental expectations, c) Parenting styles, and d) Parental involvement. Additionally, we coded FCFs into two categories to conduct meta-analyses: a) family SES (the focus of the included meta-analyses is family SES-achievement relations) and b) parental behaviors (the focus of the included meta-analyses is the relation between parental behaviors such as support, involvement, authoritative parenting and achievement).

5.4.2. *The domain of academic achievement:* We coded two different domains of academic achievement. One is the common domain that includes more than one subject (math, science or reading, etc.). The single domain includes studies that examined only one subject.

5.4.3. *Types of primary studies:* Studies including more than one report were coded as "mixed" if they include only one report, we coded them as they are.

5.4.4. *Assessment of quality:* We used the Revised Assessment of Multiple Systematic Reviews (R-AMSTAR) (Kung et al., 2010) was used to measure quality because it has good interrater agreement and construct validity. The R-AMSTAR consists of eleven items, and the grading levels of the scale are very low = 0 to 11, low = 12 to 22, medium = 23 to 33, and high = 34 to 44 (Young, 2017). Two items were excluded since they were not relevant to the current study. These two items are relevant to clinical studies: “8C. To have conclusions integrated/drives towards a clinical consensus statement” and “8D. This clinical consensus statement drives toward revision or confirmation of clinical practice guidelines”. This exclusion reduced the total possible score from 44 to 42. The quality scores of the included meta-analyses in this study ranged from 28 to 38, which indicated medium and high levels of satisfaction.

5.4.5. *Publication bias:* We coded the meta-analyses that reported publication bias as “Yes”, and “No” means no publication bias. Additionally, one of the included meta-analyses did not report any information about bias, and we coded it as “Unknown”.

5.4.6. *Date of publication:* Meta-analyses were included and published between 2010 and 2021. Meta-analyses published after December 2021 were not included in this study.

5.4.7. *Cultural contexts:* Studies examining more than one country and culture were coded as “global”, and if they were conducted in a specific country and culture, we coded them as “local”.

## 5.5. Effect Sizes

If the primary meta-analyses included more than one PF, we calculated effect sizes separately. For instance, we coded authoritative parenting style as a PF. Additionally, if the primary meta-analyses reported mother or father involvement, we also followed the same method in coding. A total of 18 effects were analyzed using the Comprehensive Meta-Analysis (CMA 2.2) program. Fifteen of those effects represent FCFs. Most of the included studies used *Pearson r* as an effect size index ( $n = 13$ ;  $k = 17$ ). Only one of the primary meta-analyses reported the *Fisher's z* score as the effect size ( $n = 1$ ;  $k = 1$ ), and we converted it to the *r* value. Thus, we could convert all the effect sizes to a common metric. We also used the *r* value following recommended guidelines to evaluate and explain the effect sizes of the relations (Funder & Ozer, 2019).

## 5.6. Statistical Model

We considered the random-effects model for mean effect sizes, heterogeneity and moderator analyses since the studies consisted of different samples and the typical characteristics of the studies greatly varied, as suggested by Borenstein, Hedges, Higgins, & Rothstein (2011). The random-effects model has the advantage of providing the expected heterogeneity between studies more accurately (Pigott & Polanin, 2020). *Q* statistics were used for heterogeneity analysis, and we interpreted total-between *Q* values. *I*<sup>2</sup> indexes were considered for evaluating heterogeneity levels (Huedo-Medina, Sanchez-Meca, Marin-Martinez, & Botella, 2006). We conducted moderator analyses for categorical variables such as cultural contexts, the domain of academic achievement or bias status and considered *Q* between tests to check the differences in mean effect sizes according to moderator variables.

## 5.7. Publication Bias

The reliability of calculated effect sizes is closely related to publication bias (Mathur & VanderWeele, 2021). Researchers have developed various tests to check publication bias (Borenstein et al., 2011). Here, we used Egger's test and Duval & Tweedie, Trim and Fill to check out the degree of publication bias of the data set (Jin, Zhou, & He, 2015).

## 6. Results

In this second-order meta-analysis, we analyzed FCFs ( $k = 15$ ). The data set included 15 effect sizes on FCFs and achievement relations. The effect sizes ranged from  $r = .12$  to  $r = .36$ . The mean effect size of the relationship between FCFs and achievement is medium-level  $r = .19$  ( $LL = .169$ ;  $UL = .224$ ). The amount of heterogeneity of the data set is  $Q_{(14)} = 203.89$ ;  $p < .01$ , and the heterogeneity level is  $I^2 = 93.13$ . These values provide evidence that our data set is heterogeneous. In this study, the researchers followed three steps to check for publication bias. The first step was analyzing the funnel plot distribution related to the effect sizes of the data set. Figure 2 shows the funnel plot standard error by point estimate.

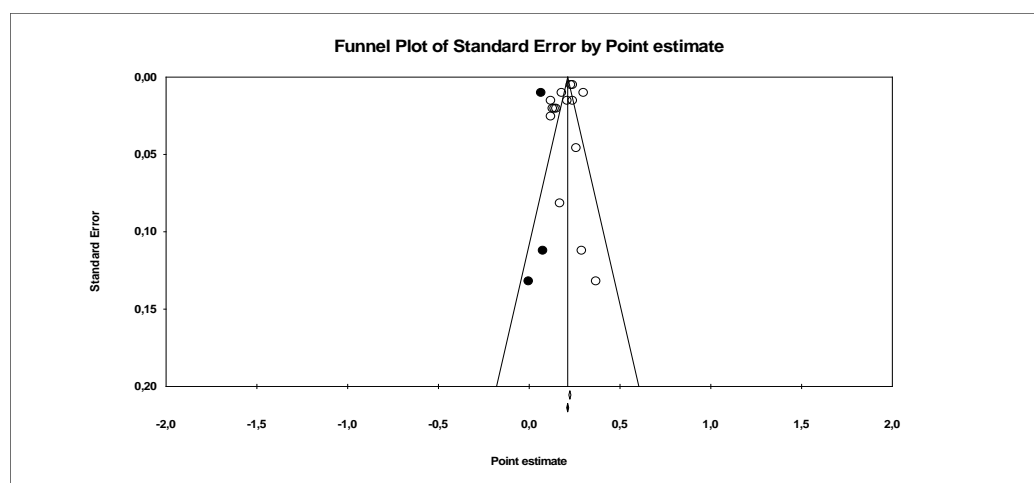


Figure 2. Funnel plot (Dark spots indicate the needed studies to be imputed,  $k = 3$ )

The second step of publication bias analyses was Egger's regression test, and the result of this test indicated no publication bias ( $t = 1.49$ ;  $p = .16$ ). In the third step, Duval & Tweedie, Trim and Fill analysis (DTTF) resulted in publication bias that indicated the three needed studies to be imputed on the left side of the plot. On the other hand, the corrected mean effect size score is  $r = .18$  ( $LL = .14$ ;  $UL = .21$ ), and by comparing the corrected and observed effect sizes, we found a negligible difference between the two values ( $\Delta r = .01$ ).

### 6.1. Moderation Effects

The results of the moderator analysis showed that the mean effect size varied among FCFs ( $Q_{(b)} = 4.33$ ;  $p = .04$ ). The magnitude of the relationship between family SES and achievement was medium level ( $r = .23$ ), and the magnitude was smaller between parental behaviors and achievement ( $r = .17$ ). The mean effect size also varies among publication bias statuses of primary meta-analyses ( $Q_{(b)} = 7.99$ ;  $p = .02$ ). One of the primary meta-analyses produced a higher effect size that did not report anything about bias ( $r = .30$ ). The effect sizes of meta-analysis, which reported information about publication bias, showed similar values ( $r = .19$ ;  $r = .17$ ).

Table 3. Moderator analyses

Group	k	ES	LL	UL	Q	df (Q)	p
<b>FCFs</b>							
Parental Behaviors	9	.17	.14	.21			
Family SES	6	.23	.19	.27	4.33	1	.04
<b>Academic Subject Domain</b>							
Common	13	.20	.17	.23			
Single	2	.17	.10	.24	.62	1	.43
<b>Culture</b>							



Global	10	.18	.15	.22			
Local	5	.24	.17	.30	2.12	1	.15
<b>Bias Status</b>							
No	10	.19	.16	.22			
Unknown	1	.30	.22	.38			
Yes	4	.17	.12	.22	7.99	2	.02
<b>Quality Assessment</b>							
Medium	12	.21	.17	.24			
High	3	.16	.10	.23	1.49	1	.22
<b>Report Type</b>							
Article	3	.18	.11	.25			
Mixed	12	.20	.16	.24	.25	1	.62
<b>Year Range</b>							
2010-2015	6	.17	.13	.22			
2016-2021	9	.21	.18	.24	1.65	1	.20

The relationship between FCFs and academic achievement showed no significant differences among other moderators, such as the academic subject domain, culture, quality assessment, report types, and year range.

## 7. Discussion

The present study was an attempt to give a holistic and bigger picture of the relations between FCFs and academic achievement by employing a second-order meta-analysis to synthesize results from first-order meta-analyses examining FCFs affecting student achievement. Our comprehensive search of the FCFs and achievement literature provided us with 13 meta-analyses for inclusion. The study selection process has given us the advantage of realizing the two common problems related to the meta-analyses conducted. The first of them was that many meta-analyses have not reported the methods used and have not included the needed statistical data. The second problem was that the researchers paid little attention to the overlap across studies. The researchers should be more careful about reporting and methodological procedures to be followed in conducting primary meta-analyses. Although we have faced those problems in the process, our study makes an important contribution to the literature to see the bigger picture of the relationship between FCFs and achievement.

The first specific objective of our second-order meta-analysis was to ascertain the strength of the relationship between FCFs and academic achievement. Our findings suggested that the strength of the relationship between FCFs and achievement was medium, and the total variance explained by FCFs was 3.8%. This finding is not surprising since it is in line with a largely studied and well-known fact that FCFs such as higher family SES, parental expectations, or involvement positively affect students' academic achievement (Daucourt et al., 2021; Liu et al., 2020; Pinguart & Kauser, 2018; Selvitopu & Kaya, 2021). The Programme for International Student Assessment (PISA), a large-scale measure for student achievement conducted every three years, has also reported that student academic achievement on the PISA exam is certainly related to socioeconomic status and parental behaviors without considering any other contexts (location or cultural differences) (OECD, 2019). This finding has given us a more holistic picture of the strength of the relationship between FCFs and achievement.

The second objective of our study was to clarify which FCFs are more influential on academic achievement. Our moderator analyses showed a medium-level relation between the components of family SES and achievement, and the total variance explained by family SES was 5.3%. On the other hand, the total variance explained by parental behaviors was 2.9%. Family SES represented a stronger relationship with student achievement than parental behaviors such as involvement or expectations. This finding signified the crucial role of family SES (family income, parental education and occupation) in promoting student academic achievement. We used the term “*crucial role*” here to attract attention to family SES as a key factor that affects achievement directly or indirectly. The literature includes many study findings on the direct role of family SES on achievement, but those findings are independent of

each other and give a little picture of the relations just focusing on one or two dimensions. Most SES achievement studies have found that family income, parental education or occupation have a significant impact on academic achievement (Harwell et al., 2017; Long & Pang, 2016; Moon, Kang, & An, 2009; Pang, Xu, Lin, & Ren, 2013). For instance, Sirin (2005), in his meta-analysis, found that SES represented one of the strongest correlations in the SES achievement context. The impressive report of Coleman et al. (1966) also found that among the factors affecting achievement, family SES explained most of the differences in achievement, and SES played a greater role than schools. These studies provide empirical support that family SES is the main factor influencing academic achievement. In an international context, PISA also helps us to better understand the crucial role of family SES by comparing large-scale data. According to the PISA reports, an increase of one unit in the PISA index of economic, social and cultural status would bring about an increase of 37-38 points in the average score in reading and science (OECD, 2019; 2016). Researchers have revealed the direct role of family SES on achievement in various contexts, such as academic subject domain, culture and community, and have found similar findings on SES-achievement relations. This relationship may be explained by the fact that parents of higher SES (higher income, higher levels of education, higher status of occupation) are more likely to provide their children with financial support and family resources and a more stimulating home environment to promote academic achievement (Thomson, 2018). Additionally, they tend to provide greater psychological support for their children that encourages the development of the skills necessary for achievement (Evans, Kelley, Sikora, & Treiman, 2010).

Our moderator analysis also indicated a lower degree of relation between parental behaviors and achievement. This result may be evidence for the indirect role of family SES on achievement, which helps us to see the bigger picture of FCFs and achievement relations. This finding is congruent with some study findings that showed parental behaviors may vary depending on the family SES (Lareau, 2003; Pomerantz et al., 2007). For instance, Davis-Kean (2005), using structural equation modelling techniques, found that socioeconomic factors were indirectly related to children's academic achievement through parents' behaviors. Long & Pang (2016) also found significant indirect effects of family SES components on achievement through parental expectations. Unlike those findings, some other studies reported that parental behaviors predicted more of the variance in academic achievement than school-related factors and SES (Kim et al., 2019; won Kim, 2019; Letourneau et al., 2013). In their meta-analytic review, Kim et al. (2019) indicated that the effect size for parental involvement was largely positive, while it was neutral for SES. In this second-order meta-analysis, we found that family SES represented a higher degree of relationship with student achievement than parental behaviors.

## 8. Conclusion

As the FCFs related to student achievement show diverse effects, we attempted to obtain a holistic and bigger picture of the relations between FCFs and academic achievement by employing second-order meta-analysis. We conducted a comprehensive search of meta-analyses on the relationship between FCFs and academic achievement and included 13 first-order meta-analyses that represented more than one thousand culturally diverse studies and covered 70 years of scholarship from 1950 to 2020. We have documented that the included primary meta-analyses consistently support a positive moderate relation between FCFs and academic achievement. Our moderator analyses showed a stronger relationship between family SES and achievement than parental behaviors such as involvement or expectations. The literature includes many study findings on the direct and indirect role of family SES on achievement, but those findings give a little and mixed picture of the relations. For that reason, we focused on the FCFs and achievement relations to obtain a bigger and holistic picture and found that family SES is the key factor in student achievement. Parental behaviors also play a critical role, but family SES truly matters. We found no significant differences among other moderators, such as the academic subject domain, culture, quality assessment, report types, and year range.

## 9. Limitations

As with all studies, our meta-analysis also has some limitations that readers should consider. First, our study includes family SES and parental behaviors as FCFs. Other cultural factors, such as the internet, e-book, materials or home resources, may be considered. Future studies can include materials, smartphones or social media usage to conduct more comprehensive research. Second, we focused on student academic achievement in our study. Future research can address the relations between FCFs and the psycho-social behaviors of students. The third limitation is that we only included studies written in English or Turkish, which may cause language bias in our study. Future research can examine studies reported in any other languages.

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