

Comparing Maternal and Paternal Parenting in Student Academic Performance: A Systematic Literature Review From 2013 To 2023

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Abstract: Students' academic success is significantly associated with parents. Given the varied effect of parenting on student academic performance, it is a strong need for independent research on the impact of maternal parenting and paternal parenting to learn more about the mechanisms of parenting influence. By systematically reviewing the literature from 2013 to 2023, this study aims to provide the landscape of maternal parenting and paternal parenting as well as to compare the effect of them on student academic performance. The results revealed that insufficient published studies in the field and uneven research in terms of geographic distribution, the volume of studies, and the stage of student learning. The analysis found that the effect of maternal and paternal parenting was both controversial. And regarding the manners, involvement level, time spending, and the effect size, the influence of maternal parenting and paternal parenting on student academic performance were distinguished significantly. These findings are not only helpful to reveal the mechanism of maternal and paternal parenting differences on student academic performance, but also provide practical guidance for schools and parents.

Keywords: parenting; parental involvement; maternal involvement; paternal involvement; student performance; systematic review

INTRODUCTION

Parents play a great role in children's schooling and development (Jeynes, 2018), and it is thought parental participation has the biggest non-teaching effect size on academic performance (Scheerens, 2016). Epstein (2018) confirmed that when parents are actively involved in their children's education, students' grades, motivation, and focus on learning improve significantly. However, limited studies distinguished the effect of fathers' and mothers' parenting on their children's education, though it has been confirmed that students' learning outcome varies as different parent involving in their education. It is supported that even both mother and father involvement are indicators of students' learning outcomes, there are differences in their effects on students (Otani, 2020). Li et al. (2023) also mentioned the

impact of father involvement and mother involvement on students is different and confirmed that fathers are more crucial to their children's education. Meanwhile, Cruz et al. (2019) recognized that fathers had greater influence on students' academic achievement whereas mothers showed positive affect on their social skills. And Nur (2022) supported maternal involvement and paternal involvement have different effects on students' self-regulating learned. In addition, the influence of fathers' involvement and mothers' involvement has been verified differently on students' academic engagement and their burnout (Zhu et al., 2021). Furthermore, to improve adolescents' achievement in mathematics, fathers and mothers varied their effective strategies (Chiu, 2021). Nevertheless, fathers' parenting behaviours impact more greatly on students' academic achievement, in contrast mothers parenting behaviours play bigger roles in students' social skills (Cruz et al., 2019). What's more, there is usually a difference between the roles played by fathers and mothers in the family, with mothers being highly involved in almost every area, whereas fathers are involved only in certain areas such as in protection, teaching responsibility, and discipline (Finley et al., 2008).

Although a separate assessment of paternal parenting and maternal parenting is recognized (Waterman & Lefkowitz, 2017), yet the research on the differences between mothers' and fathers' contributions to children's schooling has not received sufficient attention. Thus, studies specifically for each paternal parenting and maternal parenting should be paid more attention to exploring further on the mechanisms of parenting influence on student learning. To make clearer about the current research situation on the impact of paternal and maternal in student performance, the study aims to systematically review the literatures and synthesize the effects of fathers' and mothers' parenting in students' learning respectively to explore more mechanism referring to students' academic achievement and engagement, which will offer some insightful and precise direction for future studies in this area. Specifically, there are two research questions are addressed in this study:

- (1) What is the landscape of paternal involvement and maternal involvement literature (2003–2023) in terms of volume, and geographic distribution?
- (2) What are effects and differences of maternal and paternal parenting in student academic performance?

Definitions in Literature review

Defining Parenting Parenting behaviours and overall styles are the most frequently covered parts of parenting. In specific, warmth and control are two key dimensions when parenting style is discussed (Grolnick & Curland, 2001). Stright and Yeo (2014) explained that physical affection, praise, as well as other kinds of emotional support belongs to warmth.

Meanwhile, Lerner and Grolnick (2019) named the two parenting categories as control and autonomy supportive. In addition, parental involvement is another key dimension of parenting, which refers to parents' time, energy, and money investment and actively interacting with school (Grolnick & Slowiaczek, 1994). Furthermore, parental knowledge and skills are two crucial elements of parental involvement (Hoover-Dempsey & Sandler, 1995). Based on Gonzalez-DeHass et al. (2005) and Fan and Chen (2001) parental involvement is parenting behaviours in education to support students' learning or kinds of parenting behaviours practices that parents use to assist the students' adjustment in school. It is usually genderized as home-based involvement and school-based involvement (Sui-Chu, 1997). However, when refers to the practice item of parenting, the involvement scope is much broader. For example, Flouri and Buchanan (2004) focus parenting involvement on outing, managing the child, reading to child, and interest in child education. Whereas Hsu et al. (2011) concerned more on discussing, listening, monitoring, and school participation.

Furthermore, closeness, spending time together are also considered as specific involvement. Flouri and Buchanan (2004) even further supported that parent-child relationship is parent involvement. Cooper (2009) further revealed high quality of parent-child relationship made child feel warmth and support. Thus, given a wide range of parental involvement behaviours, the impact of a specific parental involvement behaviour on students which were found from literatures are all included in this study. Additionally, Jeynes (2007) stressed that parenting practices as well as styles should be taken into account together when studying parent school involvement. Therefore, parenting style and parental involvement are worth of reviewing together.

Defining Student performance Student academic achievement is usually the top consideration of their learning performance. It is one of the learning outcomes that has been studied the most, particularly for teenagers (Jeynes, 2007), which is also concerned greatly in many societies (Otani, 2019). It is not only significantly impact on students' well-being of emotion, development, and psychology but is greatly considered as an important predictor to future success (Hill & Tyson, 2009). Academic achievement is usually described as a measurement of a student's current level of mastery, comprehension, and proficiency in both broad and specialized knowledge domains. And it is a commonly used measures of academic performance with children's grades (Lerner & Grolnick, 2019), which shows how well students performed on assessments of performance, skills, and analytical thinking, among other standards of measurement (Chang & Le, 2005).

For instance, Cano et al. (2019) tested children's cognitive skills with Peabody Picture Vocabulary Test to measure the children to what extent they know the meaning of a spoken word and their receptive vocabulary. In addition, student engagement which is highly concerned in recent research involving parental involvement is a good indicator of future student performance (Gil et al., 2021; Noltemeyer et al., 2015). It can appear in many different forms and at different levels both within and outside of the classroom, such as cognitive level, affective level, and behavioural level (Groccia, 2018). And the primary means of defining student engagement usually refers to the affective, behavioural, and cognitive engagement (Fredricks et al., 2004). It is seen as a reliable indicator of student performance as well (Kuh, 2009). Thus, in this study, student academic achievement and student engagement are considered together as student performance factors, which specifically covers student examination grades, behavioral engagement, affective engagement, and cognitive engagement.

Method

To learn more effect mechanisms of paternal and maternal parenting on students' performance separately for strength future research, the study aims to provide the landscape in this field in recent 10 years, and to identify the effects and differences between maternal parenting and paternal parenting on students' academic performance. And in order to achieve this research objective, the researcher selected a systematic literature review approach to analyse the studies of maternal parenting and paternal parenting in student academic performance.

A systematic literature review can synthesize the state of knowledge in the field, address issues that cannot be explained by a single study and identify issues in process of study (Page et al., 2021). A high-quality systematic review of basic research can address recognized important questions and also ensure that new fundamental research will be conducted and interpreted with a full understanding of the extent of previous research (Pollock & Berge, 2018). Therefore, to compare the effects of father involvement and mother involvement on students' academic performance in a more comprehensive way, and to explore in depth the mechanisms of parental involvement on students' influence, the researcher conducted a systematic review of the literature on empirical studies that have been published in the last 10 years. Thus, the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) framework was followed to systematically review the studies related to maternal parenting and paternal parenting on student learning performance.

Searching strategies

For the next further reviewing, relevant studies in the past decade were systematically searched in the database of Web of Science, Scopus, and Google Scholar. The conceptual keywords such as “father* involvement” or “paternal involvement” or “mother* involvement” or “maternal involvement” and “student* achievement” or “learn* performance” were employed as key search terms to search the relevant articles. And to expand the results, some additional terms for paternal involvement, maternal involvement and student learning performance were included in the search strings (see in Table 1).

Table 1 Summary of searching strategies.

Inclusion Criteria	Exclusion Criteria	Boolean
Paternal parenting	"father* involvement" OR "father* engagement" OR "paternal involvement" OR "paternal engagement" OR "father* parenting" OR "mother* parenting" OR "mother* involvement" OR "mother* engagement" OR "maternal involvement" OR "maternal engagement"	AND
Maternal parenting		
Student learning performance	"student* performance" OR "learn* performance" OR "student* engagement" OR "academic achievement" OR "academic engagement" OR "academic outcomes" OR "learn engagement" OR "student* achievement"	

Inclusion and Exclusion Criteria

To ensure a high quality of the literature collection and to get more recent track and relevant articles around paternal and maternal involvement in the world, articles published between 2013-2023 in English were screened. And only journal articles were included in this study, other kind of articles such as book chapters, review were excluded. Additionally, nonempirical studies were excluded in this study. The criteria of inclusion and exclusion is listed in Table 2.

Table 2 Inclusion and exclusion criteria.

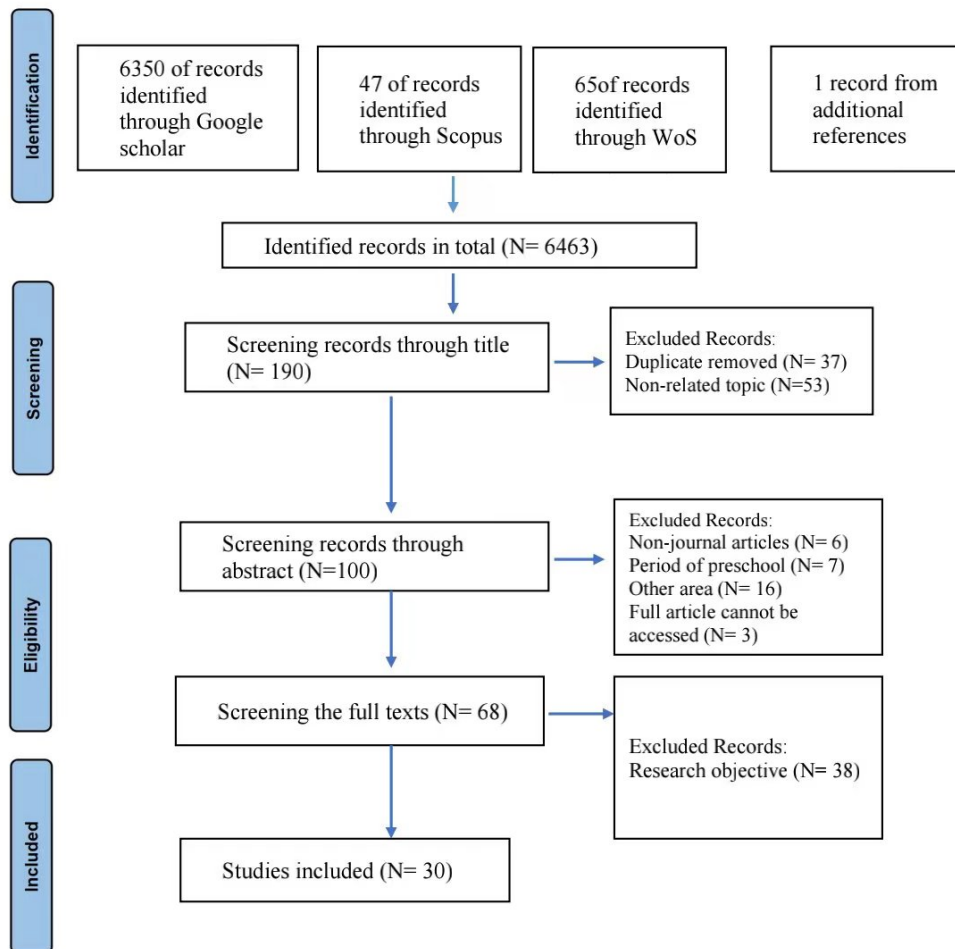
Inclusion Criteria	Exclusion Criteria
Journal articles	Book chapters, conference papers, thesis etc.

Empirical studies	Nonempirical studies
Written in English	Written in other languages
Published between 2013-2023	Published before 2013 or after 2023

Screening

In October 2023, the researcher conducted the search in the database using keywords, which showed 6,462 relevant records (47 records in Scopus, 65 records in WoS, 6350 in Google Scholar) . Then 1 article was obtained from additional reference. Thus, totally 6,463 records were found. After removing the duplicates and title screening, only 190 records were selected. Then the collection was further screened through abstract based on the exclusion criteria, finally, the records were reduced to 100 articles. Since this review focus on the differences of paternal involvement and maternal involvement on student learning performance, then after reviewing the full text of the selected articles, the records which research objectives were not aligned with the aim of this study were excluded in this review. At last, 30 research articles were included and reviewed. The detailed PRISMA flow diagram is shown in Figure 1.

Figure1 PRISMA identification flow.



Findings

Landscapes of the selected articles

After reviewing, the result showed 10 articles focused not only on maternal parenting but also paternal parenting, 11 articles only paid attention to paternal parenting, and 9 articles concerned more about maternal parenting. In terms of the education stage, 15 of the selected articles focused on secondary schools, following 9 articles located at primary school, and 2 articles covered both primary and secondary stage, meanwhile other studies respectively referred pre-school stage (N=2) and higher education period (N=2). Nevertheless, the studies are unevenly distributed around the world, with 12 articles contributed by America area (the United States and Canada), following 11 articles produced in Asia (Mainland China, Pakistan, Kenya, Indonesia, Singapore, Taiwan, and Japan), 3 articles in Europe (Finland, Portugal, and Romania), 3 studies in Africa (Kenya and Nigeria), then the rest study was conducted in Australia. Interestingly, studies conducted in America and Africa tended to research the maternal and paternal involvement influence on student academic performance separately, such as 7 articles focusing on fathers and 3 articles on mothers in the US.

Meanwhile, research in Asia and Europe tended to report the impact of the two parents together in one study such as studies in China, Indonesia, Portugal, and Romania. The details of the landscapes about the study of maternal parenting and paternal parenting are demonstrated in Table 3.

Table 3 Landscapes of selected articles in the study.

Country/Area	N of study	Focus	Period	Percentage
America	11	Mother (3) Father (7) Mother&F ather(1)	From primary to Secondary (1) Primary (2) Secondary y (5) Higher education (1) Pre- school (2)	36.7
Australia	1	Father (1)	Primary (1)	3.3
Canada	1	Mother&F ather(1)	Secondary y (1)	3.3
China (Mainland)	2	Mother&F ather(2)	Primary (1) Secondary y high (1)	6.7
Finland	1	Mother (1)	From primary to Secondary (1)	3.3
Indonesia	2	Mother&F ather(2)	Secondary y school (2)	6.7
Japan	1	Mother&F ather	Secondary y school (1)	3.3
Kenya	2	Father (2)	Primary school (2)	6.7
Nigeria	1	Mother (1)	Primary school (1)	3.3
Pakistan	1	Mother&F ather(1)	Universit y (1)	3.3

Portugal	1	Mother&F ather(1)	Secondar y school (1)	3.3
Romania	1	Mother&F ather(1)	Secondar y school (1)	3.3
Singapore	1	Mother (1)	Primary school (1)	3.3
Taiwan	3	Mother (1)	Primary school (1)	10.0
		Father (1)	Secondar	
		Mother&F ather(1)	y school (2)	

Effects and differences of maternal and paternal parenting in student academic performance

[1] *The effect of maternal parenting in student academic performance is controversial.*

In terms of parenting style, Waterman and Lefkowitz (2017) proved that students with authoritarian mothers viewed grades more important, meanwhile students with more permissive mothers tended to view grades as less important. However, it is overall shown that supportive and perceived warmth parenting tend to positively impact on student achievement, such as the study of Stright and Yeo (2014). Bindman et al. (2015) confirmed that mother's autonomy-supportive parenting in children's early lives significantly and positively predicted students' achievement later. Additionally, based on the study of Tunkkari et al. (2021) in Finland, it was supported the quantity of mothers' homework involvement no matter help or monitoring was not associated with student later achievement, and for the quality of mothers' homework involvement, it was psychology control rather than autonomy-support predicted students subsequent achievement, as well as it was mothers' monitoring rather than help had relationships with students' subsequent achievement, and both psychology control and monitoring negatively impacted students' later achievement.

When comes to involvement behaviours, it was found that the effect of maternal involvement on student academic performance was different. A study conducted in Singapore demonstrated the impact of maternal involvement in details based on three dimensions. It was found that maternal involvement in home-school conferences positively predicted student achievement, but mothers' home-base involvement had very limited contribution on student achievement whereas mothers' school-based involvement negatively impacted student achievement (Stright & Yeo, 2014). However, Chen et al. (2015) confirmed that student achievement was positively and greatly predicted by mothers' home-based involvement.

Similar result was found by another study in Latino, which confirmed that the increasement of student math achievement was related to maternal involvement in mathematics at home (Denner et al., 2016). In addition, Diwunma et al. (2016) confirmed that there is no difference in the impact of teaching and non-teaching mothers on student achievement. Meanwhile, a study conducted in the US by Lerner and Grolnick (2019) demonstrated that student perceived competence, independent self-regulation, and grades were all positively correlated with mothers' school, personal, and cognitive involvement, and mothers' school and personal involvement were found to predict grades particularly.

[2] *The effect of paternal parenting in student academic performance varies.*

Though the independent and unique role of fathers in student education was confirmed by previous empirical studies, the influence of paternal involvement on student academic performance is debatable as well. Fathers' participation significantly impacts student academic achievement and their learning behaviors (Daniel P Miller et al., 2020; Su et al., 2017). Based on Bironga and Nyaga (2015) students who perceived more father involvement showed better performance. The paternal monitoring activities, provision and further home-based involvement of fathers were greatly associated with student achievement. What's more, father involvement in school activities and the quality of father-child relationships effectively mediated the impact of community environment on student achievement (Gordon, 2016). However, Baker (2016) confirmed that paternal involvement significantly related to students' test scores but had no relationship with their learning behaviors such as attentiveness, learning skills, and task persistence. Furthermore, Kariuki and Kuria (2016) proved that paternal involvement in school activities had no relationships with student academic performance, instead fathers' high control and availability such as spending time with their children were both positively predicted students' academic achievement. Yet, the study of Gordon (2017) confirmed father's school involvement positively related to student academic achievement.

Additionally, an American scholar Whitney et al. (2018) distinguished the influence of different types of fathers or father figures including resident father (biological, step, and adoptive) and non-resident biological father (deceased, unknown, and not living with adolescents), the results seemed to unsurprisingly showed that students with resident biological fathers performed better, and overall, the students in the group with resident fathers or father figures demonstrated better academic performance than those with non-resident fathers. And Daniel P Miller et al. (2020) further confirmed that no matter resident fathers or non-resident fathers, their involvement which includes school, financial, and social

involvement was consistently beneficial for students' academic learning performance. Nevertheless, another study conducted in the US as well got different conclusions. It indicated that the students perceived closeness with father figures had no significant relationship with their learning outcomes, and the dimension of communication only had limited influence on their study (Curtis et al., 2017).

[3] Differences between maternal parenting and paternal parenting.

Level and the way of involvement. It is found that there were differences in the level of father involvement and mother involvement from both parent self-report and students' perspectives. Based on Zhu et al. (2021), mothers showed more involvement on adolescences than fathers even though father involvement was confirmed the stronger effect on students' learning engagement in the study. what's more, as to the level of father involvement, fathers at higher low-socioeconomic status showed more participation (Daniel P Miller et al., 2020). Besides the participant level, the ways of paternal and maternal involvement were different also. It was considered that fathers' support to children was usually indirectly, which even be conveyed by mothers (Popa, 2016). In terms of involvement behaviours, mothers home-based involvement such as homework involvement was focused more based on extant literatures, whereas the types of father involvement referred more widely such as material provision, school specific activities involvement, home-based involvement and so on (Bironga & Nyaga, 2015; Denner et al., 2016; Gordon, 2017; Kariuki & Kuria, 2016; Lerner & Grolnick, 2019; Daniel P Miller et al., 2020; Tunkkari et al., 2021).

Time matters. It is observed that the involvement of fathers or mothers not only has an impact on students' academic performance currently, but also has a significant influence on students' later achievement. For instance, the more autonomy-supportive and warmth mother's parenting as well as mother's cognitively encouraging could lead to student's better academic achievement in primary and high school (Bindman et al., 2015). Additionally, a two-wave study conducted by McBride et al. (2013) in the US indicated that early fathers' school involvement indirectly predicted students later academic achievement. Furthermore, Waterman and Lefkowitz (2017) supported that both fathers' or mothers' parenting characteristics could impact the academic engagement of emerging adults through past parenting behaviours and the present relationship quality between parents and children.

In addition, the amount of time of parent involvement was evidenced the influence on student learning as well. Cano et al. (2019) supported that more father-child time on educational activities such as educational play or reading greatly impacted student cognitive outcomes. Overall, father-child or mother-child time positively promoted children's cognitive

development. Yet, it showed that the effect of mother-child time is smaller though mothers tended to invest more time on their children (Cano et al., 2019).

Effects on student academic outcomes. It is evidenced that the effect of paternal parenting and maternal parenting on student performance was distinguished. For instance, students with more supportive mothers tended to get higher scores than those with less supportive mothers, yet the level of fathers' support was not associated to the difference of students' academic achievement (Popa, 2016). But Cruz et al. (2019) perceived that compared to mothers' support, students who perceived warmth and knowledge from fathers were prone to get higher academic scores. What's more, Waterman and Lefkowitz (2017) stated that both mothers' and fathers' authoritative parenting did not significantly predict students grade importance, class attendance, or GPA. Nevertheless, according to Zhu et al. (2021), depending on the student's gender, there are differences in the impact of parenting by mothers' and fathers' parenting. It is suggested that boy students tended to be impacted greatly by father's and mother's authoritative parenting. Additionally, mothers' knowledge and skills involvement only showed the prediction on their daughters, whereas fathers' knowledge and skills involvement had relationships with both girl students and boy students though the levels of influence were different.

Kusaeri et al. (2018) found that mother involvement in students' learning contributed higher mathematics grades to students compared to paternal involvement. But based on Ratelle et al. (2018), Zhu et al. (2021) and Zulfiqar et al. (2023), the effect of paternal involvement was stronger. However, for gifted students, there is no evidence showed that student achievement is associated to paternal involvement or maternal involvement (Nur, 2022). Research has even indicated that it is father's involvement rather than a mother's influences student's learning engagement (Li et al., 2023). Otani (2019) specifically explored the impact of parental involvement behaviors including parent-child discussion and parent aspiration on student academic achievement. It demonstrated that talking to moms about studies, schoolwork, and grades had a beneficial impact on students' academic performance; however, talking to mothers about friends had an unfavourable impact on students' grades. When it came to fathers' involvement, talking to fathers about school and grades also had a favourable effect on student achievement, nevertheless, conversing with fathers about extracurricular activities and hobbies as well as the future and life path after graduation had a negative impact on student grades. What's more, the differences may vary because of the student gender. Chiu (2021) found that for girl students, fathers' school involvement and discussing conflicts with mothers effectively reduced the decrease of students' math

achievement, but negative parenting effect was also found from paternal involvement such as convincing their children to accept their opinions, talking about disagreement on conflicts. But for boys, all parenting strategies from fathers or mothers were obviously associated to student academic grades positively, which includes monitoring from fathers or mothers, mothers' listening, and persuasion.

Discussion

The purpose of this research is to provide the overview of the studies on maternal parenting and paternal parenting. Specifically, the systematic review provided the landscape in terms of volume and demographic of maternal parenting and paternal parenting in student academic performance, then the effects and differences comparing the impact of father involvement and mother involvement on student learning.

Landscapes of previous studies

In terms of the volume, it is obvious that the research of maternal and paternal parenting is insufficient in the published studies. Insufficiency of properly published studies can lead to a lack of understanding on the mechanism of parental involvement, home-school cooperation by teachers, school managers, and even policy makers, which is one of their important duties on how to involve parents effectively in school. Based on the analysis of studies from 2013 to 2023, the articles specially for maternal parenting research is less and limited. Though in many studies of two-parent, the theories and the relationship with student learning were perceived to be based on mothers (Flouri & Buchanan, 2004), mothers' unique contributions on student academic performance should be concerned deeper and more. Due to many studies did not distinguish mothers' parenting and fathers' parenting, this may not be conducive to an in-depth exploration to study the mechanisms of the effect of parental involvement on student academic learning. For instance, literature showed mothers usually participated frequently and more on their children's study (Cano, 2019), but the effect of maternal parenting demonstrated less than that of fathers (Zulfiqar et al., 2023), but it hard to conclude that is the overall effect outcome of maternal involvement because of the lack of empirical studies on maternal parenting and it is also hard to deeply explore and explain the parenting influence mechanism on student academic performance.

As to the research regions, it showed that scholars in the United States published an overwhelming number of relevant articles, which accounted for 36.7% among 14 countries and areas. And the research trends show a markedly different based on the 30 selected literature. Obviously, in the US and Africa, the research emphasized more on separate study on mothers and fathers. However, in Asia, most studies reported the influence of parenting

influence from both mothers and fathers. According to Cheng et al. (2023) distinguished life environment such as culture, religious beliefs, and economic development situation may lead to different influence on research outcomes. Thus, more and further research related to maternal and paternal parenting effect on student academic performance is reasonable to explore in wider countries and areas.

When comes to the school stage, most of the articles focused on secondary schools. Perhaps it is an extremely vulnerable time during adolescence which students are in a time of increasing autonomy and cognitive growth (Hill et al., 2007), then parental involvement is especially important at this time in life (Chen & Gregory, 2009). Considering parental involvement is important and essential in each student learning stage, and the consistent impact of parental during children's growth and development, other educational period should be paid more attention as well for future research, which will provide more specific and deeper information of the mechanism of parenting impact on student performance from a holistic viewpoint.

Maternal parenting and student academic performance

The effect of maternal involvement on student learning performance showed inconsistent. It was noticed that the dimensions or sub-constructs of maternal involvement is distinguished in different research, which probably because parental involvement including maternal involvement is a multidimension concept (Lerner & Grolnick, 2019). The reviewing articles in this study use different measures including various types of maternal involvement strategies, which may result in different conclusions. As Sui-Chu (1997) said the utilization of diverse measurement instruments can cause challenges in precisely interpreting the impact of certain behaviours. Some studies only referred general home-based involvement, but Tunkkari et al. (2021) specified homework involvement exploration out of home-based involvement. Additionally, Lerner and Grolnick (2019) even construct involvement as school involvement, personal involvement, and cognitive involvement, which actually in some other studies categorized personal involvement like communicating school experience with children, and cognitive involvement like buying books for children in home-based involvement. Therefore, the disparate analysis result may arise from this uneven definition and measurement of "involvement". Another possible explanation about the different outcomes of maternal involvement is mostly because of student gender difference. It is proved maternal involvement behaviours led to different effectiveness for girls and boys. For girls, mothers' discussion when conflicts happen is more effective, yet, for boys, mothers' listening, and persuasion, even monitoring were all useful (Chiu, 2021). Thus, it reveals that

mothers should consider the gender's matter especially for adolescences when they adapt specific involvement strategies. And more scientific research is suggested to explore to provide deep reference for mothers and related educational personnel. Furthermore, the background of mothers such as mothers' education experience is a potential factor that cannot be ignored. Even though this is uniformly described as "maternal involvement", mothers may be involved in their children's learning in different ways, at different levels, and to different extents due to their educational background. For instance, mothers with different education level may have different expectations, and provide different help to their children (Kusaeri et al., 2018). Other possible reasons for different effect of maternal involvement may also related to mothers' job, personality, and the quality of mother-child relationship, and even like the time mother spending with children. Especially the roles of female including mothers in modern society are quietly changing as the development of the world, so the mechanism of the relationship between maternal involvement and student learning performance need to be explored more such as the influence of mothers' job, mothers' economic status.

Paternal parenting and student academic performance

Similar with maternal involvement, the effect of paternal involvement on student learning is controversial as well. Based on the identified literature in this study, one of the reasons may be because the different participants. A study conducted by Curtis et al. (2017) in the US showed that for black adolescences, the perceived closeness of father-child relationships did not significantly predict students' academic achievement and even the communication between them only contributed limited effectiveness. Nevertheless, another research referring 14099 adolescent participants in the US studied by Gordon (2016) confirmed that the relationship between father and adolescences was effective factor influencing students' learning. But the outcome may vary as the student gender. Waterman and Lefkowitz (2017) supported that both father-child and mother-child relationship quality were not associated with student grade importance, GPA, or their class attendance, but male students who had better relationships with their father considered more important on grades. Thus, to explain the effect of paternal parenting, more research referring to wide areas or different groups should be conducted. Additionally, the other observed reason for the diverse research outcomes is the types of fathers. Whitney et al. (2018) categorized six types of fathers (biological, step, adoptive, deceased, unknown, and not living with adolescents) into two groups named resident and non-resident fathers and conducted an experimental study to find the relationship between father involvement and student academic achievement. The result showed a significantly distinguished among different types of fathers, which

specifically demonstrated that students with biological fathers had higher performance, meanwhile, the students with non-resident fathers tended to experience the learning failure. Thus, it indicated that maybe the quality and quantity of paternal involvement should be concerned more and deeply for future study.

Comparison of maternal and paternal parenting

Findings indicate that there are distinguished effect differences of maternal and paternal parenting on student academic performance. For example, Kusaeri et al. (2018) supported that mothers' involvement led to higher scores, but Zulfiqar et al. (2023) believed that the fathers' involvement was greater. Different research background may lead to varied result. Studies on students from Romania showed that supportive from mothers positively impacted their academic scores, but supportive from their father had not any significant influence (Popa, 2016). While the contrast result was found in China recently, which supported that paternal involvement contributed to students engagement in primary schools rather than maternal involvement (J. Li et al., 2023) and the similar result was also found during Chinese high school students (Zhu et al., 2021). Additionally, different characteristics of students and parents may be other potential reasons for the differences. Student gender, educational level of mothers, and knowledge of fathers were indicated to the different parenting effect as well (Chiu, 2021; Cruz et al., 2019; Kusaeri et al., 2018; Zhu et al., 2021). But the study conducted in Indonesia showed that gifted student performance were not significantly associated maternal involvement or paternal involvement (Nur, 2022). Nevertheless, due to the limited literature in this area, it needs more empirical proofs, and more factors moderating the effect of maternal and paternal parenting on student learning performance need further explore in such a high-speed development time including parents' job, time-spending with parents.

The different research dimension of maternal and paternal parenting is another potential reason resulting varied outcome. For maternal involvement, it referred more regular involvement on home-based and school-based activities, especially education related involvement such as monitoring, teaching, homework involvement tended to be focused more on the identified articles (Diwunma et al., 2016; Lerner & Grolnick, 2019; Tunkkari et al., 2021). For fathers' involvement, the factors related financial involvement, provision, playing, and time spending with children were considered as well besides the common school educational activities participation (Bironga & Nyaga, 2015; Cano et al., 2019; Kariuki & Kuria, 2016). This obvious dimensional distinction may be due to traditional and stereotypical assumptions about the roles of mothers and fathers in the family. As J. Li et al.

(2023) mentioned that father is often regarded as an important source of material resources, while mother often plays the role of caregiver. Nevertheless, what specific mothering and fathering practices affect students' academic performance and to what extent influence is not well-documented in empirical studies though the discussion between mothers, fathers, and children as well as their expectation on children were well explored by Otani (2019) in Japan. Thus, researchers are strongly suggested broadening the dimensions of research on mothers' and fathers' parenting strategies and behaviours.

What's more, the level of parental involvement, specific involvement strategies, and parenting styles possibly result in different effects. A. Li et al. (2023) proved that increased parental expectations, intensive participation in extracurricular activities, and increased parental school involvement are associated with diminishing returns to children's achievement. They may explain why mothers were prone to involve more on students' education (Cano, 2019) but the effect of maternal involvement was not always better than that of paternal parenting. Another potential explanation may be because the uneven research on mothering and fathering on student learning, which showed that the research on maternal parenting separately is much less than that on paternal parenting.

In a word, the differences of the effect of maternal and paternal parenting indicate that the unique roles of mothers and fathers in student academic performance are worthy of being studied separately and deeply. Additionally, what leads to the differences between maternal parenting and paternal parenting on student performance, and what level of the differences calls for more empirical studies due to the limited and uneven distributed research, which may result in bias in the analysis of the influence of maternal and paternal parenting.

Limitation and Recommendation

Although the author of this study tries best to demonstrate and illustrate a systematic picture of the relationship between paternal parenting, maternal parenting, and student academic performance, yet there are still inevitably limitations. First, more high-quality empirical studies are urgent needed, the limited studies may result the bias of analysis. For example, the characteristics of parents and students, the time, participating level, and strategies were known as the potential impact factors of the differences of maternal and paternal parenting, but the more specific characteristics, the amount of time, the extent of participating level, and specific strategies were not fully explored to deeply understand the mechanism of differences between mothers' and fathers' involvement. Secondly, to draw the outline of most recent studies about the effect of paternal and maternal parenting on student learning outcomes, the time of all the reviewing literatures is limited from 2013 to 2023,

therefore, the studies without in this period are excluded in this systematic review. Then, although the researcher tries to explore some more mechanism about paternal and maternal parenting, and mentioned some related factors based on the literatures, this study focuses more on the direct impact that father involvement and mother involvement have on students' academic learning, there are some related specific questions need to be answered, such as the factors influence fathers' or mothers' parenting characters or strategies which further impact student learning; more potential reasons or mechanism determining the differences of paternal and maternal involvement and so on. Finally, the researcher tried to separately analyse the effect of maternal parenting and paternal parenting on student academic achievement and student engagement, but the empirical research on student engagement is quite limited which only showed 3 articles referring student engagement or part of the dimensions of engagement, thus, at last, the impact of each maternal parenting and paternal parenting on student engage did not list for analysing separately.

This systematic literature review aims to set a ball rolling for future research in both paternal parenting and maternal parenting. Based on the literature, parenting is related closely to student academic performance in common, and furthermore paternal parenting or maternal parenting has its unique influence mechanism. But so far, the number of the empirical research on maternal parenting and paternal parenting separately is very limited. Further research related to the area in terms of diverse background are recommended. Additionally, characteristics of students and parents, different participating level, specific parenting strategies, time matters predicted the effectiveness of mothering and fathering. Hence, empirical studies are suggested focusing more specific dimensions in future, which is beneficial to provide theoretical and practical guidance to school managers, teachers, parents and even policy makers in home-school cooperation.

Conclusion

This study provides an overview of research related to the impact of maternal parenting and paternal parenting on student academic performance and distinguishes the impact of maternal parenting and paternal parenting on student performance respectively. Clarifying the current state of research and clearly understanding the differences between maternal and paternal parenting not only provide insights into the mechanisms by which parental involvement affects students' academic performance but will also provide a broader direction for future research. The study can contribute to maternal parenting and paternal parenting on student academic performance.

Firstly, the research concerning maternal parenting and paternal parenting is uneven in terms of geographic distribution, the number of studies, and the stage of student learning. These characteristics of unbalanced distribution provide gaps in the direction of future research in this area.

Secondly, evidence concerning different effect of maternal parenting and paternal parenting on student academic performance are inconsistent, and the impact comparison of maternal parenting and paternal parenting is analysed. It showed varied result of maternal and paternal parenting are associated with the study background such as culture and student grade, characteristics of students and parents such as student gender and fathers' knowledge, level of parental participation, strategies of parental involvement, the amount of parental involvement time, and dimensions of measurement. The findings provide important reference for school managers, teachers to properly guide parental involvement in student academic learning and give a valuable guidance for student parents. What's more, combining the limitation of the study, specific suggestions are recommended for future research.

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