

# Article

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# Can Preschool Out-of-Kindergarten Tutoring Improve Approaches to Learning for Children? Evidence from China Family Panel Studies (CFPS) 2012 to 2020

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**Abstract**: Based on data from the China Family Panel Studies in 2012, 2014, 2016, 2018, and 2020, this study used propensity-score matching to investigate whether preschool out-of-kindergarten tutoring impacts children's approaches to learning. We discovered the following: (1) approximately one sixth of the preschool children in the sample participated in out-of-kindergarten tutoring, and the participation rate increased year on year; (2) preschool children with a higher family socioeconomic status and a higher level of urbanization in their local area participated more in out-of-kindergarten tutoring; and (3) the effect of preschool out-of-kindergarten tutoring on improving children's approaches to learning was very limited. In particular, participation in subject-based tutoring to prepare for elementary school failed to improve children's approaches to learning. Based on the above findings, we recommend that parents make rational choices concerning preschool out-of-kindergarten tutoring, based on a comprehensive understanding of their children. In addition, the government should increase the systematic supervision and strict regulation of institutions that provide preschool out-of-kindergarten tutoring, while actively constructing a collaborative parenting system involving home, school, and community to promote children's healthy comprehensive development.

Keywords: out-of-kindergarten tutoring; preschool children; approaches to learning

# 1. Introduction

As the marketization of education continues, out-of-kindergarten tutoring for preschool children is rapidly becoming increasingly popular worldwide [1,2], and preschool children's participation in out-of-kindergarten tutoring has become a common phenomenon in many countries. According to a large-scale national survey, 89.92% of preschool children in China attended out-of-kindergarten classes [3]. In the United States, 73% of parents reported having enrolled their children in out-of-kindergarten tutoring [4]. According to another survey, about 50% of preschool children in South Korea have been involved in out-of-kindergarten tutoring [5]. An Australian study showed that nearly 80% of preschool children in the survey sample were involved in out-of-kindergarten tutoring [6]. Studies in Singapore, Canada, and Hong Kong have reported similar results [7–9]. To provide children with an early advantage over their peers, participation in out-of-kindergarten tutoring has become a common choice among parents of preschool children around the world.

Unlike expectations for school-age children, improving cognitive skills is not the sole reason that parents choose out-of-kindergarten tutoring for preschoolers. Parents are more interested in developing good approaches to learning, such as an interest in learning, persistence, and a sense of accomplishment [10]. Approaches to learning describe the

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**Copyright:** © 2023 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (https://creativecommons.org/license s/by/4.0/). behaviors, tendencies, styles, attitudes, habits, and abilities that children exhibit during the learning process [11]. These may help preschoolers adapt to learning situations faster and better prepare them to enter elementary school [12–14]. They are also important predictors of children's academic achievement; Children with better approaches to learning are more likely to achieve better academic results when they enter elementary school [15– 17]. Approaches to learning not only play a vital role in children's learning and development, but also represent basic skills that children need in order to adapt to their future environment and can thus affect their future lives [18]. Nevertheless, previous studies have focused almost exclusively on the effects of out-of-kindergarten tutoring on preschool children's academic achievement [19,20] and have largely neglected approaches to learning as an important developmental indicator. Out-of-kindergarten tutoring, as a form of social education outside school, may impact preschool children's approaches to learning. However, there has been a lack of research testing whether out-of-kindergarten tutoring can promote the development of preschool children's approaches to learning, especially empirical research based on extensive data. Accordingly, this study investigates whether out-of-kindergarten tutoring affects preschool children's approaches to learning. The findings can provide practical guidelines for the introduction of national policies related to out-of-kindergarten tutoring, empirical references to support governance of the preschool out-of-kindergarten tutoring market, and scientific guidance to allow parents to choose out-of-kindergarten tutoring rationally.

# 2. Literature Review

### 2.1. The Meaning and Composition of Approaches to Learning

Approaches to learning have recently been oriented toward "the achieving approach [21,22]", which can be further divided into the "deep approach," "surface approach," and "strategic approach [23]". The original concept of approaches to learning was focused more on "methods and strategies" rather than "quality" of learning. The concept of early childhood approaches to learning was first introduced by L. G. Katz, an American scholar of early childhood education, regarding the learning dispositions of young children. "Dispositions" are distinct from knowledge and skills, and comprise enduring mental habits or typical ways of responding to things or experiences in different contexts [24]. Researchers have since elaborated the term to include three specific subcategories: intentions, dispositions, and learning styles [25]. The National Education Goals Panel defines approaches to learning as the behaviors, styles, and abilities that children exhibit during the learning process, including learning styles, dispositions, attitudes, and habits in a broad sense, and in a narrower sense curiosity and exploration, creativity and initiative, concentration and persistence, and retrospection and reflection [11]. Chinese scholars have defined approaches to learning as the positive attitudes and favourable behavioral dispositions that children exhibit in the learning process [26]. The terminology does not refer to specific knowledge, abilities, skills, or emotions, but rather to how children acquire and use knowledge and skills and the role of these in motivational regulation during the learning process [27]. Specifically, the concept includes curiosity, interest in learning, initiative, persistence, concentration, imagination, creativity, problem-solving, reflection, and interpretation [28,29].

# 2.2. The Relationship between Extracurricular Tutoring and Students' Approaches to Learning in Elementary and Secondary Schools

Numerous studies have shown that participation in extracurricular tutoring has a positive impact on elementary and secondary school students' approaches to learning, including improvements in self-confidence, interest, responsibility, self-esteem, persistence, initiative, and autonomy. Scholars have found that it positively influences students' attitudes toward learning, and boosts their self-confidence and interest to some extent

[30,31]. Effective extracurricular tutoring improves students' confidence in academic competition [32,33]; students show higher self-confidence up to a certain threshold, after which its positive effect diminishes [34]. Extracurricular tutoring allows students to gain broader and deeper knowledge and increases their interest in the school curriculum [32]. Additionally, it increases students' and parents' self-confidence, self-esteem, and other qualities [34,35]. Research has also shown that extracurricular tutoring helps students discover new areas of interest while developing existing ones [36,37]. It positively influences learners' emotional responses and subsequently leads to increased persistence of learned behaviors and achievement [38-40]. Extracurricular tutoring may also improve students' study habits and increase their initiative in the classroom [41]. In terms of specific subjects, more intense extracurricular math tutoring helps to form positive study habits [42]. Participation in extracurricular tutoring can reduce the need for parental tutoring and increase student autonomy [41]. In addition, some studies have demonstrated that non-subject-based extracurricular tutoring, especially in the arts, has significant positive effects on all dimensions of non-cognitive abilities such as self-esteem, self-control, interpersonal skills, school adaptability, leadership skills, and cooperation [43,44].

In contrast, other studies have found that participation in extracurricular tutoring had a negative impact on students' approaches to learning. For example, extracurricular tutoring can reduce students' curiosity and interest in learning [45]. Participation in extracurricular tutoring can cause students to lose their natural curiosity, creativity, communication skills, interest, passion, joy, and hope, and can reduce their intrinsic motivation to learn [46–49]. Excessive extracurricular tutoring increases students' academic burden and weakens their enthusiasm for independent learning [50,51]. "Over-step learning" (studying content designed for older ages or grades) and intense tutoring can lead to a lack of concentration [49,52–54]. Because extracurricular tutoring focuses excessively on test-taking skills, it can have a negative impact on students' creativity and critical thinking [48,51,55].

Our comparison of the results of these studies indicates that extracurricular tutoring has both positive and negative effects on approaches to learning. Other findings have shown that extracurricular tutoring itself neither promotes nor undermines students' independent learning [56]. There is no evidence that extracurricular tutoring contributes to or undermines the development of motivation or learning methods [57].

# 2.3. The Relationship between Preschool Out-of-Kindergarten Tutoring and Children's Approaches to Learning

"Preschool out-of-kindergarten tutoring" refers to paid educational services, such as "interest-oriented classes" and "specialty tutoring classes," attended by children aged 3-6 outside kindergarten [58]. In recent years, studies have examined the relationship between out-of-kindergarten tutoring and approaches to learning, but the findings have been inconsistent. Covay and Carbonaro found that shadow education was significantly and positively related to children's approaches to learning, and that approaches to learning also explained strengths in the language and math skills of children who participated in physical education and music-based shadow education, respectively [59]. Bodovski and Farkas' analysis of data from approximately 8000 white children in an ECLS-K program found that children's approaches to learning were positively affected by the amount of out-of-kindergarten tutoring that the children attended [60]. Chinese scholars administered a survey to preschool children in Shanxi Province to investigate the mediating effect of children's approaches to learning in out-of-kindergarten tutoring on their learning and developmental outcomes. The results showed that varying roles for each element of the approaches to learning in out-of-kindergarten tutoring; out-of-kindergarten tutoring could positively affect children's persistence and self-control but did not positively affect their curiosity or interest in learning [58]. Some scholars have stated that allowing children to participate in preschool out-of-kindergarten tutoring enables improved discovery and cultivation of children's potential and talent, provided that parents respect their children's

interests and developmental patterns [61,62]. Kremer-Sadlik et al. concluded from interviews that parents expressed their belief that out-of-kindergarten tutoring could promote a wide range of skills including concentration [63]. Chiu and Lau studied 5–6-year-old preschoolers in Hong Kong and found that increased participation in out-of-kindergarten tutoring was associated with better teacher-reported readiness for school and lower levels of anxiety and withdrawal [9].

Inconsistent with those findings, mainland Chinese scholars conducted a survey of 984 preschool children and found that, except for significant differences in the social–emotional aspect, when children attended early childhood classes before entering kindergarten there were no significant differences in any domains, including approaches to learning [64]. Other studies used propensity-score matching (PSM) to explore the impact of preschool out-of-kindergarten tutoring on children's learning and development, based on follow-up survey data from 664 and 367 children aged 3–6 years in 2017 and 2018, respectively. The results showed that participation in preschool out-of-kindergarten tutoring had no significant effect on the approaches to learning or the development of young children in various areas [65]. Chiu and Lau concluded that participation in out-of-kindergarten tutoring was not significantly related to children's social competence, anger, aggression, or peer acceptance [9]. Moreover, the relationship between out-of-kindergarten tutoring and social–emotional outcomes is tenuous. If the quality of tutoring is not high or if students do not form meaningful connections with the activities, the outcomes are less than desirable [66].

The existing findings on the impact of out-of-kindergarten tutoring on children's approaches to learning are inconsistent, and thus require further exploration and in-depth analysis. In contrast with the considerable research conducted at the stage of compulsory education, there have been few studies on the relationship between preschool out-of-kindergarten tutoring and children's approaches to learning. This includes a lack of published research based on nationally representative survey data exploring the correlation between preschool children's out-of-kindergarten tutoring and children's approaches to learning. Studies that have examined the relationship between out-of-kindergarten tutoring and approaches to learning in preschool children have mainly used statistical descriptions and general regression methods, which are prone to problems of endogeneity and thus impair the reliability of findings. Based on nationally representative survey data, this study uses propensity-score matching to examine the effects of preschool out-of-kindergarten tutoring on children's approaches to learning. This paper has the dual aims of helping parents dialectically view through empirical research the relationship between preschool out-of-kindergarten tutoring and children's approaches to learning, to provide a reference basis for them to make rational choices, and to encourage the state to regulate preschool out-of-kindergarten tutoring.

#### 3. Methods

#### 3.1. Data Sources

The data for this study were obtained from the China Family Panel Studies (CFPS) of Peking University for the years 2012, 2014, 2016, 2018, and 2020. The CFPS sample covered 25 provinces in China, with a target sample size of 16,000 households, and surveyed all members of each household. Focusing on the economic and non-economic well-being of China's residents, including many other research topics such as economic activity, educational outcomes, family relationships and dynamics, population migration, and health, CFPS is a national, large-scale, multidisciplinary social panel study. CFPS provides rare and comprehensive large-scale follow-up survey data from across China, thus constituting suitable baseline data for the current study. The subjects of this study were 8192 preschool children aged 4–6 years, and the sample sizes for each year are shown in Table 1.

Year	Sample Size
2012	1610
2014	1773
2016	1560
2018	1779
2020	1470
Total	8192

Table 1. Sample sizes for 2012–2020.

## 3.2. Study Variables

### 3.2.1. Explained Variables

The explained variables in this study were children's approaches to learning, specifically curiosity, interest in learning, initiative, regularity, persistence, concentration, imagination, and creativity. The scale for measuring children's approaches to learning comprised several questions assessing different aspects of approaches to learning. For example, "regularity" was measured by questions on "children's compliance with rules," and "persistence and concentration" by questions on "children's attention to tasks." The options were scored on a 5-point Likert scale (1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, and 5 = strongly agree), and the variables were identified using factor analysis. Reliability analysis of the variables was also conducted. The Kaiser– Mayer–Olkin value was 0.867 and the value of Cronbach's alpha was 0.790, indicating good reliability and validity.

# 3.2.2. Core Explanatory Variable

The core explanatory variable of this study was whether preschool children participated in out-of-kindergarten tutoring, measured as a dummy variable taking a value of 1 if they participated in out-of-kindergarten tutoring and 0 otherwise. Out-of-kindergarten tutoring was then divided into subject-based and non-subject-based out-of-kindergarten tutoring. The former refers to tutoring courses with language, mathematics, or other subject knowledge as the main curriculum content, including phonics classes, Mathematical Olympiad classes, and English classes. If preschool children participated in subject-based out-of-kindergarten tutoring, they were assigned a value of 1, or 0 if otherwise. Non-subject-based tutoring refers to courses with non-knowledge-based skills, including arts and sports, as the main content of the curriculum, including dance classes, painting classes, and basketball classes. If preschool children participated in non-subject-based out-of-kindergarten tutoring, this variable was given the value 1, or 0 if otherwise.

### 3.2.3. Other Control Variables

Other factors associated with participation in out-of-kindergarten tutoring and children's approaches to learning were also selected in this study as control variables, including gender, family location, per capita family income, highest level of parental occupation, highest number of years of parental education, type of kindergarten, and kindergarten location. The descriptions of specific variables are presented in Table 2. When examining the variable of parental occupation, this study drew on the occupational stratification study by Li, a Chinese scholar, to classify children's parental occupations into lower, middle, or upper strata according to the socioeconomic status index, and selected the highest occupational stratum of either parent as the value to be recorded [67]. The lower occupational classes include commercial and service workers, unskilled workers, agricultural, forestry and fishery workers, freelancers, the unemployed, and homemakers. The midlevel careers include basic management, other professional and technical personnel, general technicians, employees of enterprises or institutions, skilled workers, military police, firefighters, and self-employed or small business owners (employing eight people or less). The upper occupational level includes heads of government bodies, enterprises, or institutions, middle management, middle and senior professional and technical personnel, general officials and civil servants, economic business personnel, and employers in private enterprises. The propensity-score matching did not include 2020 data, because when the analysis was conducted the 2020 CFPS surveyors had not yet released the variables of per capita household income, highest level of parental occupation, and time spent in parental education.

Туре	Variable	Description and Coding		
Participation in	Participation in out-of- kindergarten tutoring	0 = No, 1 = Yes		
out-of- kindergarten	Participation in subject-based out- of-kindergarten tutoring	0 = No, 1 = Yes		
tutoring	Participation in non-subject-based out-of-kindergarten tutoring	0 = No, 1 = Yes		
Approaches to learning	Approaches to learning score for children	Obtained through the children's approaches to learning scale; continuous variable.		
	Gender	0 = Girl, 1 = Boy		
	Type of the kindergarten	0 = Private kindergarten, 1 = Public kindergarten		
	Kindergarten location	1 = Rural area (including townships), 2 = County seat, 3 = General city (including county-level cities or prefecture- level cities), 4 = Provincial capital(including municipalities)		
	Family location	0 = Countryside, 1 = City		
Control variable	Per capita family income	1 = Lowest 20%, 2 = Mid/Lower 20%, 3 = Middle 20%, 4 Mid/Higher 20%, 5 = Highest 20%		
	Highest level of parental occupation	1 = Lower, 2 = Middle, 3 = Upper		
	Highest number of years of parental education	Continuous variable		

Table 2. Study variables.

# 3.3. Research Methodology

The traditional ordinary least squares (OLS) method, based on the assumption of random assignment, increases the probability of sample-selection bias and counterfactual estimation bias. Therefore, as an effective method to address sample-selection bias in the process of determining the effect of out-of-kindergarten tutoring on children's approaches to learning, this study used PSM to evaluate counterfactual treatment outcomes. Specifically, matching enables a balanced distribution of covariates between the groups that are involved or not involved in out-of-kindergarten tutoring, thus eliminating as much as possible the effect of differences in confounding variables within the sample. At the operational level, PSM identifies individuals in the treatment group that can be matched with individuals in the control group possessing similar characteristics based on the propensity scores estimated by the Logit or Probit model, and compares the differences in approaches to learning between those preschool children who participated in out-of-kindergarten tutoring and those children who did not (i.e., the average treatment effect in the treatment group). The model is expressed as follows:

$$ATT = E\{E[Y_{i1} | D_i = 1, p(X)] - E[Y_{i0} | D_i = 1, p(X)]\}$$
(1)

In the above model,  $Y_{i1}$  and  $Y_{i0}$  are the approaches to learning of children who participated and children who did not participate in out-of-kindergarten tutoring, respectively.  $D_i$  is a dichotomous variable labeled  $D_i = 1$  if the children participated in out-ofkindergarten tutoring and  $D_i = 0$  if they did not. p(X) is the probability of participating in out-of-kindergarten tutoring after controlling for individual children and families. To ensure the robustness of the estimation results, this study used nearest-neighbor, radius, and kernel matching to estimate the effect of out-of-kindergarten tutoring on children' approaches to learning.

### 4. Results

### 4.1. Participation of Preschool Children in Out-of-Kindergarten Tutoring

Figure 1 represents the participation of preschool children in out-of-kindergarten tutoring. The percentage of preschool children participating in out-of-kindergarten tutoring was 8.2% in 2012, 7.8% in 2014, 9.6% in 2016, 11.7% in 2018, and 16.9% in 2020. The proportion of preschool children participating in subject-based out-of-kindergarten tutoring increased from 2.7% in 2012 to 11.2% in 2020, indicating a growth of 8.5 percentage points. The proportion of preschool children participating in non-subject-based out-of-kindergarten tutoring increased from 4.5% in 2012 to 18.5% in 2020, reflecting a growth of 14.0 percentage points. Overall, the proportion of preschool children participating in out-of-kindergarten tutoring is on the rise.



Figure 1. Participation of preschoolers in out-of-kindergarten tutoring in 2012–2020.

# 4.2. Analysis of the Factors Influencing Preschool Children's Participation in Out-of-Kindergarten Tutoring

Table 3 presents the results of factors influencing preschool children's participation in out-of-kindergarten tutoring. As shown in Table 3, factors such as kindergarten location, per capita household income, and years of parental education significantly affected preschool children's participation in out-of-kindergarten tutoring. Specifically, boys were significantly less likely to participate in out-of-kindergarten tutoring than girls; the higher the per capita household income, the higher was the probability of preschool children participating in out-of-kindergarten tutoring; the higher the maximum years of parental education, the higher was the probability of preschool children participating in out-ofkindergarten tutoring; and the higher the level of urbanization at the location of the kindergarten, the higher the probability of preschool children participating in out-of-kindergarten tutoring.

Table 3. Factors influencing children's participation in out-of-kindergarten tutoring.

We we have	Participation in Out-of-		
variable	Kindergarten Tutoring		
Gender	-0.551 ** (0.235)		
Family location	0.451 (0.274)		
Per capita family income	0.589 *** (0.112)		
Highest level of parental occupation	0.064 (0.192)		
Highest number of years of parental education	0.279 ** (0.111)		
Type of kindergarten	0.081 (0.252)		
Kindergarten location	0.599 *** (0.127)		
Intercept	-4.666 *** (0.523)		
Note: ** <i>p</i> < 0.01; *** <i>p</i> < 0.001.			

### 4.3. Balance test

Using PSM to estimate the effect of out-of-kindergarten tutoring on preschool children's approaches to learning, it was first necessary to conduct a balance test on the variables in the control and balance groups. Table 4 presents the results of the balance test under the nearest-neighbor-matching method. The results of the balance test show that the standard errors of all covariates were reduced to different degrees after matching, with the highest bias reduction for gender reaching 100%, whereas the *t*-test results for each covariate in the treatment and control groups were not significant after matching. This indicates that the matching effect was relatively successful, and the matching of data eliminated differences in various aspects between preschool children who did or did not participate in out-of-kindergarten tutoring.

	Matching	Treated Group	Untreated Group	Reduction of Standard Errors (%)	Absolute Value of Reduction	t Value
Candan	Before	0.534	0.546	-2.4	100.0	-0.29
Gender	After	0.534	0.534	0.0	100.0	0.00
Earrita la sation	Before	0.730	0.331	86.9	05.4	10.32 ***
Family location	After	0.730	0.712	4.0	95.4	0.37
	Before	3.810	2.665	93.8	05.0	11.10 ***
Per capita family income	After	3.810	3.865	-4.5	95.2	-0.43
Highest level of parental	Before	1.982	1.622	55.9	00.2	7.02 ***
occupation	After	1.982	1.976	1.0	98.3	0.08
Highest number of years of	Before	4.295	3.190	91.9	08.0	12.12 ***
parental education	After	4.295	4.282	1.9	98.9	0.09
The second states and second second	Before	0.494	0.402	18.5	<b>F</b> ( 1	1.71
Type of kindergarten	After	0.494	0.535	-8.1	56.1	-0.57
Vindergerten legation	Before	2.436	1.572	90.5	08.2	9.09 ***
Kindergarien location	After	2.405	2.391	1.6	90.3	0.10

Table 4. Balance-test results of nearest-neighbor matching.

Note: \*\*\* *p* < 0.001.

Figure 2 presents the common range of values for the propensity score of whether preschool children participated in out-of-kindergarten tutoring, from which it can be seen that most of the observations fell within a common range, basically satisfying the requirements for the common support assumption.



Figure 2. Range of common propensity-score values.

### 4.4. PSM model estimation results

Based on the balance test, this study used nearest-neighbor matching (1:2), radius matching (0.05), and kernel matching to estimate the effects of out-of-kindergarten tutoring on preschool children's approaches to learning. As can be seen from Table 5, except for 2018, when preschool children's participation in non-subject-based out-of-kindergarten tutoring significantly improved their approaches to learning, the results of analysis for other years and for the full sample showed that preschool children's participation in either subject-based or non-subject-based out-of-kindergarten tutoring was ineffective in improving their approaches to learning. Thus, it is evident that preschool children's participation in out-of-kindergarten tutoring has a limited effect overall on improving children's approaches to learning.

Year		Neighbor Matching	Radius Matching	Kernel Matching
	Out-of-kindergarten tutoring	-0.106	-0.173 **	-0.166 *
2012	Subject-based out-of-kindergarten tutoring	-0.098	-0.186	-0.191
	Non-subject-based out-of-kindergarten tutoring	-0.101	-0.158	-0.141
	Out-of-kindergarten tutoring	-0.067	-0.069	-0.075
2014	Subject-based out-of-kindergarten tutoring	0.036	-0.085	-0.083
	Non-subject-based out-of-kindergarten tutoring	0.027	-0.052	-0.049
	Out-of-kindergarten tutoring	-0.113	-0.089	-0.086
2016	Subject-based out-of-kindergarten tutoring	-0.005	-0.118	-0.119
	Non-subject-based out-of-kindergarten tutoring	-0.151	-0.031	-0.033
2018	Out-of-kindergarten tutoring	0.079	0.056	0.061

Table 5. Effect of participation in out-of-kindergarten tutoring on children's approaches to learning.

	Subject-based out-of-kindergarten tutoring	0.269 *	0.150	0.152
	Non-subject-based out-of-kindergarten tutoring	0.171 *	0.154 *	0.156 *
4 11	Out-of-kindergarten tutoring	-0.036	-0.064	-0.069
All	Subject-based out-of-kindergarten tutoring	0.027	-0.048	-0.042
samples	Non-subject-based out-of-kindergarten tutoring	0.049	0.032	0.035

Note: \* *p* < 0.05; \*\* *p* < 0.01.

# 4.5. Robustness Test

To further verify the relationship between out-of-kindergarten tutoring and preschool children's approaches to learning, we selected the cost of preschool children's participation in out-of-kindergarten tutoring for robustness testing. If the cost of out-of-kindergarten tutoring for a given preschool child was greater than 0, it indicated that the preschool child participated in out-of-kindergarten tutoring, and if the cost of out-of-kindergarten tutoring was 0, it indicated that the preschool child did not participate in outof-kindergarten tutoring. Similarly, we estimated the effect of out-of-kindergarten tutoring on preschool children's approaches to learning, using nearest-neighbor, radius, and kernel matching applied to the full sample data. As shown in Table 6, the effects of outof-kindergarten tutoring on preschool children's approaches to learning were not found to be significant, indicating that the study results are robust.

**Table 6.** Robustness test for the effect of participation in out-of-kindergarten tutoring on children's approaches to learning.

All Samples	Neighbor	Radius	Kernel
	Matching	Matching	Matching
Out-of-kindergarten tutoring	0.028	0.044	0.042

# 5. Disscussion

5.1. Preschoolers Are Increasingly Involved in Out-of-Kindergarten Tutoring and Non-Subject-Based Tutoring

This study found that nearly one sixth of preschool children in China participated in out-of-kindergarten tutoring in 2020, and the proportion of Chinese preschool children participating in out-of-kindergarten tutoring increased gradually between 2012 and 2020. The latter finding is consistent with those of other studies in China [68]. Some researchers have pointed out that China is a highly selective society that screens people at every stage of education. Being screened out means being isolated from quality educational resources [68], a process that has intensified in the last decade. To provide their children with an early advantage over their peers, parents are increasingly opting to "jump the gun" by using out-of-kindergarten tutoring as a way to succeed in the context of competitive education, enrolling their children in various classes at an early age [69]. In addition, kindergartens in China have on average 30–35 students per classroom, while class sizes for preschool out-of-kindergarten tutoring are typically much smaller [1]. Given that kindergarten class sizes are large, teachers tend to adopt a uniform teaching model to meet the needs of all preschoolers, which makes it difficult for them to meet individual needs. In contrast, flexible and diverse out-of-kindergarten tutoring can to a certain extent meet the individual and diverse developmental needs of children. Therefore, parents of preschoolers are choosing in increasing numbers to enroll their children in out-of-kindergarten tutoring.

As stated above, this study also found that the respective proportions of preschoolers participating in subject-based and non-subject-based out-of-kindergarten tutoring rose between 2012 and 2020. Notably, the proportion of preschoolers participating in non-subject-based out-of-kindergarten tutoring was higher in 2012, 2014, 2016, 2018, and 2020 than

those receiving subject-based out-of-kindergarten tutoring, and the growth of participation in non-subject-based out-of-kindergarten tutoring was also higher, corroborating the findings of Ren et al. [70]. Another study in China found that the main reason that parents choose tutoring institutions for their children is in order to develop their children's habits and interests, and exercise their abilities and thinking skills [71]. Preschoolers develop through play and activity, and their attention span and memory-retention time are short, so they cannot sit still in a classroom and listen so attentively as elementary and middle school students. Most subject-based out-of-kindergarten tutoring in China focuses on subject knowledge and classroom teaching, which do not suit the age characteristics of preschool children, making it difficult for such tutoring to achieve parents' aims of cultivating their children's interests and abilities. Thus, non-subject-based out-of-kindergarten tutoring is more popular among parents of Chinese preschoolers.

Another interesting finding resulting from the current study is that the proportion of preschool children participating in out-of-kindergarten tutoring grew at its quickest rate from 2018 to 2020, by 5.2 percentage points in just two years. In 2018, the General Office of the State Council promulgated the Opinions on Regulating the Development of private tutoring institutions, a policy that imposed stricter restrictions on extracurricular tutoring in elementary and secondary schools. Since the implementation of the policy, subject-based out-of-kindergarten tutoring during compulsory education has been subjected to numerous restrictions, and many subject-based extracurricular tutoring institutions have flocked to the preschool level in an attempt to transform their institutions by offering tutoring to preschool children. The increase in the number of preschool tutoring institutions has attracted more parents to choose out-of-kindergarten tutoring for their preschool children.

# 5.2. Impact of Children's Gender, Family Socioeconomic Background, and Kindergarten Location on Preschoolers' Participation in Out-of-Kindergarten Tutoring

This study found that gender, family socioeconomic background, and kindergarten location were important influencing factors in preschool children's participation in outof-kindergarten tutoring. Specifically in terms of gender, as reflected in previous studies, the participation of girls in out-of-kindergarten tutoring was significantly higher than that of boys [20,72,73]. According to data released by the United Nations Development Programme, Chinese women's education levels and rates of participations in the labor force are 11.4 and 14.0 percentage points lower than those of men, respectively [74]. Chinese women remain at a disadvantage in terms of education and employment because of the influence of traditional cultural values. To help girls gain greater advantages in their future education and work, parents prefer to secure extracurricular tutoring as compensatory education.

Furthermore, family socioeconomic background had a significant positive effect on preschool children's participation in out-of-kindergarten tutoring, with higher per capita household income and extended parental education associated with a higher probability of preschool children's participation in out-of-kindergarten tutoring, consistent with the results of many previous studies [1,59,70]. In the time-based out-of-kindergarten tutoring market, per capita household income determines whether households can afford out-of-kindergarten tutoring for preschool children, with economically well-off households being more likely to pay the extra costs to invest in their children's education [75]. Moreover, parents with more years of education themselves tend to place greater emphasis on their children's education and are more likely to use out-of-kindergarten tutoring, as they are willing to invest more in their children to give them an advantage in educational competition [76].

Finally, this study found that the kindergarten location also had a significant effect on preschool children's participation in out-of-kindergarten tutoring, with higher levels of urbanization in the kindergarten's location being associated with higher probability of preschool children's participation in out-of-kindergarten tutoring, corroborating many previous studies [68,77,78]. In China, most out-of-kindergarten tutoring institutions are concentrated in provincial capitals and economically developed areas. Out-of-kindergarten tutoring in areas with higher levels of urbanization is developing comparatively faster and on a larger scale, while its supply in rural areas is very limited. Furthermore, families in regions of China with higher levels of urbanization tend to have higher per capita disposable income and are more likely to invest in their children's education. Poorer families in regions that are less economically developed, especially in rural areas, are often unable to afford out-of-kindergarten tutoring [72].

# 5.3. Preschool Out-of-Kindergarten Tutoring Has no Significant Effect on Children's Approaches to Learning

This study found no significant effect of preschool out-of-kindergarten tutoring on children's approaches to learning, a result which is consistent with other studies [9,64,71]. Preschool children are influenced by many factors, including personal factors, parenting styles, family background characteristics, educational styles, and social culture, all of which affect the development of their approaches to learning. However, it should be noted that out-of-kindergarten tutoring represents only one type of social education, and the successful development of preschool children's approaches to learning continues to require the cooperation of families, kindergartens, and society. Another possible explanation supported by previous studies is that teacher–child interaction is an important factor in the development of children's approaches to learning [79] and that out-of-kindergarten tutoring than in kindergarten and at home. Insufficient time and intensity of teacher–child interaction in out-of-kindergarten tutoring may explain its lack of significant effect on the development of children's approaches to learning.

This study also found that subject-based out-of-kindergarten tutoring had no effect on preschoolers' approaches to learning, a conclusion which is supported by the results some previous studies [65,72]. In China, preschool subject-based out-of-kindergarten tutoring often uses an elementary school curriculum to prepare students for elementary school. Preschoolers in these classes learn elementary school curriculum content in advance, such as phonics and English, which may lead to a loss of interest in learning, curb their imaginative and creative development, and be detrimental to the development of learning approaches [80]. Furthermore, some preschool out-of-kindergarten tutoring institutions in China have problems with inconsistent teaching quality, a lack of professionally qualified teachers, and insufficient supervision [81]. The low quality of some forms of out-of-kindergarten tutoring may also explain why it has no impact on children's approaches to learning.

In general, although non-subject-based out-of-kindergarten tutoring has some impact on preschoolers' approaches to learning, its effects are very limited and the impacts are neither obvious nor long-lasting. Non-subject-based out-of-kindergarten tutoring is not knowledge-oriented but is conducted as an activity-based experience that may have an impact on children's interest in learning, creativity, etc. However, parents often focus on quick results when choosing non-subject-based tutoring; for instance, they want their children to master certain skills (e.g., piano or painting) quickly. To meet parents' expectations, non-subject-based tutoring often requires a repetitive approach to education, which can damage children's interest in learning, initiative, and other aspects of their approaches to learning.

# 6. Conclusions, Implication and Limitations

Based on data from 2012, 2014, 2016, 2018, and 2020, this study used PSM to explore the effects of preschool children's participation in out-of-kindergarten tutoring on approaches to learning. The results indicated that the proportion of preschool children participating in out-of-kindergarten tutoring in China is increasing, with a higher growth rate of participation in non-subject-based out-of-kindergarten tutoring. Gender, family socioeconomic background, and kindergarten location were all influential factors in preschool children's participation in out-of-kindergarten tutoring. Using PSM, we found that preschool children's participation in out-of-kindergarten tutoring was hardly effective in improving their approaches to learning, especially in subject-based out-of-kindergarten tutoring.

Based on this study's findings, we make the following recommendations. First, parents should rationally choose out-of-kindergarten tutoring based on a comprehensive understanding of their children. They should not have blind faith in out-of-kindergarten tutoring nor exaggerate its role, but should instead carefully consider the interests and developmental needs of their children. Second, the government should increase the systematic supervision of preschool out-of-kindergarten tutoring institutions to regulate them strictly and crack down on "over-step learning." Third, we should develop a collaborative parenting system involving home, kindergarten, and community to create educational synergy and jointly promote the healthy and comprehensive development of young children.

This study has several shortcomings due to the limitations of the data. Although this study used data gathered during five periods, it did not track for analysis the dynamic effects of out-of-kindergarten tutoring on children's approaches to learning, because panel data were not used. In addition, the data utilized in this study were not sufficiently comprehensive to measure approaches to learning and may not fully reflect the impact of out-of-kindergarten tutoring on children's approaches to learning. Furthermore, this study did not consider the specific teaching methods and materials applied in out-of-kindergarten tutoring. In future studies, we hope to conduct follow-up surveys to measure more comprehensively children's approaches to learning and to thoroughly explore the dynamic effects of preschool out-of-kindergarten tutoring on children's approaches to learning on children's approaches to learning and to thoroughly explore the dynamic effects of preschool out-of-kindergarten tutoring on children's approaches to learning and to thoroughly explore the dynamic effects of preschool out-of-kindergarten tutoring on children's approaches to learning and to thoroughly explore the dynamic effects of preschool out-of-kindergarten tutoring on children's approaches to learning and to thoroughly explore the dynamic effects of preschool out-of-kindergarten tutoring on children's approaches to learning and to thoroughly explore the dynamic effects of preschool out-of-kindergarten tutoring on children's approaches to learning.

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