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Profiles of Approaches to Learning and the Relationship with Academic School Readiness in Chinese Preschoolers

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ABSTRACT

Research Findings: The study examined the latent profiles of approaches to learning (ATL) in Chinese preschoolers and the association of profile membership with their academic school readiness. A total of 235 preschoolers (M_{age} = 58.07 months, SD = 10.09 months) were sampled and evaluated with the School Readiness Composite (SRC) of the Bracken Basic Concept Scale-Revised, and early achievement tests in language and literacy and mathematics excepted from the East Asia-Pacific Early Child Development Scales (EAP-ECDS). The children's class teachers ($N_{teacher}$ = 18) rated their ATL using a newly developed teacher-rating scale, and one of their parents (N_{parent} = 235) completed a survey questionnaire measuring family demographics. Results of latent profile analysis have yielded four latent profiles of ATL: the low group (27.66%), the positive group (20.85%), the middle of the road group (37.87%), and the social and persistent group (13.62%). The hierarchical regression analysis indicated that ATL profile membership was significantly related to academic school readiness, in terms of basic concept readiness and early language, literacy, and mathematics achievements. In addition, higher levels of ATL were associated with higher levels of academic school readiness. *Policy and Practices*: The findings highlighted the importance of ATL in young children, and positive ATL should be nurtured during the early years to promote their school readiness.

Approaches to learning (ATL) is an umbrella term extensively used to refer to the attitudes, habits, learning styles, and behaviors relevant to the act of engaging in learning and achieving learning goals (Kagan et al., 1995). As one of the "soft skills" for success in the 21st century (Sylva et al., 2016), ATL is critical to children's engagement in learning and lays the foundation for early academic readiness, long-term achievement, and even life-long learning (Beisly et al., 2020; Hyson, 2008; Sung & Wickrama, 2018; Vitiello & Greenfield, 2017; L. Zhang, 2021). Due to the importance of ATL, the Chinese Ministry of Education (2012) included "approaches to learning" as one of the fundamental domains of school readiness in *Early Learning and Development Guidelines for Children Aged 3 to 6 Years (ELDGs)*. However, the existing studies on Chinese children's ATL have focused on the association between ATL and school readiness or the influential factors (e.g., Guan et al., 2020; Hu et al., 2017; Wang et al., 2010; L. Zhang & Zhou, 2018), leaving the major components and potential profiles unexplored. Furthermore, ATL is multidimensional (Domínguez et al., 2011); without knowing how different dimensions of ATL are manifested within individual children (Beisly, 2020), these ATL studies will not provide useful implications for improving early childhood learning

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and development. To fill this gap, the study adopted a person-centered approach to explore the latent potential profiles of ATL and further examined the relationship between ATL profiles and academic readiness.

Approaches to Learning and Its Importance in the Chinese Context

Approaches to learning (ATL) first appeared as one of the critical dimensions of school readiness in the 2000 *U.S. National Education Goals* (Kagan et al., 1995). As a least understood and under-defined dimension, ATL is also known as learning dispositions, learning behaviors, or learning-related skills (Chen et al., 2011; Hyson, 2008). However, there are minor differences among these alternatives. As an umbrella term, ATL is defined as a combination of "the inclinations, dispositions, or styles" that facilitate children's involvement in and pursuit of learning (Kagan et al., 1995; Kartz, 1993). The inclination is the "disposition of mind or character . . . which subsumed under disposition" (Kartz, 1993, p. 2). Learning dispositions refer to the "enduring habits of mind and characteristic ways of responding to experiences" that help children approach their learning (Kartz, 1993, p. 16). Learning styles encompass the motivations, attitudes, and cognitive styles, including "openness to and curiosity about new tasks and challenges, initiative, task persistence and attentiveness, approach to reflection and interpretation, capacity for invention and imagination, and cognitive approaches to tasks" (Kagan et al., 1995, p. 23). To emphasize that ATL is observable, measurable, and teachable, some researchers use "learning behaviors" and define ATL as a set of behaviors that facilitates children's engagement in learning activities (Fantuzzo et al., 2004). Yet, another group of researchers refers to "learning-related skills" or "learning-related social skills" to stress the importance of social skills such as self-control and cooperation that facilitate children's learning (McClelland et al., 2006). Although different terms are alternatively used, ATL is a more broad term that includes dispositions, learning behaviors, and skills. And as such, the study will use the term "approaches to learning (ATL)" defined by Epstein (2012) and Hyson (2008), which means a range of qualities that characterize children's learning, including the engagement in activities, acquisition of new knowledge, mastery of skills, and achieving learning goals.

Due to its profound importance, ATL has attracted wide attention from education policymakers globally (Suo, 2019). In China, the Ministry of Education (2012) considered ATL a domain-general element included in the *ELDGs*. It stressed that we should attach importance to children's approaches to learning, including curiosity, attentiveness, persistence, willingness to try, exploration, imagination, and creativity. Recently, the Ministry of Education (2021) issued *The Opinions on Promoting the Transition from Kindergarten to Primary School ("The Opinions"* hereafter) and put forward four critical components of school adaptation for young children, including physical and mental adaptation and life skills, social adaptation, and learning adaptation. The last component is further described as curiosity and interest in learning, good learning habits in terms of persistence, planning, and problem-solving, and learning capability, which are core elements of ATL. Thus, ATL has been considered by the Chinese government as a key and critical dimension of school readiness in young children.

However, the related research lags behind the policy development (Hu et al., 2017; Suo, 2019). Only a few studies have focused on Chinese children's ATL. It is noteworthy that there is no unified definition and different researchers focused on different components (Hu et al., 2017; Hyson, 2008; L. Zhang & Zhou, 2018). At the same time, practically, teachers and parents have difficulties in fostering children's ATL. On the one hand, due to the lack of research on ATL, teachers do not have a good understanding of this school readiness dimension and do not purposefully pay attention to children's development of ATL in daily practices (Ye, 2020; Zhao et al., 2020; X. M. Zhang, 2018). On the other hand, parents dominantly focus on children's acquisition of knowledge and overlook the importance of ATL in the early years (Yu et al., 2019).

The first step is to conceptualize this school readiness dimension to promote research and practices related to children's ATL development. Recently, Suo (2019) conducted a comprehensive review on the definition issue of ATL and pointed out that positive approaches such as curiosity, initiative, persistence, concentration, problem-solving, and cooperation should be emphasized in the Chinese

context. Therefore, this study will adopt Suo's definition to explore children's ATL and investigate the different profiles in Chinese children and the association with academic readiness. The findings will help promote teachers' and parents' awareness of the importance and understanding of ATL in young children.

Studying ATL: The Assessment and the Person-Centered Approach

The assessment of ATL usually relies on teacher rating. In the past decade, several teacher-rating scales developed in the United States have been predominantly used to assess different components of ATL (Peng, 2020; L. Zhang & Zhou, 2018). The first measure is the *Preschool Learning Behavior Scale* (PLBS) which rates children's ATL on three dimensions: competence/ motivation, attention/ persistence, and learning strategy (McDermott et al., 2012). The second measure is *the Child Behavior Rating Scale* (CBRS) that some states have adopted in the United States, such as Oregon and Virginia, to monitor the development of children's ATL (Matthews et al., 2009; Rowley, 2015; Virginia Kindergarten Readiness Program, 2020). The third ATL measure, Early Childhood Longitudinal Study -Kindergarten Cohort's ECLS-K's *Approaches To Learning Scale*, focuses on children's attention, persistence, flexibility, learning independence, organization, responsibility, curiosity, eagerness to learn, creativity, and so forth (Li-Grining et al., 2010). Other scales such as the *AtL Rating scale* and the *Devereux Early Childhood Assessment* have also been used to assess children's ATL (Barbu et al., 2015). In Asia, the *East Asia-Pacific Early Child Development Scales* (EAP-ECDS) have been widely used in China and repeatedly reported in recent studies (e.g., Su et al., 2021; Sun, Zhang, Chen, Lau, & Rao, 2018; L. Zhang, 2021; L. Zhang & Zhou, 2018; Zhou et al., 2018). EAP-ECDS includes a sub-scale of ATL, which evaluates the three components of ATL (self-control, curiosity and interest, and persistence) through observation and assessment (Rao, Sun, Ng et al., 2014). However, the sub-scale does not capture other components such as initiative, problem-solving, and cooperation (L. Zhang & Zhou, 2018). Despite the different measures used, the challenge of cultural appropriateness has underlined the necessity for Chinese scholars to develop their own scales. These measures usually include different components, and some only target 5-6-year-olds (Peng, 2020; L. Zhang & Zhou, 2018). This study has referred these measures and developed them into a teacher-rating scale, validated through exploratory factor analysis (EFA) and confirmatory factor analysis (CFA).

The current understanding of how ATL develops in an individual child is confined to variable-centered approaches (Elliott, 2019), which generally focuses on a single variable, the relationship between different variables, or between a variable and a particular criterion. Such research requires a homogeneous sample (Von Eye & Bogat, 2006). However, ATL is a multidimensional concept and might have different profiles within a certain group of young children. Therefore, the variable-centered approach does not help identify how different dimensions of ATL coalesce within clusters, or profiles, of children (Justice et al., 2017). Instead, the person-centered approach is very powerful in identifying individuals with different characteristic patterns. For instance, latent profile analysis (LPA), a widely employed person-centered statistical method, is usually adopted to identify the patterns of multiple variables (Beisly, 2020). It allows researchers to understand how multiple characteristics co-occur in individual children; thus, it has been used to study umbrella constructs like school readiness (Elliott, 2019; Sabol & Pianta, 2017). However, there has been a paucity of studies dedicated to profiling a specific domain of school readiness, especially ATL. So far, to our knowledge, only one study has adopted the person-centered approach to explore the profiles of ATL in young children (Beisly, 2020). The study examined ATL as a combination of five components, including initiative, self-regulation, attachment, self-reliance, and attention, and found five profiles. Among all the children, 30% were identified as having positive ATL (Profile 5), while nearly 12% (Profiles 2 and 4) were rated as Low-level ATL. Further, Low-level ATL was associated with underachievement in academic school readiness (Beisly, 2020). However, this study has targeted American children from the

Head Start project and focused on the ATL components that are not commonly investigated. Therefore, it remains unknown how different components of ATL combine to shape different patterns in young children in China. To fill this gap, this study endeavored to understand ATL profiles through latent profile analysis, which would help us understand the nuanced differences in children's early learning.

ATL and Academic School Readiness

Academic school readiness, an important predictor of children's school attainment, is also an important indicator for evaluating preschool effectiveness and quality improvement (L. Zhang, 2019). Previous studies have documented the association between early ATL and preschool achievement in language and mathematics (Beisly et al., 2020; Schmitt et al., 2015; Vitiello et al., 2011). On the one hand, young children with high ATL levels tend to have better self-regulation, thus demonstrate persistent engagement in tasks, eagerness to learn, sustained attentiveness, and refrain from being unoccupied and disruptive (Beisly et al., 2020; Bohlmann & Downer, 2016; Nesbitt et al., 2015). All these skills facilitate children's early learning and improve their early achievement. On the other hand, young children with poor ATL easily get distracted and exhibit inattentiveness, low impulse control, inadequate persistence, and decreased motivational levels (Beisly et al., 2020; McDermott et al., 2014; Nesbitt et al., 2015). For instance, a longitudinal study showed that the Head Start children who demonstrated a lower level of competence motivation and attentional persistence at the program's entry continually lagged behind their peers with positive ATL in different achievement domains to the close of Grade One (McDermott et al., 2014).

Another important goal of academic school readiness is to help young children learn basic concepts to prepare them academically for school (Vitiello et al., 2011). Research indicated that after controlling for cognitive flexibility and individual characteristics, ATL predicted the acquisition of basic concepts in Head Start children (Vitiello et al., 2011). However, few studies have explored the relationship between ATL and such academic school readiness. In particular, in China, the *ELDGs* sets age-appropriate learning and development goals for teachers to promote child development in five domains of school readiness, including health, language, and early literacy, social development, science and mathematics, and the arts. It suggests that ATL permeates different domains and emphasizes the development of ATL in young children. The newly issued *The Opinions* stress the importance of approaches to learning and emphasize the basic learning experience and abilities, including early reading and literacy, writing habits and skills, and rich mathematics experience in the transition from kindergarten to primary school. However, little evidence has been reported on the relationship between ATL and academic school readiness (L. Zhang & Zhou, 2018). Further, Chinese parents highly value socialization for academic achievement and are substantially involved in early childhood education to promote their children's school readiness (Rao, Sun, Zhang et al., 2014). However, they do not value the importance of ATL in early learning (Rao, Sun, Zhang et al., 2014). One cross-cultural study indicated that teacher-rated ATL did not predict early achievement in mathematics and language in China (Wanless et al., 2011). In contrast, a recent study found a strong association between ATL and early achievement in Chinese children (L. Zhang & Zhou, 2018). However, whether children's ATL can enhance their academic school readiness or not is not yet confirmed. Therefore, this study is dedicated to filling this research gap by exploring ATL's relationship with Chinese children's academic school readiness after controlling for the child and family demographic variables and kindergarten quality level. Based on Suo's (2019) definition, this study focused on the core elements of ATL and extracted four components, including curiosity and initiative (CI), concentration and persistence (CP), problem-solving (PS), and social skills and

sharing (SS). Further, the person-centered approach was adopted based on children's ATL in the four components to investigate ATL profiles. Accordingly, the following questions guided this study:

(1) What are the profiles and the characteristics of ATL in Chinese preschoolers?
(2) Is the ATL profile membership associated with Chinese preschoolers' academic school readiness after controlling for the child, family, and kindergarten covariates?

Method

Research Site

The study was conducted in the P district of Shanghai, China. The district consists of 12 communities and 24 towns and has the largest area and population in Shanghai. According to the seventh *National Population Census*, the population in P district is over 5.68 million, accounting for 22.80% of the whole population in Shanghai, and 42.60% of the population in P District are migrated from other provinces and cities (Shanghai Municipal Bureau of Statistics & Office of the Leading Group of the Seventh Shanghai Population Census, 2021; Shanghai P District Statistical Bureau & Office of the Leading Group of the Seventh Shanghai P District Population Census, 2021). In 2019, the disposable income per capita in the P district was 71.60 thousand RMB, slightly higher than the city average (69.44 thousand RMB; Shanghai Municipal Bureau of Statistics & Shanghai Investigation Team of the National Bureau of Statistics, 2020; Shanghai P District Statistical Bureau & P District Survey Team of National Statistics Bureau, 2020). In addition, the proportion of the population who has an associate degree or above is over 35.83%, which is slightly higher than the average level of 33.87% (Shanghai Municipal Bureau of Statistics & Office of the Leading Group of the Seventh Shanghai Population Census, 2021; Shanghai P District Statistical Bureau & Office of the Leading Group of the Seventh Shanghai P District Population Census, 2021).

Just like its population, the P district also has the largest number of kindergartens in Shanghai. In 2019, the number of kindergartens was 326, reaching nearly 20% of the total in Shanghai. Among all the kindergartens in the P district, 61.67% are public ones, and the proportion is similar to the city level (61.56%; Shanghai Municipal Bureau of Statistics & Shanghai Investigation Team of the National Bureau of Statistics, 2020; Shanghai P District Statistical Bureau & P District Survey Team of National Statistics Bureau, 2020). By the end of 2020, the percentage of "quality kindergartens" reached 84%, ranking the first in Shanghai (The Government of P District, 2021). The educational authorities of Shanghai have classified kindergartens into four groups according to their quality levels: the demonstration kindergartens, Level 1 kindergartens, Level 2 kindergartens, and Level 3 kindergartens. The first two groups are regarded as "quality kindergartens," while the latter two groups are not (P District Education Bureau, 2021; The Government of P District, 2016).

Participants

Ethical approval was obtained from the first author's university, and the written consent forms were collected from all the participants in this study. We recruited six public kindergartens from two adjacent towns in the P district. Four kindergartens are Level 1 kindergartens, while another two are Level 2 kindergartens. One class was randomly selected from each age group (K1 class for Ages 3–4, K2 class for Ages 4–5, and K3 class for Ages 5–6), resulting in 18 participating classes. In each class, 14–16 children around the average age level were randomly sampled, resulting in 269 participants.

However, 34 children across 15 classes did not have ATL data as they did not show or asked for sick leave the day their teachers filled in their scales. Teachers were reluctant to complete the missing ones after the data collection when it was approaching the end of the semester. We compared the differences in child age and academic school readiness between this group and the rest of the children and did not find any significant differences, $t_{(267)\ \text{Age}} = 0.22$, $p > .05$; $t_{(267)\ \text{school readiness}} = 1.52$, $p > .05$; $t_{(267)\ \text{language and literacy}} = -0.24$, $p > .05$;$t_{(267)\ \text{mathematics}} = 0.81$, $p > .05$. Therefore, we removed the data of the 34 children from the final analysis. Among the 235 children, 114 were girls, accounting for 48.50% of the sample. There were 78, 77, and 80 children in K1, K2, and K3 classes, respectively. The average age was 46.32 ± 2.66 months, 57.61 ± 2.71 months, and 69.96 ± 2.82 months for each age group.

Measures

Three sets of measures were utilized for the study, including a parent survey, the teacher-rating scale on ATL, and academic school readiness tests regarding the basic concept readiness test and the early achievement measures in language, literacy, and mathematics. The academic school readiness tests were conducted within five days during children's free play sessions in each kindergarten. The research team sent the parent survey questionnaires and the ATL scales to the teachers on the first day of assessment and invited each kindergarten to mail all the questionnaires and rating scales to the first author after completion.

Parent Survey

The parent survey included demographic information on their child's gender, age, maternal educational attainment, and monthly household income. Maternal education was constructed using the mother's highest qualification across eight levels ranging from no formal education (coded as 1) to the doctoral degree (coded as 8). The household income was indicated by a variable of family monthly income across seven levels from less than 1,500 (coded as 1) to over 20,000 RMB (coded as 7). Thus, maternal education and household income were operationalized as continuous variables.

Teacher-Rating Scale on ATL

The development of the teacher-rating scale on ATL followed four steps. First, all the items related to either of the six ATL components (curiosity, initiative, persistence, concentration, problem-solving, and cooperation) recommended by Suo (2019) were selected from the *Early Learning and Development Guidelines for Children Aged 3 to 6 Years*, and the existing measures, including the *Child Behavior Rating Scale* (CBRS; Matthews et al., 2009), *Preschool Learning Behavioral Scale* (PLBS; McDermott et al., 2012), *ECLS-K's Approaches To Learning* (Li-Grining et al., 2010), the AtL Rating Scale (Barbu et al., 2015), the DECA (Barbu et al., 2015), as well as the ATL subscale of the *East Asia-Pacific Early Child Development Scales* (EAP-ECDS; Rao, Sun, Ng et al., 2014). Thus, a 57-item scale with six subscales was initially developed. Further, by deleting the repetitive items and combining the similar ones, we got a draft of 38 items.

Second, the first author interviewed ten kindergarten teachers in-depth to learn their perspectives on ATL and the draft items. Teachers reported that concentration, listening skills, initiative, and cooperation were critical elements of ATL, which were similar to Suo's definition (2019). They further provided comments on the descriptions of the items to make them more understandable to kindergarten teachers. Based on the interview results, the research team has further revised the 38-item scale.

Third, five professors in early childhood education were invited to score the relevance of the items to the sub-scales on a 5-point Likert Scale and provide comments. The higher scores indicated higher relevance. The professors agreed upon the six components of the ATL scale. However, eight items were removed as the average scores of these items were around to or below three.

Finally, the five professors' comments and suggestions were incorporated into the revision, and the final version with 30 items was confirmed. Each item describes a behavior or performance that reflects a child's ATL. For instance, the child likes asking and following up questions. Teachers were invited to rate the target child's ATL using the five-point Likert scale, ranging from "1-never" to "5-always." The higher the score a child gains, the higher level of ATL they achieve.

A pilot study was conducted to examine the psychometrics of the scale in another two kindergartens in Shanghai. This pilot study selected a class from each age group (K1, K2, and K3 classes) in each kindergarten and recruited 15–16 children from each class, with a nearly equal number of boys and girls. The total sample size was 91. Teachers of these children were invited to rate their ATL using the scale. As the sample size was not large enough for the Exploratory Factor Analysis, data from one of the six kindergartens were randomly selected and included. One Level 2 kindergarten with 41 participant children was selected, and the final sample size for the EFA was 132. The construct validity of the teacher-rating scale on ATL was conducted using IBM SPSS 23.0. Eleven items were removed due to low factor loadings or cross-loadings. The EFA results yielded four factors: (1) the first factor consisted of six items describing children's "curiosity and initiative" (CI); (2) the second factor is comprised of five items focusing on "concentration and persistence" (CP); (3) the third factor included five items depicting ways and strategies of solving problems and was thus labeled as "problem-solving" (PS); and (4) the fourth factor contained three items evaluating "social skills and sharing" (SS) (see Table A1).

Next, the CFA was carried out on the rest sample of 194 children to verify this 4-dimensional model. The results indicate a good model fit, $\chi^2/df = 1.58$, RMSEA = 0.06, CFI = 0.96, and TLI = 0.95 (Van de Schoot et al., 2012). The whole scale's internal consistency was 0.91, and that of each factor ranged from 0.81 to 0.88. The correlation coefficients between each factor for the whole sample (235 children) ranged from 0.29 to 0.61, which were appropriate for the discriminant validity (Rönkkö & Cho, 2022).

Academic School Readiness

This study utilized two academic school readiness measures: the basic concept readiness assessment and the early achievement tests in language, literacy, and mathematics. The assessments were conducted into two separate sessions in two days, with each session lasted for about 20–30 minutes for each child. Children were able to take a rest during each assessment. Two undergraduate students and four postgraduate students who majored in early childhood education participated in the training provided by the first author. They administered the assessment to the children in one-on-one sessions in a quiet room of the kindergarten.

Basic Concept Readiness. This study adopted the *School Readiness Composite* (SRC) of the *Bracken Basic Concept Scale-Revised* to gauge children's cognitive readiness (BBCS-R; Bracken, 1998). BBCS-R has been used in several studies in China (Rao et al., 2012; L. Zhang, 2019; Zhou et al., 2015). The SRC contains six subscales of colors, letters, numbers/counting, sizes, comparisons, and shapes. The sub-scale of English letters was replaced with 15 characters selected from the picture-character matching sub-scale of the *Preschool and Primary Chinese Literacy Scale* (PPCLS; H. Li, 1999). Therefore, this study used five sub-scales of the BBCS-R SRC and a sub-scale of Chinese characters, with a total of 87 items. The number of items for each of the sub-scales was 11,15,19,12,10, and 20 items, respectively.

During the assessment, the assessor presented the child with pictures and asked them a question. The child was required to point out the correct picture or provide a verbal response. A child would gain one score for a correct answer and 0 for a wrong answer or a refusal of an item. The total score for the scale is 87, and the Cronbach's alpha coefficient for the scale is 0.95, and that for the sub-scales was 0.86, 0.88, 0.94, 0.65, 0.70, and 0.77, respectively.

Early Achievement Tests. The language and literacy test contained 12 items from the language and emergent literacy subscale in the EAP-ECDS (α = .81). The test examined children's vocabulary development, storytelling, character recognizing, pre-reading skills, and pre-writing skills (e.g., writing their own names). The mathematics test comprised nine items from the sub-scale of cognitive

development domain in the EAP-ECDS (α = .92). The items assessed children's command of quantity, counting and numeracy, simple calculation, classifying, and shape naming (Rao, Sun, Ng et al., 2014; L. Zhang, 2021). A child would gain one score for a correct answer for all the items in both tests, except for the last two items in the language and literacy test. These two tests evaluated the understandability and speech clarity of children's oral responses, and the highest score for each item is 2. The total scores for the two measures were 42 and 25, respectively, due to the step-by-step scoring. For instance, a child was required to count 30 blocks in one item in the mathematics test. They would get one score for every correct count of the first, second, or the third ten blocks and would finally gain three scores for the item for the correct count of all the 30 blocks.

Analytical Plan

A two-step analytical procedure was adopted in the study.

First, latent profile analysis (LPA) was performed using MPlus 8.3 to explore the profiles of ATL in Chinese children. The four-factor scores of ATL were employed as the dependent variables to define children's classes via maximum likelihood estimation. Next, the probability of classifying a child into a specific class is simultaneously estimated with the overall model. This step led to the creation of the variable of ATL profile membership. Then, children were assigned to each profile group according to the posterior probability in the LPA analysis.

Second, a 3-step hierarchical regression analysis (with the enter method) was conducted using SPSS 23.0 to examine whether the profile membership was associated with children's school readiness, early language and literacy, and early mathematics. In Step 1, the child's age and gender were entered. In Step 2, maternal education, family monthly income, and the quality level of kindergarten were entered. Finally, in Step 3, the profile membership was entered.

Results

Descriptive Statistics and Bivariate Correlations

Tables 1 and 2 present the descriptive statistics and bivariate correlations among all the variables in this study. The average scores for the overall ATL and each factor were 3.20–3.87 out of 5 points. The correlation analyses showed that child gender was correlated with CP, and girls tended to have higher scores in this factor. Child age was significantly associated with the overall ATL, CP, and PS. Maternal education was associated with CI and SRC, and family income was significantly correlated with CI. The quality level of kindergarten was not related to ATL but was associated with maternal education and family income. Further, the overall ATL and scores of CI, CP, PS, and SS were all significantly correlated with the SRC, early achievement in language and literacy, and mathematics, except that SS was not related to SRC and early language and literacy. Finally, child age was significantly related to SRC and early achievement. Maternal education was correlated with SRC, but family income was not related to either academic school readiness tests. However, as it was closely correlated with maternal education, it was still included in the regression models. Kindergarten quality was associated with all three school academic readiness measures.

The Latent Profiles of ATL

The four-factor scores of ATL were standardized and entered as the observed dependent variables to conduct latent profile analysis (LPA). Five competing models with one to five latent classes were estimated, and the model-fit indices for each LPA are presented in Table 3. Models of different classes were evaluated and compared based on the criteria suggested by Merz and Roesch (2011). The optimal number of classes for the sample was selected using the model-fit indices, including Akaike information criteria (AIC), the Bayesian information criteria (BIC), the adjusted Bayesian information criteria (ABIC),

Table 1. Descriptive statistics for the demographic variables, approaches to learning and academic school readiness (N = 235).

Variable	%	*M*	*SD*	Range	Total Score
Demographic variables					
Gender (percent girls)	48.51				
Quality level of kindergarten (percent District Model)	31.49				
Quality level of kindergarten (percent Level 1)	34.89				
Child's age		58.07	10.09	41–76	-
Maternal education		4.75	1.13	2–8	7
Household monthly income		4.36	1.47	1–7	7
Approaches to learning					
Overall approaches to learning (ATL)		3.51	0.50	2.05–4.84	5
Curiosity and initiative (CI)		3.59	0.65	1.67–5.00	5
Concentration and persistence (CP)		3.60	0.69	2–5	5
Problem-solving (PS)		3.11	0.56	1.60–4.40	5
Social skills and sharing (SS)		3.87	0.68	2–5	5
Academic school readiness					
Basic concepts readiness		58.04	14.33	17–85	87
Early language and literacy		34.41	4.52	21–42	42
Early mathematics		14.95	5.95	2–25	25

Maternal education level was classified into 8 categories: 1 = no formal education; 2 = primary school or below; 3 = junior high school; 4 = senior high school or vocational school; 5 = associate degree; 6 = bachelor degree; 7 = master degree; 8 = doctoral degree. Household monthly income was classified into 7 categories: 1 = below ¥1,500; 2 = ¥1,501– 4,500; 3 = ¥4,501–8,500; 4 = ¥8,501–12,500; 5 = ¥12,501–16,000; 6 = ¥16,001–20,000; 7 = above ¥20,000. These two variables were operationalized as continuous variables in the analyses.

the Lo-Mendell-Rubin Adjusted Likelihood Ratio Test (LMRT), the Boostrap Likelihood Ratio Test (BLRT), and entropy. The LMRT/BLRT compares a target model of *k* classes to a comparison model of *k-1* classes. A significant *p*-value generated for the LMRT/BLRT indicates the more complex model fits better. Further, the smallest group size should also be considered. The numbering of this group should be equal to or above 5% of the full sample (Beisly, 2020). Therefore, a better-fitted model has a higher value of entropy (.80 or higher), lower values of AIC, BIC, and ABIC, a significant *p*-value for LMRT, and the largest number of classes (Beisly, 2020; Muthén & Muthén, 2007).

Accordingly, a set of LPA models was estimated, and the model fits for classes 1–5 are presented in Table 3. According to the entropy, the 2-class, 4-class, and 5-class solutions were well identified. Despite that the LMRT *p*-value and BRT *p*-value for the 2-class solution were significant, the solution included two groups and did not reflect the varieties in the development of ATL. Although the 5-class solution had the highest entropy value and reduced AIC, BIC, and ABIC, the numbering of the smallest sample is below 5% of the sample. Therefore, based on a combination of model fit, parsimony, and the interpretability of the classes, we retained the 4-class solution, although it did not have a significant LMRT *p*-value (Beisly, 2020).

Four distinct profiles best captured the development of ATL in the participant children (see, Figure 1). According to the 4-profile model, Profile 1, labeled as *low ATL* (27.66% of the sample, $n = 65$), was composed of children with relatively low scores across all the four ATL factors. The children of this profile had scored nearly or over one standard deviation below the average in each factor. Accounting for 37.87% of the sample ($n = 89$), Profile 2 consisted of the children with 0.5 standard deviations above the average in CI and generally average scores across the other three factors and was labeled *middle of the road*. Profile 3 (13.62% of the sample, $n = 32$) was characterized as *social and persistent*. The children in this group were nearly or over one standard deviation above average in SS and PC and were at the average level in CI and PS. Finally, Profile 4, the *positive ATL*, represented 20.85% of the children ($n = 49$). This group was 0.69 standard deviation above the average in SS and nearly one standard deviation above average in the other three factors.

As shown in Table 4, the four profile groups were differentiated by gender ($\chi^2 = 7.96$, $p < .05$). Relative to boys, girls were more likely to be in the social and persistent group ($\chi^2 = 4.50$, $p < .05$). Further, the four groups had differences in household monthly income (F (3, 231) = 4.07, $p < .01$).

Table 2. Zero-order correlations between all the variables (N = 235).

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13
Demographic variables													
(1) Gender	-												
(1) Age	.02	-											
(1) Maternal education	.02	−.14*	-										
(1) Household monthly income	.02	−.07	.37***	-									
(1) Quality level of kindergarten	−.01	.07	.34***	.28***	-								
Approaches to learning													
(1) Overall approaches to learning (ATL)	.08	.22***	.12	.08	.01	-							
(1) Curiosity and initiative (CI)	.01	.12	.16*	.13*	.05	.82***	-						
(1) Concentration and persistence (CP)	.13*	.23***	.06	.02	−.05	.79***	.40***	-					
(1) Problem solving (PS)	.04	.21**	.08	.09	.13	.77***	.61***	-	-				
(1) Social skills and sharing (SS)	.09	.11	.05	−.06	−.12	.68***	.39***	.61***	.29***	-			
Academic school readiness													
(1) Basic concepts readiness	.05	.69***	.14*	.11	.20***	.30***	.20***	.29***	.32***	.10	-		
(1) Early language and literacy	.10	.63***	.12	.01	.16*	.24***	.16*	.24***	.22***	.10	.70***	-	
(1) Early mathematics	.07	.80***	.06	.05	.18**	.30***	.15*	.34***	.26***	.17**	.85***	.69***	-

*$p < .05$.**$p < .01$.***$p < .001$.

Table 3. Latent profile analysis (LPA): model-fit statistics of competing models.

Model	AIC	BIC	ABIC	Entropy	Estimated proportion of children in the smallest class	LMRT *p*-value	BLRT *p*-value
1 Profile	2679.60	2707.27	2681.92	-	-	-	
2 Profiles	2477.71	2522.69	2481.48	0.80	36.43%	.00	.00
3 Profiles	2435.05	2497.33	2440.27	0.73	29.08%	.12	.00
4 Profiles	2406.46	2486.03	2413.13	0.80	13.62%	.12	.00
5 Profiles	2396.72	2493.59	2404.84	0.81	4.19%	.77	.00

N = 235. AIC – Akaike Information Criterion; BIC = Bayesian Information Criterion; ABIC = Adjusted BIC; LMRT = Lo-Mendell-Rubin likelihood ratio test. BLRT = Bootstrapped likelihood ratio test. The null hypothesis for the LMRT *p*-value and BLRT *p*-value indicates that a solution with the given number of classes provides the same data as a solution with one less class.

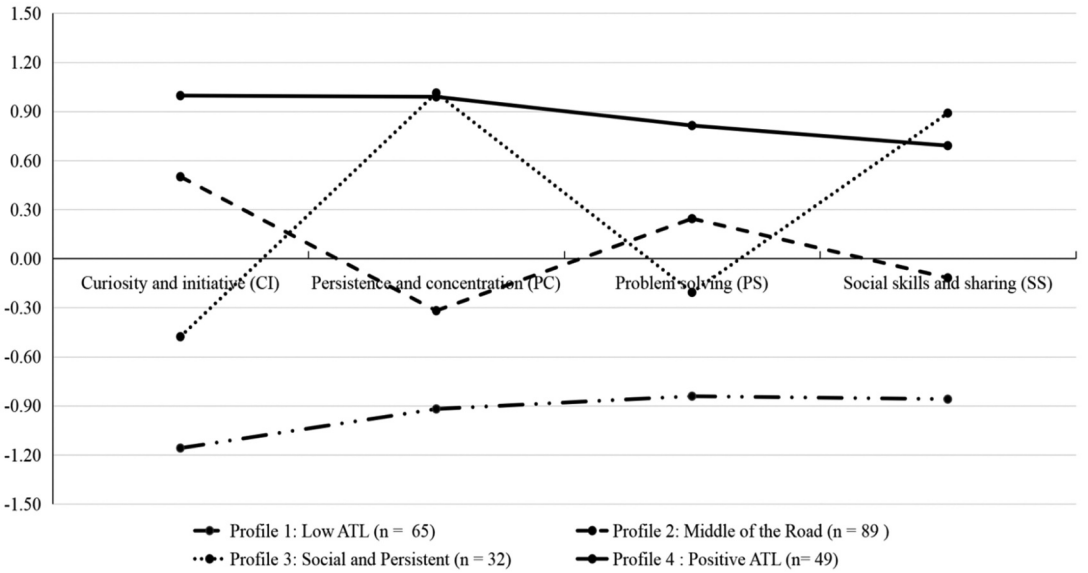

Figure 1. The four latent profiles of approaches to learning (N = 235). All the scores for the subscales were standardized.

Table 4. Demographic characteristics and academic school readiness means (Standard deviation) by the four ATL profiles.

	Profile 1 Low ATL % or *M(SD)*	Profile 2 Middle of the Road % or *M(SD)*	Profile 3 Social and Persistent % or *M(SD)*	Profile 4 Positive ATL % or *M(SD)*	χ^2 or *F*
Demographic variables					
Child gender					
Girl	38.46%	49.44%	68.75%	46.94%	7.96*
Boy	61.54%	50.56%	31.25%	53.06%	
Child age (in months)	56.06 (10.33)	57.83 (9.74)	60.28 (9.49)	59.71 (10.51)	1.84
Maternal education	4.63 (1.11)	4.79 (1.18)	4.53 (0.92)	4.98 (1.18)	1.37
Household monthly income	4.28 (1.47)	4.44 (1.45)	3.65 (1.20)	4.77 (1.51)	4.07**
Kindergarten quality level					
District model	36.92%	33.71%	9.38%	34.69%	9.10
Level 1	30.77%	33.71%	43.75%	36.74%	
Level 2	32.31%	32.58%	46.88%	28.57%	
Academic school readiness					
Basic concepts readiness	54.37 (15.88)	57.67 (13.83)	58.31 (14.24)	63.39 (11.66)	3.85*
Language and literacy	33.40 (4.76)	34.17 (4.64)	35.19 (4.08)	35.67 (3.99)	2.82*
Mathematics	13.47 (6.02)	14.40 (5.83)	16.06 (6.67)	17.16 (4.91)	4.39**

*$p < .05$.**$p < .01$.

Children from the social and persistent group had lower levels of household monthly income than the *positive ATL* group ($\Delta M = -1.12$, $p < .05$), *middle of the road* group ($\Delta M = -0.79$, $p < .01$) and the *low ATL* group ($\Delta M = -0.64$, $p < .01$). However, the profiles did not differ by age (F (3,231) = 1.84, $p > .05$).

The Relationship between ATL Profiless and Academic School Readiness

Table 4 showed that the four profile groups had differences in academic school readiness in terms of basic concept readiness (F(3,231) = 3.85, $p < .05$), early language and literacy achievement (F (3,231) = 2.82, $p < .05$) and early mathematics achievement (F(3,231) = 4.39, $p < .01$). In this section, a set of 3-step hierarchical regression analyses was conducted to further examine whether ATL profiles were related to children's basic concept readiness (SRC) and early achievement in both language and literacy and mathematics, after controlling for child gender, age, maternal education, family income and the quality level of the kindergarten. ATL profile membership is operationalized as a continuous variable.

First, the analysis was conducted to examine whether ATL profile membership was associated with children's school readiness independently after controlling for the covariates. As shown in Table 5, the three models for each step were significant ($F(2,232)_{\text{step 1}} = 99.99$, $p < .001$; $F(5,229)_{\text{step 2}} = 52.81$, $p < .001$; and $F(6,228)_{\text{step 3}} = 46.28$, $p < .01$, respectively). In the third step, child age, maternal education, and quality level of the kindergarten were significantly linked with basic concept readiness. The ATL profile membership was also significantly associated with basic concept readiness ($t = 2.62$, $p < .01$) and accounted for a significant R^2 change of 0.01 ($\Delta F(1,228) = 6.86$, $p < .01$) based on the model in the second step. Children with higher levels of ATL were more likely to have a better command of basic concepts.

Second, the three-step regression model was established to examine whether profile membership was associated with early language and literacy. As indicated in Table 5, all the regression models were significant ($F(2,232)_{\text{step 1}} = 72.90$, $p < .001$; $F(5,229)_{\text{step 2}} = 35.86$, $p < .001$; and $F(6,228)_{\text{step 3}} = 30.95$, $p < .001$, respectively). Similar to the models for the SRC, in the third step, child age, maternal education, and quality level of the kindergarten were also strongly associated with children's early language and literacy. The ATL profile membership was significantly related to early language and

Table 5. Summary of hierarchical regressions for the relationship beween ATL profiles and children's academic school readiness.

	Basic concepts readiness				Language and literacy				Mathematics			
	β	*SE*	R^2	*F*	*β*	*SE*	R^2	*F*	*β*	*SE*	R^2	*F*
Step 1			0.46	99.99***			0.38	72.90***			0.62	187.02***
Child gender	0.02	1.38			0.07	0.45			0.04	0.48		
Child age	0.68***	0.84			0.61***	0.28			0.78***	0.29		
Step 2			0.54	52.81***			0.44	35.86***			0.66	88.57***
Child gender	0.02	1.29			0.07	0.45			0.04	0.46		
Child age	0.71***	0.80			0.64***	0.28			0.80***	0.28		
Maternal education	0.18***	0.65			0.19**	0.22			0.12*	0.23		
Household monthly income	0.05	0.48			−0.05	0.17			0.02	0.17		
Quality level of kindergarten	0.11*	0.87			0.10	0.30			0.12**	0.31		
Step 3			0.55	46.28***			0.45	30.95***			0.68	79.25***
Child gender	0.01	1.28			0.07	0.45			0.03	0.46		
Child age	0.69***	0.80			0.62***	0.28			0.78***	0.28		
Maternal education	0.17**	0.64			0.18**	0.22			0.11*	0.23		
Household monthly income	0.05	0.48			−0.06	0.17			0.01	0.17		
Quality level of kindergarten	0.13*	0.86			0.11*	0.30			0.13**	0.30		
ATL profile membership	0.12**	.60			0.10*	0.21			0.13**	0.21		

$N = 235$. ATL profile membership was operationalized as a continuous variable and was entered as the independent variable in step 3. $\Delta R^2 = 0.07$ for step 2 of basic concepts readiness. $\Delta R^2 = 0.05$ for step 2 of language and literacy. $\Delta R^2 = 0.04$ for step 2 of mathematics. $\Delta R^2 = 0.01$ for step 3 of SRC. $\Delta R^2 = 0.01$ for step 3 of language and literacy. $\Delta R^2 = 0.02$ for step 3 of early mathematics achievement.

*$p < .05$.***$p < .001$.

literacy (t = 2.01, p < .05) as well and explained a significant R^2 change of 0.01 ($\Delta F(1,228)$ = 4.06, p < .05) based on the model in the second step. The higher level of ATL was associated with a higher level of early language and literacy achievement.

Finally, another three-step regression model was conducted to examine the relationship between ATL profile membership and early mathematics. Table 5 showed that the three regression models were significant ($F(2,232)_{\text{step 1}}$ = 187.02, p < .001; $F(5,229)_{\text{step 2}}$ = 88.57, p < .001; and $F(6,228)_{\text{step 3}}$ = 79.25, p < .001, respectively). Likewise, in the third step, child age, maternal education, and quality level of the kindergarten were significantly associated with children's early mathematics. Further, after controlling for these covariates, the ATL profile membership was significantly related to early mathematics (t = 3.433, p < .01) and accounted for a significant R^2 change of 0.02 ($\Delta F(1,228)$ = 11.79, p < .01) based on the model in the second step. Children with higher levels of ATL tended to achieve higher scores in early mathematics.

Discussion

The promulgation of *ELDGs* called on researchers and educators to attend to ATL development in young children in China. However, teachers have difficulties understanding ATL and implementing the corresponding practices, and parents have not been aware of the importance of ATL to child development, especially academic readiness (Yu et al., 2019; Zhao et al., 2020). Thus, this study has empirically explored Chinese preschoolers' latent profiles of ATL and the association with academic school readiness to fill the gap. The results indicated that four profiles emerged, and the profile membership was significantly associated with young children's academic school readiness, including basic concept readiness, early language and literacy achievement, and early mathematics achievement. This section will discuss these findings and their implications for early childhood education.

The 4-Profile Model of ALT for Chinese Preschoolers

Chinese preschoolers' ATL was best captured by four distinct "profiles," including the *low ATL*, the *middle of the road*, the *social and persistent*, and the *positive ATL* groups. This finding is consistent with Beisly (2020), who found five ATL profiles in a group of Head Start children. Among the five, two profiles demonstrated low levels of ATL in terms of task engagement, attention, and independence. The other three profiles included those having positive ATL in all the components, at the average level of ATL or showing a high level of social skills and initiative. It is interesting that although both studies adopted different measures and targeted different groups of children, their results indicated that American and Chinese preschoolers commonly shared at least four ATL profiles. Therefore, the two studies have similar results and have complemented the dominant variable-centered approach by illuminating the heterogeneity and different patterns of children's ATL.

Specifically, the *low ATL* group was less likely to show curiosity and initiative, easily get disturbed, had difficulties in problem-solving, and did not have good social skills. Notably, the *low ATL* group accounted for nearly 30% of the sample, indicating that their teachers rated many children as having problems in ATL. This aligns with one survey study on K3 and Grade 1 teachers in China, demonstrating that nearly 30% of teachers reported that one-fourth of the children in their classes had attention problems. In addition, nearly or over 20% of teachers thought that one-fourth of their children could not follow directions, had difficulty working in a group, or had problems with social skills (An et al., 2018).

The group labeled as the *middle of the road* was at the average level of all four components and exhibited a slightly higher level of curiosity and initiative. It is important to note that this profile characterized nearly 40% of the sample in Chinese preschoolers. The *positive ATL* group in our study presented high levels of curiosity and initiative, concentrated on and persistent in activities and tasks, was good at solving problems, had good peer relationships, and was willing to share.

Last, this study has identified the profile of *social and persistent* group, who had good social skills and attended activities and tasks but showed average performance in curiosity, interest, and problem-solving. Teachers in China highly value children's social skills, concentration, and persistence (An et al., 2018; Zhao et al., 2020). Therefore, they may emphasize these components in practices and provide children with the corresponding support, thus influencing children's ATL development. In addition, Chinese children showed heightened awareness of persistence and concentration in their learning beliefs (J. Li, 2004). Therefore, it is possible to detect this profile, which accounted for 13.62% of the total sample in this study.

It is noteworthy that girls outperformed boys in ATL. Girls in the study were more likely to be in the social and persistent group. This has also been evidenced in other studies (e.g., Buek, 2019; Hu et al., 2017; Vitiello et al., 2011). Girls tend to be quiet and obedient, show greater persistence and a higher level of attention skills, and are more capable of following teachers' instructions (Ready et al., 2005; L. Zhang & Zhou, 2018). However, boys are typically more active and like to take risks and are more likely to be rated by teachers as having lower levels of ATL (Hu et al., 2017; L. Zhang & Zhou, 2018). It is also interesting that although age was correlated with the overall ATL and two ATL factors, the ATL profiles did not differ by age. This suggests that older children were not associated with stronger ATL, and ATL profiles may remain stable during the early years (Buek, 2019; Vitiello et al., 2011).

The Association of ATL with Academic School Readiness

This study found that ATL profiles were associated with children's basic concept readiness and early language, literacy, and mathematics achievements. The finding is consistent with the existing studies (Li-Grining et al., 2010; Vitiello et al., 2011; L. Zhang & Zhou, 2018). ATL may promote early achievement in two possible ways. First, ATL may serve as keystone variables to support other aspects of school readiness, which means that the enhancement of ATL will also promote achievement in other areas (Hyson, 2008). This echoed the researchers (Beisly et al., 2020; Vitiello & Greenfield, 2017) and the *ELDGs* by the Chinese Ministry of Education (2012) that ATL is a domain-general skill. To solve the problems in the measures, the children had to adopt different approaches to learning. For instance, in the early mathematics test, they should focus their attention on the instructions of the assessors, especially the details related to figures (e.g., putting 15 blocks on the piece of paper), show persistence (e.g., counting out all the blocks), make plans before starting a task (e.g., sorting out the cards in three different ways) and so on. Children with higher levels of ATL were more likely to maintain interest and initiative, enhance motivation for learning, keep good attention, be willing to face challenges and difficulties, regulate their emotions and behaviors, be more likely to get along and cooperate with others (L. Zhang, 2019). Furthermore, these children usually had high problem-solving levels and flexibly resorted to what they had learned to deal with problems in different situations. Such domain-general positive approaches are conducive to children's early academic learning (Sung & Wickrama, 2018).

Second, ATL may also play the role of "jump-starters" of a positive developmental cycle and exhibits cumulative effects on child development and achievement (Hyson, 2008). Children with higher levels of ATL are usually viewed as positive and competent (Hyson, 2008). Consequently, these children can get more positive responses, resources, and learning opportunities from adults and peers, leading to a higher level of ATL and increased academic school readiness.

However, it should also be noted that in this study, although ALT was associated with three academic school readiness measures, the magnitude was relatively small. Chinese parents are highly involved in children's early cognitive and academic learning and largely shape children's early achievement (Rao, Sun, Zhang et al., 2014). Therefore, as this finding indicated, the impact of ATL on children's academic school readiness might not be strong enough during the early years, which is consistent with Sung and Wickrama (2018). The latter found that children's ATL in kindergarten did not predict the concurrent mathematics but predicted the growth rate of mathematics between

kindergarten and Grade 1. This finding implies that ATL's predictive power might become stronger as American children go to higher grades. However, it remains unknown whether these findings apply to Chinese primary schools children. Therefore, longitudinal studies are needed to follow these children into their primary school years.

Conclusions, Limitations, and Implications

The unique contribution of this study is that it identified the heterogeneity of ATL in a group of young children in urban China. First, four distinct profiles of ATL were detected: the low group (27.66%), the middle of the road group (37.87%), the social and persistent group (13.62%), and the positive group (20.85%). Second, regression analysis indicated that ATL profile membership was significantly associated with academic school readiness, including basic concept readiness, early language and literacy achievement, and early mathematics achievement.

However, this study has several limitations. First, it was only conducted in six public kindergartens in Shanghai, and the sample size was small. Future studies could recruit more diversified samples of children from other areas, such as those from families with low socioeconomic status, the migrant children, or the left-behind children, to further examine the developmental patterns of ATL and the influences on other child outcomes. Second, the study did not include other important control variables. For instance, children's general cognitive abilities, which contribute to academic school readiness, were not assessed. In addition, some important family demographic variables, such as parents' marital status and family types, which might affect children's ATL (Buek, 2019), were not involved. And as such, cautions should be made when interpreting the results, and future studies should include these variables. Third, the present study used cross-sectional data. It is not clear whether the patterns of ATL will change over time and whether the prediction of ATL becomes stronger in later years as children promote to higher grades. Further studies may consider exploring ATL patterns and the longitudinal association with children's academic school readiness and school attainment in Chinese children.

The findings of the study, although preliminary, have implications on both theoretical and practical fronts. Although there have been increasing studies related to children's ATL, few have paid attention to the characteristics and development of ATL (Hu et al., 2017; L. Zhang & Zhou, 2018). This study revealed the four profiles of ATL and depicted the characteristics of each profile, which helps to fill in the research gap in this area to some extent. The result will promote teachers' understanding of ATL and help them identify the different levels of ATL development in their children. This will then guide teachers to provide appropriate support for children to develop their ATL. At the same time, as boys and girls differed in ATL, teachers should consider gender differences in promoting children's ATL. Further, the high percentage of the low ATL profile group (even though the children were sampled from the most developed city in China) and the significant association of ATL profile membership with academic school readiness jointly highlight the need to promote ATL early years. Given the fact that ATL trajectories might be stable over time between kindergarten and Grade 2 (Buek, 2019), it is high time that teachers and parents attach importance to fostering the different components of ATL, such as curiosity and initiative, concentration and persistence, problem-solving, and social skills and sharing, in young children.

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Appendix

Table A1. Factor Analysis of the Teacher-rating Scale on ATL.

	Factor loading			
ATL item	1	2	3	4
Factor 1: Curiosity and initiative				
(1) Initiates activities or play.	0.82	0.49	0.29	0.34
(1) Likes to explore a new environment.	0.79	0.31	0.26	0.30
(1) Likes to try new things or activities.	0.74	0.46	0.41	0.34
(1) Likes to observe and fiddle with things.	0.71	0.26	0.37	0.46
(1) Carries out activities or play spontaneously according to his/her own ideas.	0.68	0.25	0.19	0.21
(1) Likes to ask and follow up questions.	0.67	0.53	0.19	0.17
Factor 2: Concentration and persistence				
(1) Shows patience and persists in completing a task or activity.	0.33	0.39	0.79	0.53
(1) Follows rules and does not need to be reminded repeatedly.	0.17	0.40	0.76	0.52
(1) Concentrates on tasks and activities and is not easy to be disrupted.	0.38	0.56	0.75	0.50
(1) Is able to listen attentively to others.	0.27	0.37	0.67	0.61
(1) Returns back to activities quickly after being interrupted or disturbed.	0.29	0.45	0.56	0.36
Factor 3: Problem-solving				
(1) Is able to make plans before starting the tasks or activities.	0.24	0.82	0.38	0.28
(1) Changes original activities or play if having a better idea.	0.50	0.72	0.50	0.38
(1) Deals with new problems through learnt experience.	0.53	0.71	0.52	0.38
(1) Finds out answers to questions using different resources.	0.54	0.71	0.61	0.52
(1) Chooses difficult and challenging tasks.	0.34	0.70	0.44	0.21
Factor 4: Social skills and sharing				
(1) Gets along with others.	0.31	0.26	0.63	0.83
(1) Is willing to share toys or other things with others.	0.31	0.37	0.52	0.79
(1) Takes turns when playing with peers and does not need to be reminded.	0.44	0.32	0.52	0.71

$N = 132$. KMO = 0.90. The extraction method was principal axis factoring with promax rotation. The highest factor loading for each item is in bold.