

# A Narrative Review on Studies of Non-cognitive Ability in China

Changheng Zhou

*School of Engineering, the University of Melbourne, Melbourne, Victoria 3010, Australia*

**Abstract:** *Non-cognitive ability has recently gained popularity as a hot topic in education and has appeared as a novel idea in contemporary study. Numerous studies on the definition, measurement, influencing factors, impact, and other aspects of non-cognitive talents have been conducted. With the intention of igniting additional conversation on this topic and encouraging student holistic development, this study attempts to present an overview of research on non-cognitive ability in China and outline the limits of existing studies.*

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**Correspondence to:** *Changheng Zhou, School of Engineering, the University of Melbourne, Melbourne, Victoria 3010, Australia. E-mail: [andrewzhou04@outlook.com](mailto:andrewzhou04@outlook.com)*

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**S**TUDENT competency is conventionally equated with cognitive ability, although non-cognitive aptitude is frequently undervalued. However, in a society that is always evolving, non-cognitive ability has become a vital component of student core competency. Numerous studies demonstrate that non-cognitive qualities, such as learning resilience, emotional balance, self-confidence, and educational self-expectations, have a higher impact than IQ on student academic achievement and long-term development. This study draws on the relevant CNKI literature on the influence of non-cognitive abilities on student development and analyzes the research findings of current studies to demonstrate the importance of increasing inputs for enhancing student non-cognitive abilities.

## **Non-Cognitive Ability Definitions**

The majority of scholars describe non-cognitive ability from a psychological standpoint. Non-cognitive ability, according to Sheng and Hu (2019), is a type of capacity to place oneself in the position of the other, referring to personality attributes such as cooperative, adaptive, communicative, and gregarious that cannot be fully quantified by educational standards. According to Lei (2021), non-cognitive ability is not a one-dimensional talent, but rather a composite of numerous personality traits; unlike cognitive capacity, non-cognitive ability cannot be measured by intelligence tests or academic performance, but rather by personality traits. Non-cognitive ability in psychology is typically characterized by non-intellectual qualities such as emotional intelligence or a balance of thought, emotion, and behavior.

From a sociological standpoint, Xie (2020) viewed non-cognitive ability as cultural capital, exemplified by habitual behaviors and personality traits; in educational research, it encompasses more specific elements such as learning styles, self-efficacy, peer communication skills, etc.

Nonetheless, some scholars have stated that the dichotomy of cognitive and non-cognitive ability is not a precise approach, as the majority of personality traits that are viewed as non-cognitive skills involve cognition; that is, intelligence-based cognitive and non-cognitive ability are not completely distinct. Given this, Huang (2018) suggested that non-cognitive ability is a multidimensional concept, correlated with but distinct from cognitive ability, encompassing a variety of social attitudes and behavioral habits such as leadership capacity, perseverance, self-esteem, self-control, and educational expectations, which are inextricably linked to the academic and future career success of individuals.

In addition, several nations, including China, and international organizations, encourage non-cognitive ability as one of the basic competences of teenagers and strive to define it precisely. For instance, the *Core Competence Development of Chinese Students*, promoted the cultivation of curiosity and inquiry, among other skills in basic knowledge learning, and encourages the autonomous development of self-confidence, self-love, tenacity, optimism, self-control, emotional regulation, and resistance to frus-

tration. All of these concepts are intimately associated with non-cognitive abilities (Jiang & Jiang, 2021).

## **The Measurement of Non-Cognitive Ability**

Methodologies and indices are the main topics of research in non-cognitive ability measurement. The personality test, questionnaire survey, and behavioral experiment are the most frequently utilized methodologies in the empirical research on this topic now available. The questionnaire survey is the one that is used the most commonly. The *Big Five Personality Inventory* personality qualities, as well as self-efficacy and integration into the group, are among the commonly used indexes for measuring non-cognitive abilities from practice that have been developed by an increasing number of scientists.

As per Jiang and Jiang (2021), the *Big Five Personality Inventory* had gained widespread acceptance and use among researchers in China and other nations for the measuring of non-cognitive ability as a result of its many benefits. Openness, conscientiousness, extraversion, agreeableness, and neuroticism are among the five groups of qualities that it comprises. In contrast to conformists and rigid people, those who are open to new experiences are more creative, curious, and willing to try new things. In contrast to ineffective and unreliable people with a low sense of responsibility and poor organizational skills, highly conscientious people have outstanding organization and planning skills and tend to consciously increase work efficiency; In contrast to withdrawn, aloof, unsociable, and depressed people, extroverts are typically vivacious, energetic, enthusiastic, and socially adept. People with high agreeableness tend to be amiable, gentle, modest, and compassionate, while those with low agreeableness are frequently selfish, indifferent, and mean; Individuals with high levels of neuroticism exhibit poor self-control, anger, and depression in contrast to those with low levels, who are often calm, assured, and secure (Jiang & Jiang, 2021). The *Big Five Personality Inventory* was used in studies like Huang's (2020) "*Factors Influencing Non-Cognitive Skills of Secondary Vocational Students*" and Miao's (2020) "*The Impact of Non-cognitive Skills on Job Promotion*" to evaluate and measure samples, and they came to logical conclusions.

According to Chen (2013), self-efficacy—the degree of assurance in one's own ability to carry out a particular behavior—is a crucial element of non-cognitive ability. The more self-efficacy a person has, the more confident, motivated, and determined they are to overcome obstacles and challenges. Because of this, self-efficacy is a regularly used index when assessing non-cognitive abilities. Li and Wu (2021) used the self-efficacy of the kid to determine the relationship between maternal educational level and non-cognitive abilities.

Some researchers measure non-cognitive abilities by taking into account the locus of control and self-esteem. Rotter (1966) introduced the psychological concept of locus of control, which describes how firmly people feel they have control over the events and experiences that have an impact on their lives. The locus of control in education often relates to how students interpret what led to their success or failure in the

classroom. While students with an “external locus of control” typically attribute their success or failure to outside forces they have no control over, such as luck, opportunities, or circumstances, those with an “internal locus of control” typically attribute their success or failure to the effort they put into their studies. In Liu’s (2018) study, locus of control and self-esteem were closely explored as two important aspects affecting non-cognitive abilities.

Lei (2011) asserted that one of the indexes for assessing non-cognitive ability should also be taken into account: integration into the collective, which can be reflected by more specific factors like the number of friends, engagement in group activities, and psychological intimacy. These items can be used to assess the research subject’s potential for pro-social conduct.

## **The Significance of Non-Cognitive Ability**

The social evaluation of an individual’s competence has historically focused on cognitive capacity, and occasionally the degree of competence is closely correlated with educational attainment. Despite this, there are differences in employment earnings and possibilities for advancement among people with the same levels of education, showing that non-cognitive ability is an essential component of human capital and that knowledge and skill are only one aspect of an individual’s capabilities. The current study aims to investigate the significance of non-cognitive ability in academic achievement and employment; its distinctive benefits over cognitive ability in the contemporary labor market are underlined.

### ***The Influence of Non-Cognitive Ability on Student Personal Development***

### ***The Effect of Non-Cognitive Ability on Student Academic Performance***

The majority of current empirical investigations into the connection between non-cognitive ability and student academic performance support the idea that non-cognitive ability has a favorable impact on academic results.

Li and Zhao (2017) discovered that non-cognitive skills have a significant positive impact on student academic achievement based on the baseline data of the China Education Panel Survey (CEPS) 2013-2014. The likelihood of low-achieving students receiving moderate and good grades increases by approximately 87% and 3%, respectively, for every unit of gain in non-cognitive ability.

Through his analysis of data from the Survey on Compulsory Education Development in Beijing, Li (2018) presented that parental involvement, including parent-child reading, parent-child communication, and home-school interaction, promotes the

development of student non-cognitive skills, which further improves child academic performance.

In their empirical studies, some researchers go into greater detail on the non-cognitive skill components and others go into great detail about the heterogeneous effect of non-cognitive abilities on student academic advancement. According to Liu (2018), non-cognitive abilities had an impact on student academic performance in two ways: internal locus of control and self-esteem may mediate an individual's assessment of their own capacity, which determines the amount of effort they will expend to achieve higher academic results; people with these traits typically invest more time and effort into learning. After adjusting for the sampled students' cognitive abilities, locus of control and self-esteem will have an impact on academic success through altered student learning effort. In addition, there are disparities in how gender, urban vs. rural, and family background affect non-cognitive talents. Teenage girls are more motivated by self-esteem than by locus of control. This is in contrast to boys, who are more affected by locus of control because society generally considers that men tend to dominate the labor market and women are relatively disadvantaged. Compared with urban students from economically advantaged families, rural adolescents have relatively fewer educational opportunities. As a result, self-esteem has a greater influence on them than locus of control.

In order to conduct the empirical research, Lei and Li (2021) divided non-cognitive ability into four categories: learning persistence, emotional balance, self-confidence, and educational expectations. 438 classes from 112 schools in 28 county-level regions throughout China were randomly chosen for the study. The results demonstrate that non-cognitive ability has a significant favorable impact on the academic performance of junior secondary students after controlling for the fixed effects of class, past academic achievement, cognitive ability, individual characteristics, and family factors. They also talk about how non-cognitive talents fluctuate depending on the group, pointing out that at the junior secondary level, non-cognitive skills have less of an impact on boys' academic success than they do on girls'. With the exception of emotional balance, boys' non-cognitive skills are significantly lower than girls'. Junior secondary school students from rural and low-income families have stronger learning perseverance and are more likely to develop perseverance than their peers from urban middle- and high-income families. However, there is little correlation between academic aspirations, self-confidence, and academic success for adolescents from rural low-income families.

Several studies on the influence of non-cognitive skills on students' tolerance to frustration were conducted by other scholars. In order to determine the academic standing of students in compulsory education, Qian et al. (2020) used random sampling and elaborated on the meanings of non-cognitive ability in five dimensions: extroversion, tenacity, optimism, rigorousness, and self-expectation. It has been discovered that non-cognitive skills can predict academic success for students. At the primary level, extroversion, tenacity, optimism, and rigorousness as well as self-expectation can improve students' capacity to deal with ongoing pressure in the classroom and their awareness of overcoming adversity; at the junior secondary level, extroversion, opti-

mism, rigorousness, and self-expectation can significantly predict the likelihood of student academic advancement, among which self-expectation is essential to academic success.

## *The Influence of Non-Cognitive Ability on Individuals' Employment*

In China, empirical study on the impact of non-cognitive aptitude on people's jobs and wages started in the 2010s. Based on their examination of data from the *Chinese Enterprise-Employee Survey* (CEES), Cheng and Li (2017) drew the conclusion that openness and conscientiousness on the *Big Five Personality Inventory* have a significant beneficial impact on workers' ability to earn more money. Le and Hu (2017) conducted their research using data from the 2012 and 2014 *China Family Panel Surveys* (CFPS) and the Big Five Personality Inventory. The findings demonstrate that non-cognitive abilities are essential for people to survive in the workforce and that these skills' influence on employment is unrelated to educational attainment. According to Xu's (2017) analysis of employment data from 2,000 graduates of 54 public universities in Beijing, differences in employment of college graduates were primarily caused by implicit personality traits, and non-cognitive ability was a more important factor in determining graduates' competitiveness and earnings in the labor market than family background. Therefore, non-cognitive talents can aid disadvantaged students in overcoming the disadvantages of their family origins, thereby closing the gap in their personal capabilities and career outcomes with their peers from affluent family backgrounds and enabling social mobility. Using data on national college students from the "*Higher Science Education Reform*" project of the Graduate School of Education at Peking University, Liu (2016) made an effort to analyze the effects of cognitive and non-cognitive factors (such as professional values and interpersonal communication skills) on graduates' employment outcomes. His research demonstrates that while non-cognitive talents have a significant influence on job search outcomes, cognitive ability cannot entirely explain income inequalities across graduates. Wang (2021) drew the conclusion from earlier research that job candidates with superior non-cognitive skills are better at emotional regulation, displaying a pleasant and reasonable demeanor, and effectively interacting with others in a variety of social contexts.

The heterogeneous effects of non-cognitive ability on employment outcomes among other groups have also garnered the interest of a large number of academics. According to Le and Hu (2017), agreeableness and neuroticism in the *Big Five Personality Inventory* have a stronger impact on female job seekers, but conscientiousness has a greater impact on male workers' earnings. Wang and Zhang (2019) discovered that non-cognitive ability has a greater effect on female income growth than on male income growth, which is mediated by the social capital effect, occupational screening effect, and marginal effect of schooling. Therefore, boosting female non-cognitive ability can somewhat reduce the wage difference between men and women.

Zhu and Zhang (2018) noted that although non-cognitive ability may play a positive role in increasing the monthly salaries of university graduates, its effect on junior college students is different; cognitive ability development has a greater impact on the monthly salaries of junior college graduates, while the effect of non-cognitive ability is not significant, indicating that there are job differences in the influence on incomes between cognitive and non-cognitive ability. As a result, cognitive ability has a primarily short-term effect on their earnings, whereas non-cognitive ability may influence their long-term professional development. In addition, Zhou (2015) found the more general conclusion that the effect of non-cognitive ability varies based on the complexity of different sectors and vocations. Non-cognitive abilities are of similar value in employment that is only partially or not at all tied to technology, whereas superior cognitive ability provides a substantial advantage in technology-oriented jobs.

## ***The Impact of Non-Cognitive Skills on the Labor Market***

### *Non-Cognitive Abilities and Excessive Education*

Nowadays, unemployment among highly educated individuals, depreciation of certificates, and excessive education are extremely widespread, and doctoral or master's degrees are no longer assurances of excellent employment opportunities. The proportion of people whose educational level is excessively higher than that required for specific employment demonstrates inefficient use of human resources and results in a variety of undesirable outcomes, such as lower earnings, reduced job satisfaction, deteriorating health, etc. Zhang (2021) used CFPS 2018 data to determine the relationship between non-cognitive ability and excessive education, as well as whether non-cognitive skills can mitigate the detrimental effects of excessive education. The results indicate that workers with high non-cognitive ability are less affected by the negative effects of excessive education than those with low non-cognitive ability; rigor and extraversion are advantageous for mitigating the negative effect of excessive education on income; and aggression, conscientiousness, and interpersonal communication skills can alleviate over-educated individuals' income penalties.

### *Non-Cognitive Skills and Service Industries*

Because low-skilled labor for non-programmable and interaction-based tasks cannot be easily replaced by machinery and equipment, Sheng and Hu's (2019) empirical analysis based on micro data from CFPS 2010-2016 demonstrated that the demand for labor in the low-end service sector has been increasing in recent years. This increases the boosting effect of non-cognitive skills on the incomes of low-end industry workers. Low-end service sectors in China's economy, including transportation, lodging and catering, wholesale, and retail, saw a growth of 10.2% in 2010 to 15.8% in 2016. According to the *Routine-biased Technological Change* (RBTC) theory, jobs in service sectors that

demand a high level of interaction, quick decision-making, and empathy will survive as information and automation technology gradually replaces labor in procedural and task-intensive occupations, such as office clerks, machine operators, and assembly line operators (as cited in Sheng & Hu, 2019). The growth of the low-end service industry attests to the rising demand for workers in contemporary economies who have strong non-cognitive skills.

## **Factors Influencing Non-Cognitive Ability Development**

In China, research on the factors influencing the development of non-cognitive abilities concentrates on micro-elements such as family background, family cultural capital, parenting techniques, and schooling, with few discussions on macro-level factors such as social environment. This study attempts to integrate the most often mentioned literature on CNKI into three dimensions: parenting style, family capital (including family economic position and cultural capital like parents' educational level), and school environment.

### ***Parenting Styles and Child Non-Cognitive Ability***

According to research findings, parenting and the family environment are critical to the development of non-cognitive skills in students. Parents with a high level of expertise and involvement in child development are better able to aid their children in developing their abilities. Involvement of these parents in their children's early development and their continual influence on their children's learning motivation have positive effects on the development of their children's non-cognitive skills and subsequent academic achievement.

Huang (2019) used CEPS 2014-2015 data to examine the current distribution and class differences of parenting styles, as well as their influence on the development of adolescent non-cognitive skills, and found a correlation between high-quality parent-child interaction and child non-cognitive ability development. Among numerous parenting styles, authoritative parenting is most conducive to the development of children's non-cognitive talents, whereas authoritarian parenting is detrimental.

In their empirical research, Yang and Dai (2021) explored two dimensions of parental participation: emotional and behavioral, both of which had considerable positive effects on the mental health, life satisfaction, and self-esteem of children. The troubling mental state of left-behind children (children separated from their migrant worker parents) is frequently attributable to the dearth of empathy and camaraderie resulting from parental absence. The absence of one or both parents will raise the likelihood that their children will develop depression and greatly diminish their perceptions of happiness, self-confidence, and willingness to engage in interpersonal connection.

Wu et al. (2019) analyzed the impact of working hours of native urbanites and migrant workers on the cognitive and non-cognitive ability of children using CFPS data.

Their study concluded that parental encouragement and involvement with their children can considerably enhance the cognitive and non-cognitive abilities of their children.

Huang (2020) applied the *Big Five Personality Inventory* to a random sample of secondary vocational school students in Hunan Province and conducted a questionnaire survey on the factors affecting the non-cognitive ability of secondary vocational school students. He found that at home, the second classroom of students, parents' encouragement, patience, concern, and communication with children are extremely beneficial to the development of students' non-cognitive skills. Students in secondary vocational education between the ages of 15 and 19 are in a crucial phase of life. However, the majority of their parents believe that they are merely studying for a living and disregard quality communication with them, exposing them to negative views.

### ***Family Capital and Child Non-Cognitive Ability***

Numerous studies have shown that socioeconomically privileged families may easily transmit household resources between generations. Family contexts affect a child's ability acquisition through two separate processes. First, parents use the family's advantage in financial resources to buy high-quality educational tools directly to train their children's abilities, or they provide possibilities for skill development through connecting them with internships or jobs through social connections. Second, a child's acquisition of cognitive and non-cognitive skills that are essential to their academic and future career success can be affected implicitly and over time by the family's advantage in cultural capital, including language proficiency, social skills, professional competence, and broader perspectives.

Ye and Yao (2018) found a substantial positive link between family economic and cultural capital and children's non-cognitive and cognitive abilities using CEPS data. The more educated the parents, the better the family's financial situation. Advantaged families are able to provide their children with the educational resources they require while simultaneously allowing them access to superior family cultural environments.

Fang (2018) examined the relationship between student non-cognitive ability and family background using data from the CEPS 2014 and the propensity score matching method and mediation model. She came to the conclusion that children from high-income families typically have higher non-cognitive skills, and that this relationship between family income and a child's non-cognitive ability development becomes stronger as the child gets older. Due to varying family resources, there are notable differences in non-cognitive abilities among kindergarten students. These differences tend to grow over the six years from kindergarten to fifth grade, typically by a factor of two to three.

According to Tang (2019), who examined the intergenerational mobility of thousands of Chinese families using data from the CFPS in 2014 and 2016, parents had three different ways of influencing their children's non-cognitive abilities. First, parents' incomes have a direct impact on the educational attainment of their kids because

wealthy parents are frequently more willing to invest generously in their kids' education. Second, because highly educated parents are more likely to apply scientific methods in their child's education, parental education will have an impact on the development of non-cognitive abilities in children. Third, parents will also utilize their registered address and social connections to enroll their kids in prominent schools so they can benefit from the advanced training program there and enhance their non-cognitive talents. Therefore, the majority of Chinese experts agree that family circumstances and parenting practices are essential for children's development of non-cognitive skills as well as for people's overall well-being. The development of children benefits from parents' high competence and total engagement. Class gaps in children's non-cognitive talents already exist in childhood and will progressively get worse as they get older. Additionally, the quality of the education students receive in schools has a big impact on their acquisition of non-cognitive skills; overly utilitarian instructional methods harm students' physical and mental health and inhibit their overall development.

## ***School Environments and Students' Non-Cognitive Ability***

The majority of student education occurs in schools, where teachers and peers have a significant impact on educational attainment. As important parts of a child's outside environment, high-quality educational resources, scientific teaching methods, competent teachers, and high-competence peers will all help a child develop cognitive and non-cognitive skills.

Using random class placement data from the CEPS, Gao and Zhu (2021) revealed that the impact of releasing student rankings (as an incentive mechanism) on student non-cognitive ability growth varies by academic level. Students with relatively strong academic standings can be further encouraged by this strategy. However, students with average or below-average academic standings may experience frustration, impeding their academic growth and mental health development.

Using multi-level modeling, Tao et al. (2015) analyzed the data of 12,023 students in grades 4-6 from 423 schools in 100 districts and counties across the country and discovered that a positive school psychological environment has a significant effect on the improvement of students' non-cognitive abilities. The school should provide kids with an environment that is equitable and fair. Discrimination based on test scores will degrade student self-efficacy, compromise student school identity, and produce negative school adaptation, consequently hindering the development of students' non-cognitive abilities.

Some researchers explored the influence of boarding and day schools on the mental and emotional development of students. Zhou and Xu (2021) utilized OLS regression and PSM approaches to evaluate the impacts of boarding and day education on students' non-cognitive abilities. They obtained Chinese and math exam scores from the CEPS database for 19,784 junior secondary school students in 28 districts (counties) in China. Their findings show that boarding schools have a negative impact on students'

psychological and emotional development. Although boarding school provides an environment conducive to academic and learning advancement, it is detrimental to the social and emotional development of students.

Additionally, Dong and Zhu (2020) concentrated on talking about the effect of curriculum design on the growth of students' non-cognitive abilities. They came to the conclusion that competitive sports play a crucial role in helping students develop non-cognitive skills like self-efficacy and environmental adaptability after analyzing data about respondents' daily participation in additional sports from Monday through Friday from the CEPS 2013–2014 questionnaires. Teenagers' non-cognitive abilities can be boosted by an appropriate increase in after-school sports. Zhao (2020) used semi-structured interviews with 85 urban and rural students from four junior secondary schools in a county in central China to investigate the effects of extracurricular activity engagement on the acquisition of non-cognitive skills. According to the research, participating in extracurricular activities that are focused on their interests helps kids develop their self-efficacy by increasing their self-assurance and their openness to new experiences. Additionally, through extracurricular activities, teachers who are highly knowledgeable in a particular sector can assist students in expanding their horizons and igniting their interest in potential occupations. Therefore, extracurricular activities help children gain valuable non-cognitive abilities and a deeper understanding of who they are.

## **How to Develop Non-Cognitive Skills in Students**

Chinese scholars have suggested changes to the home-school relationship, class numbers, educational quality, evaluation system, social supervision, and early childhood education in order to enhance students' non-cognitive abilities.

Since parenting styles have a substantial impact on the development of a child's non-cognitive skills, the question of how to improve parents' educational perspectives has become an urgent one. Zhang et al. (2022) recommended that through school-parent partnership programs, schools should educate parents to abandon harmful parenting styles such as authoritarian, indulgent, and neglectful approaches and to comprehend the actual situation and requirements of children. At the same time, under the guidance of teachers, parents are taught specific techniques for fostering the development of their children's non-cognitive talents. Tang (2019) noted that despite the fact that most schools plan parents' meetings and open days, they have not contributed to the improvement of parents' home education techniques; parents' meetings and other school-parent cooperation events are only formalities. Teachers, as the organizers of home-school activities, should therefore understand the parenting style of each family in advance and then customize improvement methods to meet their actual needs.

Some researchers believe that lowering class size can facilitate the development of students' non-cognitive skills. Zheng (2020) suggested that, if educational resources permit, schools should limit class sizes so that teachers may spend more time interacting with students. Additionally, he emphasized that students' interactions with teachers and peers, as well as class environments with reasonable competitiveness, have

positive effects on the promotion of students' perseverance, creative thinking, and other non-cognitive skills; and that schools should place a premium on teachers' ability in creating a healthy competitive environment and in promoting positive teacher-student interaction and inter-student communication; and that training and seminars should be provided to teachers.

Some scholars contend that enhancing students' non-cognitive skills necessitates rethinking educational objectives and revising the educational evaluation system. The current educational evaluation system concentrates solely on student knowledge rather than covers all educational objectives, such as the development of students' non-cognitive talents. After reviewing international research findings, Zhao (2021) advocated for a competency-based evaluation norm. *The Mastery Transcript Consortium* (MTC) in the United States has developed a more scientific evaluation paradigm, utilizing electronic media to evaluate student comprehensive abilities, such as self-management, interpersonal communication, evaluation of information, application of knowledge, etc.; MTC collects students' experiences and works to certify the level of their abilities; and observes students' development paths over a long period of time, including but not limited to liaising with teachers, parents, and students. In a similar vein, Li and Xin (2021) recommended that the Department of Education develop a CIPO (Context-Input-Process-Outcome) survey architecture that includes two primary components. One is the educational output survey. Standardized exams are used to measure students' cognitive ability; the other is to explore the key factors affecting students' growth, with an emphasis on the development of students' attitudes, emotions, and values. However, Zhu and Ye (2013) argued that incorporating non-cognitive skills into the educational evaluation system is a difficult task because factors such as communication capability and moral strength are complex concepts that are constrained and influenced by a variety of variables, making it nearly impossible to formulate unified standards.

Dong (2020) presented that social evaluation of students' capabilities is still based on students' test scores, i.e., the results of student cognitive ability. This is despite the fact that non-cognitive ability, hailed as essential social and emotional skills in the 21st century, has been accorded increasing importance in the new human capital theories, and its influence on individuals' social behavior even exceeds that of cognitive ability. Prior to the complete transformation of the current evaluation mechanism, the relevant educational authorities must supervise the application of non-cognitive ability instruction in schools. In addition, the media should be encouraged to examine and oversee issues connected to the education of non-cognitive skills in adolescents.

Non-cognitive skills are more malleable in childhood, according to Zhou and Xu's investigation into the best time for non-cognitive ability education in 2021. Heckman and Rozelle (2019) showed that early non-cognitive ability interventions have a greater positive impact on adult economic and social success than later interventions, and that most nations have invested more money in early childhood development programs and vulnerable community child development than they have in other areas. The majority of adult education programs (including vocational training, adult literacy instruction, and offender rehabilitation programs) produce few results, whereas early

childhood intervention programs are more equitable, more cost-effective, and have a history of producing better long-term outcomes. Therefore, it is recommended that non-cognitive ability education be incorporated into the preschool curriculum and be adjusted to the age and ability of the students.

## Conclusions

In the past, the majority of studies on student cognition in China and other nations have focused on cognitive capacity, as more reliable and precise measures have been developed to evaluate it at an earlier stage of research. Non-cognitive ability is significantly more difficult to assess than cognitive ability. Although the significance of non-cognitive skills is widely accepted, insufficient study has been conducted on the effects of each specific skill and their training techniques. Due to the complexity of data gathering, non-cognitive ability study remains inadequate. There are still restrictions on data accessibility and coverage (Jiang & Jiang, 2021).

Numerous empirical researches on non-cognitive ability schooling have been undertaken, with varying results. The following are some proposals for future research on this topic: First, investigate family-related aspects that can enhance the development of a child's non-cognitive abilities in order to create new opportunities for the growth of persons. Second, acquire high-quality data and increase the representativeness of samples for a more thorough investigation based on evidence. Third, incorporate global measuring frameworks into China's empirical research to broaden the breadth of non-cognitive skill theories.

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