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Socio-Cognitive Factors of Future Teachers' Personal Growth in the Cross-Cultural Context of Kazakhstan and China

Abstract

Introduction. The study examines socio-cognitive factors associated with the personal growth of pre-service teachers in the cross-cultural educational contexts of Kazakhstan and China. The research focuses on metacognitive regulation, emotional intelligence, empathy, and intercultural awareness as dimensions relevant to personal and professional development. **Methodology and methods.** A comparative mixed-methods design was used with 210 pre-service teachers, including 105 participants from Kazakhstan and 105 from China. Quantitative data were collected through a five-point Likert-scale questionnaire and analyzed using descriptive statistics, independent-samples t-tests, Pearson's correlation, and multiple regression. Qualitative data were obtained through semi-structured interviews with 20 participants and reflective journals and were examined using thematic analysis. **Results.** Kazakhstani participants demonstrated higher mean scores in metacognitive regulation, whereas Chinese participants demonstrated higher empathy scores. The regression analysis indicated that the examined socio-cognitive variables explained 46% of the variance in personal growth indicators in the Kazakhstani group and 44% in the Chinese group. Intercultural learning experiences were associated with adaptability, self-awareness, and professional identity development in both groups. **Scientific novelty.** The study develops an integrative conceptual model linking socio-cognitive factors with reflection, empathy, intercultural interaction, and personal growth in cross-cultural teacher education. **Practical significance.** The findings provide a basis for incorporating reflective learning, intercultural activities, and socio-emotional components into teacher education programs and international collaboration.

Keywords: socio-cognitive development, pre-service teachers, personal growth, intercultural education, empathy.

Introduction. Now with all this global change in education, training future teachers isn't stuck in one place anymore. Higher education is getting more international, so new ways of developing teachers focus on adapting socio-cognitively, handling cultures, and reflecting. The movement of students and teachers between Kazakhstan and China shows how cross-cultural settings change personal and thinking sides of teacher education. It builds flexibility in thinking and awareness socially.

The socio-cognitive approach helps explain this. Vygotsky said cognitive processes come from social interactions and culture, not just

alone (Vygotsky, 1978, as cited in Jusri et al., 2024). So for pre-service teachers, their development depends on the cultural learning environment. In places linking Kazakhstan and China, talking socially, learning together, and reflecting on culture drive intellectual growth. Seeing different teaching ways and cultures pushes flexibility, self-awareness, and empathy, which teachers need today.

Bandura's theory adds that cognition, behavior, and environment interact (Bandura, 1986, as cited in Kipchakova, 2023). Future teachers build identity not just from books but from engaging with social and cultural things.

Observing and internalizing cross-cultural experiences is key for growth. In Kazakhstan-China, philosophies differ: China has collectivist Confucian influences, Kazakhstan pushes autonomy, languages, innovation. This contrast is great for seeing socio-cognitive mechanisms across cultures; comparative data on human capital in the two countries are provided by Sarkytkan (2024).

Personal growth goes further than grades. Day and Gu (2010) associate resilience and moral purpose with teachers' personal and emotional health (see also Kuznetsov et al., 2021). Cross-cultural stuff helps rethink values, attitudes, responsibilities. For pre-service teachers, international settings build reflection, adaptability, emotional control, needed for diverse classes. So studying these factors in Kazakhstan-China context makes sense now. It shows how interaction, diversity, cognitive engagement form teachers holistically. Results could help policies for global, reflective educators in multicultural schools.

The personal growth of future teachers is increasingly understood as a multidimensional process that encompasses self-awareness, self-determination, reflective capacity, cognitive development, and professional identity formation. In this context, professional self-development represents an important mechanism through which future teachers develop the ability to evaluate their own competencies, establish professional goals, and regulate their learning trajectories. Imasheva and Toleubekova (2021) emphasize the importance of self-identification, self-esteem, self-determination, and self-government in the professional self-development of future social pedagogues, demonstrating that personal and professional development are closely interconnected. From a socio-cognitive perspective, the ways in which students perceive and process information may further influence their developmental potential. Prosekov et al. (2022) demonstrate a relationship between students' dominant cognitive styles and their creative abilities, suggesting that individual cognitive characteristics should be considered when examining students' educational and personal

development. These individual characteristics, however, develop within particular educational environments. Vashetina et al. (2022) highlight that the professional development of teachers and future teachers is influenced by multiple contextual factors and challenges, emphasizing the importance of supportive educational conditions and opportunities for continuous development.

This perspective is consistent with the systematic review conducted by Salmerón Aroca et al. (2023), which identifies continuous professional learning and the development of new competencies as important components of teachers' professional development. At the same time, contemporary higher education increasingly emphasizes student-centered approaches that encourage learners to actively identify challenges and participate in developing solutions. Ramos et al. (2024) show that a human-centered design thinking approach can support student success by placing students' needs and experiences at the center of educational improvement. Evidence that these competencies are amenable to targeted intervention is provided by Özdemir Cihan and Dilekmen (2024), who demonstrated in a mixed-methods quasi-experimental study that a training programme focused on social and emotional learning significantly increased the emotional intelligence of pre-service primary school teachers. Such approaches become particularly relevant in international and intercultural educational contexts, where students encounter new social, cultural, and academic experiences. In this regard, Zimmermann et al. (2024) found that international student mobility was associated with positive development in proactive personality, indicating that exposure to new environments and behavioural exploration may contribute to students' personal development. Taken together, these studies suggest that the personal growth of future teachers cannot be considered solely as an individual psychological process; rather, it emerges through the interaction of cognitive characteristics, reflective and self-regulatory capacities, professional development opportunities, student-centered educational practices, and intercultural experiences. This

provides a theoretical basis for examining socio-cognitive factors of future teachers' personal growth in cross-cultural educational contexts such as Kazakhstan and China.

The study aims to examine the socio-cognitive factors associated with the personal growth of pre-service teachers and to compare these factors among future teachers in Kazakhstan and China, with particular attention to metacognitive regulation, emotional intelligence, empathy, and intercultural awareness within cross-cultural educational contexts.

Materials and Methods. The study involved 210 pre-service teachers, including 105 participants from Kazakhstan and 105 participants from China. The participants were enrolled in international teacher education programs and represented different academic specializations, including English, pedagogy, and psychology. The participants were students in their third and fourth years of study. All participants had experience in an international or intercultural educational environment, including bilingual classes or student exchange activities, which was considered relevant to the objectives of the study. **Sampling Criteria.** A purposive sampling approach was used to recruit participants relevant to the research objectives. The sample was structured to provide comparable groups from Kazakhstan and China, with 105 participants from each country. Participants were selected from international teacher education programs and included students from different academic specializations and study years. Their previous exposure to bilingual, international, or intercultural educational activities was considered an important characteristic for participation in the study.

Data Collection Methods. A mixed-methods approach was used to collect quantitative and qualitative data. Quantitative data were collected using questionnaires based on the selected socio-cognitive and personal growth dimensions. The questionnaires were administered using a five-point Likert scale. Qualitative data were collected through semi-structured interviews and reflective journals. The interviews involved 20 participants, including 10 participants

from Kazakhstan and 10 from China. The interview questions focused on intercultural learning experiences, adaptation challenges, and participants' perceptions of changes in their personal and cognitive development. In addition, reflective journals completed during practicum were analyzed to identify recurring socio-cognitive themes.

Research Instruments. Three principal instruments were used in the study. The first was the Socio-Cognitive Development Questionnaire (SCDQ), adapted from the social cognitive framework and used to assess metacognitive regulation, intercultural awareness, and cognitive flexibility. The second was the Personal Growth Inventory (PGI), which assessed dimensions of personal development, including self-awareness, emotional intelligence, and reflective capacity. The third instrument was a semi-structured interview protocol, developed to explore participants' experiences of intercultural learning, adaptation, and personal and cognitive development. Reflective journals were additionally used as a qualitative data source.

Data Analysis Methods. *Quantitative data were processed using SPSS 27.0. Descriptive statistics, including means and standard deviations, were calculated for the main study variables. Independent-samples t-tests were used to compare the socio-cognitive indicators of participants from Kazakhstan and China. Metacognitive regulation was operationalized in line with Sapancı (2023), who examined metacognition in university students. Pearson's correlation coefficient was applied to examine the relationships between socio-cognitive factors and indicators of personal growth. Multiple regression analysis was conducted to determine the contribution of the selected socio-cognitive predictors to personal growth indicators.*

Qualitative data obtained from the semi-structured interviews and reflective journals were analyzed using thematic analysis based on Braun and Clarke's (2006) six-phase approach. The analysis included familiarization with the data, initial coding, development of themes, review of themes, definition and naming of themes,

and reporting. The quantitative and qualitative data were integrated at the interpretation stage. This integration made it possible to compare statistical patterns with participants' reported experiences and to provide a more comprehensive interpretation of the findings.

Reliability and Validity. The internal consistency of the quantitative instruments was assessed using Cronbach's alpha. The reported coefficients ranged from 0.81 to 0.89, indicating high internal consistency. Before the main data collection, the research instruments were piloted with 20 pre-service teachers from Kazakhstan and China. The use of questionnaires, semi-structured interviews, and reflective journals provided data triangulation and strengthened the consistency and contextual validity of the findings.

Ethical Considerations. The study adhered to international ethical research standards.

Participation was voluntary, and informed consent was obtained from all respondents. The anonymity and confidentiality of participants were maintained throughout the research process. Institutional approval was obtained from the ethics committees of the participating universities before the beginning of data collection.

Results. The data from mixed methods showed socio-cognitive factors really affect development of future teachers in both countries. Ill mix quant and qual to show similarities and differences. To assess the socio-cognitive factors and personal growth of pre-service teachers, a total of 210 respondents: Kazakhstan – 105; China – 105, were surveyed using a five-point Likert scale questionnaire. Table 1 presents the mean values and standard deviations for the main dimensions: metacognitive regulation, emotional intelligence, empathy, and intercultural awareness.

Table 1

Descriptive statistics of socio-cognitive factors among Kazakhstani and Chinese pre-service teachers

Indicators	Kazakhstan (M ± SD)	China (M ± SD)	Mean Difference	t-value	p-value
Metacognitive Regulation	4.08 ± 0.52	3.76 ± 0.47	0.32	3.87	0.000 **
Emotional Intelligence	3.92 ± 0.50	3.88 ± 0.44	0.04	0.65	0.52
Empathy	3.84 ± 0.48	4.19 ± 0.41	-0.35	-4.27	0.000 **
Intercultural Awareness	3.95 ± 0.53	3.89 ± 0.49	0.06	0.78	0.43

Note: $p < 0.01$ indicates statistical significance

Looking at the data, it seems Kazakhstani people did better on metacognitive regulation stuff. They showed more self reflection and that independent learning vibe. Chinese folks had higher empathy scores. This fits with their collectivist ideas, you know, focusing on how people connect and keep things harmonious socially. A multiple regression analysis was

conducted to determine which socio-cognitive predictors significantly influence personal growth indicators: self-reflective awareness, adaptability, and professional identity. So that part gets a bit tricky, since not everything lines up perfectly. Maybe the empathy ties into adaptability somehow (Table 2).

Table 2

Regression model of socio-cognitive predictors of personal growth

Predictor Variable	Kazakhstan (β)	China (β)	Significance (p)
Metacognitive Regulation	0.41	0.28	0.000 **
Emotional Intelligence	0.33	0.37	0.000 **

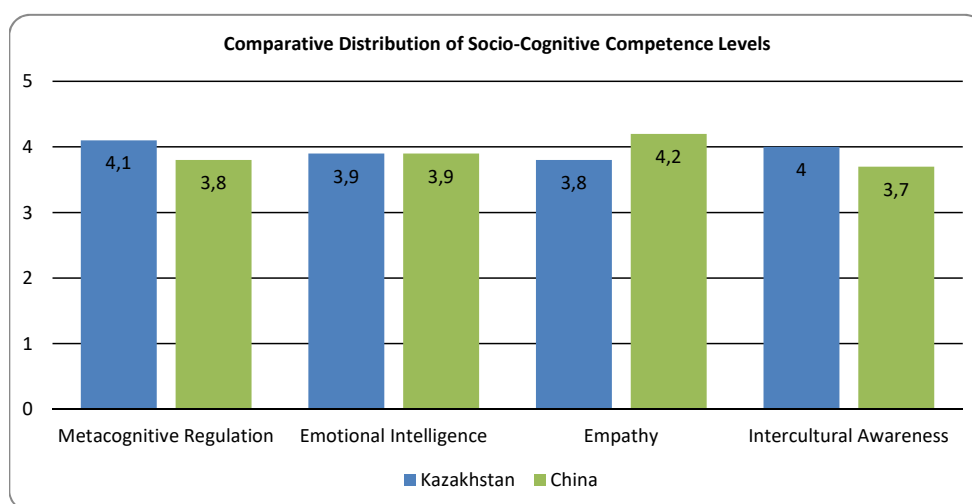
Empathy	0.25	0.43	0.001 **
Intercultural Awareness	0.29	0.31	0.004 **
R ² (Explained Variance)	0.46	0.44	—

These findings indicate that socio-cognitive variables collectively explain 46% of the variance in personal growth among Kazakhstani respondents and 44% among Chinese respondents. The most influential factors were metacognitive regulation for Kazakhstan and empathy for

China, confirming cross-cultural variations in personal development dynamics. To visualize the distribution of socio-cognitive competence levels, a comparative bar chart was generated see Fig. 1.

Figure 1

Comparative distribution of socio-cognitive competence levels among Kazakhstani and Chinese pre-service teachers



Bar chart showing mean values for four indicators: Metacognitive Regulation, Emotional Intelligence, Empathy, Intercultural Awareness - Kazakhstan vs. China.

The diagram clearly illustrates that Kazakhstani students outperform slightly in self-regulation and intercultural awareness, while Chinese respondents lead in empathy and emotional understanding. These tendencies reflect broader educational paradigms: Kazakhstani teacher education prioritizes reflective and critical thinking within modernization frameworks, whereas Chinese universities emphasize emotional literacy and relational ethics derived from Confucian traditions. The qualitative phase complemented the quantitative findings by explaining why these differences occurred. From the interviews I looked at, there were 20 people total, 10 from Kazakhstan and 10 from China, and some patterns kept coming up. In Kazakhstan, it was

this thing about reflective autonomy. Students there said that being in these multilingual and multicultural classrooms really helped them get better at planning their own learning, keeping track of it, and checking how they were doing. That makes sense with the higher scores they got on metacognitive regulation in the numbers part.

Over in China, the big one was collective empathy. The participants talked a lot about how teamwork and feeling for others was super important to who they were as professionals. They saw group learning as a way to build morals or something like that. And yeah, the stats showed empathy was the main predictor for the Chinese group. Both sides had stuff on intercultural awareness. People from each country mentioned how those joint seminars

and exchange programs built up tolerance and adaptability, plus this intercultural competence. It lined up with personal growth in the data, with a correlation of 0.61 and p less than 0.01. I think that's the part that stands out, how it

connects across. When you put the two datasets together, it points to this overall model for socio-cognitive development that's kind of universal, but still keeps the cultural differences clear. Like in Figure 2.

Figure 2

Conceptual model of socio-cognitive mechanisms of teacher growth in cross-cultural context

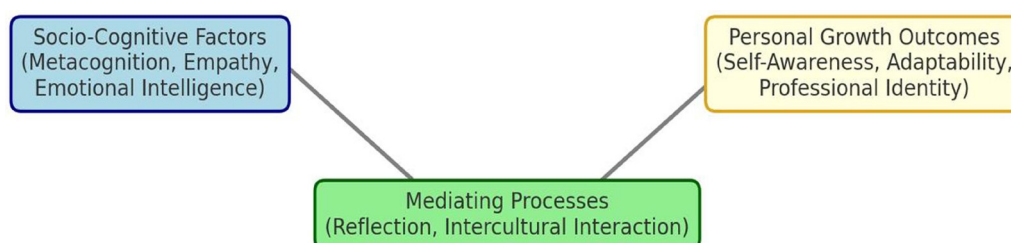


Diagram showing: Socio-Cognitive Factors → Mediating Processes (Reflection, Empathy, Intercultural Interaction) → Personal Growth Outcomes

The research here shows how things like metacognition, empathy, and emotional intelligence work in different contexts, mostly through reflection and how people interact with their culture, which helps with personal growth in the end.

Discussion. Thus, we think Kazakhstan's changes in education and China's focus on moral and group values kind of meet up in wanting teachers who are well-rounded, aware of social stuff, and able to regulate themselves for the future. The results from this study give pretty solid proof that these socio-cognitive things really shape how future teachers grow, both personally and in their jobs, especially in places where education is getting more international. By mixing numbers and stories from interviews, it points out patterns that are the same everywhere and ones that are more specific to each culture, like among pre-service teachers in Kazakhstan and China. That part stands out because it is not just one way of looking at it.

In the quantitative part, Kazakhstani people scored higher on metacognitive regulation, sort of keeping track of their own thinking, while the Chinese ones were better at empathy and focusing on relationships with others. This makes sense with how their education systems and traditions differ so much. Kazakhstan is pushing reforms to modernize and match global

standards, so they stress self-reflection, learning on your own, and thinking critically. On the other side, China's teaching is still tied to Confucian ideas that put collectivism first, with moral responsibilities, harmony in society, and being sensitive to emotions as key for professionals.

A comparable pattern is reported by Graziano et al. (2024), who found that the association between teacher empathy and perceived professional competence was moderated by emotional self-efficacy, indicating that empathy contributes to professional functioning only when it is accompanied by the capacity to regulate emotions. It ties into Bandura's social cognitive theory, where growth comes from balancing self-control, what is around you, and feedback on emotions and social stuff. The Chinese way of emphasizing empathy and moral sense feels like a unique cultural take on adapting socio-cognitively, and for Kazakhstan, it is more about reflection and directing yourself, which seems to build that inner cognitive independence. Some people might see these differences as bigger than they are, but overall, it shows how personal development adapts through these mechanisms.

The role of internationalized learning environments. The study confirms that exposure to international or intercultural learning environments acts as a catalyst for socio-

cognitive development. Both Kazakhstani and Chinese participants reported that participating in joint educational projects, bilingual programs, and student exchanges enhanced their intercultural awareness, communication competence, and adaptive learning strategies.

These experiences align with findings from recent comparative research on global teacher education, which argue that intercultural exposure enhances cognitive flexibility, empathy, and self-reflective growth. Students in both contexts described the international classroom not only as a site of knowledge exchange but as a transformative social space where they learn to reinterpret their identities and teaching roles. The regression stuff showed that those socio-cognitive things together explained around 45 percent of how personal growth happened in both the Kazakhstan and China groups. It kind of backs up the idea that metacognition, emotional intelligence, and empathy all connect to help with personal and professional stuff. But I think the way they balance out changes depending on the place.

In Kazakhstan, it seems like reflective autonomy is the main way teachers build their identity. Over in China, empathy and that sense of group awareness play a bigger role in building moral resilience and how they handle relationships. This makes me think the overall setup for growing socio-cognitively is pretty much the same everywhere, but how it shows up culturally depends on the context. So educational systems in these countries can end up with teachers who are self-regulated and responsible socially, even if they take different paths to get there. That part stands out because it is not always straightforward. For teacher education programs, the findings suggest some changes in how they are designed. Curricula need to mix in reflective parts, intercultural elements, and socio-emotional training so students get a full experience of growth. It feels like that would help a lot. Then there is international collaboration, which should not just be about swapping students but also joint mentoring, research across schools, and places for talking about cultures to keep development going long term. Both sides could pick up

tips from each other, like Kazakhstan learning Chinas way of training collective empathy, and China getting ideas from Kazakhstans student-focused reflective teaching. This gets a bit messy when you think about applying it, but it seems worth trying.

This study pushes forward our ideas about how people develop socially and cognitively, especially when you look at it through the lens of higher education across different cultures. I think its a step toward seeing things in context, like in places such as Kazakhstan and China. The main thing here is this model they came up with, the one in Figure 2, which tries to tie together cognitive stuff and emotional parts. It works through things like reflecting on experiences and interacting with other cultures. Personal growth doesnt just happen inside someones head on their own, but it comes from jumping into social and cultural setups that keep changing.

That model helps connect Western ways of thinking about cognitive growth with Eastern views on moral and emotional learning. It makes teacher training feel more complete for todays world, the 21st century kind of thing. Some parts of this might overlap a bit, but it seems to fill in gaps that were there before. When you compare the two countries, Kazakhstan and China, you see socio-cognitive skills driving personal and job-related growth everywhere, but how much they matter or show up changes with the culture. Even though their educational ideas differ, both end up aiming for teachers who reflect, show empathy, and handle intercultural stuff well. Those are key for education thats global now, I suppose. The comparison highlights that convergence, though it gets a bit messy in the details.

Conclusion. The research I looked at basically shows how socio-cognitive stuff plays a big role in helping future teachers grow personally and professionally, especially in these international and cross-cultural school settings. When they compared Kazakhstan and China, there were some common patterns but also differences based on each place. It seems like metacognitive regulation, emotional intelligence, empathy, and intercultural

awareness all connect and predict how students develop. The numbers from the analysis suggest these things explain about half of the changes in self-reflection and adapting for students. That makes sense because it ties together how socio-cognitive parts work in teacher training.

In Kazakhstan, they focus more on reflective autonomy and self-regulating thoughts, which fits with their push for modernizing education and building competencies. Over in China, its different, with more emphasis on empathy, group thinking, and moral duties, coming from that Confucian ideas and the way they learn together. Still, both sides end up building teachers who can reflect critically, handle emotions well, and understand other cultures. International learning spots really boost this socio-cognitive growth by pushing intercultural talks, more self-awareness, and ways to adapt. Things like joint projects, teaching in two languages, or exchanges help widen views and make people feel more realized in their careers. Intercultural experiences arent just background,

they change how teaching happens and speed up maturity.

The model they suggest pulls in cognitive, emotional, and social sides of teacher growth, and it could help improve programs in both countries. It shows becoming a good teacher isnt straight line, but more interactive through reflection, empathy, and talking across cultures. I think that part gets a bit messy to explain fully. The study had limits, like the sample size and how long the intercultural stuff lasted. Maybe future work could look at more areas, track people over time, see how these factors change. Also, adding digital platforms for online teaming might show new things about forming teacher identities globally. Overall, this adds to knowing how socio-cognitive development mixes culture, thinking, and education. Kazakhstan and Chinas examples show different teaching ways, in an international setup, can aim for the same thing, preparing teachers who reflect, empathize, and handle global education challenges. That stands out, but its not everything.

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