



Second Language Learning Motivation and Cooperative Learning: Does it Enhance ESL Chinese Students Critical Thinking?

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Abstract

A descriptive-correlational study examined the influence of second language (L2) learning motivation and cooperative learning on enhancing critical thinking skills among Chinese ESL students in Wenzhou and Ningbo. Using convenience and snowball sampling, a cross-sectional study obtained an overall representation of the 400 respondents' perspectives: 203 students from Sino-foreign universities and 197 from Chinese traditional institutions. A quantitative approach was used to analyze the data.

L2 learning motivation and critical thinking were found to be strongly positively correlated. Chinese ESL students who are integratively motivated, aspiring to travel, build friendships, and connect with English-speaking people demonstrate high self-regulation skills in critical thinking. They can self-consciously monitor their cognitive activities, the components involved, and the results obtained. Similarly, Chinese ESL students who are instrumentally motivated, aiming to fulfill university learning requirements and gain a competitive advantage in their career prospects through English proficiency, tend to have a highly open mindset and systematic approach. They continually seek out information relevant to problem-solving and use a collection of data that has been systematically organized.

Cooperative learning and critical thinking were found to be strongly positively correlated. Students who are good at group dynamics and possess the ability to identify which behaviors to maintain or modify conducive to goal achievement and foster effective working relationships tend to demonstrate high evaluation abilities. They utilize supportive evidence, including references, and engage in re-evaluation to draw logical conclusions. Furthermore, students who are good at recognizing individual performance and accountability in creating cooperative learning tasks and reward structures also tend to have a high disposition toward fairness and objectivity. They are willing to accept proven truths even if they hold different perspectives during their thinking process.

Keywords: *Language Learning Motivation, Cooperative Learning, Critical Thinking (CT), CT Cognitive Skills, CT Disposition*

1. Introduction

Motivation is essential in language learning. Piaget conceptualized language as a symbolic medium that reflects reality and serves as a vehicle for articulating and molding human thinking. The essence of critical thinking (CT) lies in thinking skills, and in recent times, CT has gained increasing prominence in language pedagogy [1]. Prior research found that critical thinking facilitates language learning and enhances language proficiency [2]. Chen and Hu [3] have found that a connectivism-inspired intelligent learning environment can bolster the critical thinking abilities of individuals learning a second language. Moreover, evidence supports that cooperative learning strategies can significantly sharpen students' critical thinking [4]. Additionally, cooperative learning that is well structured can create a dynamic in which students can actively engage in examining, clarifying, and elaborating their ideas, as well as collaboratively devising solutions, thereby leading to more substantial educational advancements [5]. Although the relationship between motivation, cooperative learning, and critical thinking has been established, the distinct influence of motivation and cooperative learning on Second Language Acquisition (SLA), especially within Sino-foreign educational institutions in China, remains a largely uncharted area. Consequently, this study examined the correlation among these variables in SLA at Wenzhou Kean University (WKU), a Sino-foreign educational institution, and Chinese traditional Universities in Ningbo.

1.1 Second Language (L2) Learning Motivation



Galishnikova [6] summarized the functions of L2 acquisition motivation as helping learners experience success, improving their interests and abilities, keeping learners positive about the language they are learning, and creating enjoyment. This study adopts Gardner et al.'s [7] socio-educational model of SLA, which defines motivation as a concept that can be influenced by *integrative and instrumental orientations*.

1.1.1 Integrative Motivation. The original meaning of integrative orientation is that the motivation for language acquisition comes from the *desire to integrate* into the relevant cultural community [7]. However, because of the special status of English as an international language, the desire for a specific English-speaking community is gradually replaced by the global community [8], [9]. According to Dörnyei [10], the core of integrative orientation is related to the identification on both psychological and emotional levels. This identification is not only of the community but also the *desire to learn about the culture*. Hence, learners can initiate L2 motivation by being attracted to the corresponding culture. In addition, Dörnyei and Ushioda [11] have developed the L2 Motivation Self System (L2MSS) with three aspects: learners' L2 ideal self, learners' ought-to L2 self, and L2 learning experience, which is related to the environment. Among this theory, the *ideal self* is a concept related to the term "possible selves" in social psychology. It is explained as individuals' idea of qualities they would like to possess [10].

1.1.2 Instrumental Motivation. Learners can also be motivated by extrinsic motivation, which often comes from *external requirements* or pressure. In Gardner's model, the external requirements are embodied in instrumental orientation, which is always identified as the motivation to achieve practical goals [7]. These goals can be divided into 4 levels: global level, country level, place of education level, and family level. For example, since English is the universal language, learners may learn it because of global needs. Moreover, some universities have foreign language learning requirements, which encourage learners to learn foreign languages from their place of education. Dörnyei and Ottó [12] pointed out that the stimulation one gets from the outside can have an impact on overall L2 acquisition motivation. Possible factors that are included in the *learning situation* are teacher, class activity, and cooperation with others. A teacher's personality, such as being "humorous, making jokes, kind, helpful, easygoing, and patient, makes students feel good and motivates them to converse and interact [13]. Students may try to perform well to please teachers, which is called "affiliative motive." In addition, students' attitudes toward learning a second language are closely related to the content and form of classroom activities [10].

1.2 Cooperative Learning (CL)

Cooperative learning is an instructional strategy that allows students to collaborate with a small number of peers to accomplish a collective work goal [14]. Vygotsky's Sociocultural Theory states that cognitive development occurs as a result of social interactions with peers and teachers. He believed social negotiation was essential for building knowledge and understanding concepts. Swain [15] stated that the integration of CL provides an authentic learning context for students to practice communicative competence because the setting allows them to formulate words and sentences necessary to express their thoughts accurately, coherently, and appropriately for the audience to understand.

The current study applied Johnson and Johnson's five core elements to measure productive cooperative learning, as cited in Yang [16]. *Positive interdependence* posits that group members understand their responsibilities and that everyone's efforts are essential to success [17]. Group members understand that their own development affects the group's advancement. Each member has unique learning materials and information, is accountable for different duties, and plays various roles in the group, allowing each person to contribute his or her own share of work [18]. In *promotive interaction*, group members assist and support one another, exchange information and learning resources, provide sound advice and ideas to other group members, promote the success of other group members, and work toward achieving common goals [18]. *Individual accountability* teaches each team member that their individual performance influences the performance of the collective. Group work encourages learners to take responsibility for group performance and increases their passion for conceding knowledge to other group members [19]. When individual accountability is implemented, there is a greater sense of interdependence amongst teams [20] that improves the performance of each team member. The social loafing effect will also vanish. Johnson et al. [17] described *interpersonal skills* within group dynamics that require familiarity and trust among members, accurate communication, mutual acceptance and support, and conflict management skills. This necessitates group members to have leadership, decision-making, problem-solving, and the ability to build trust and communicate. In *group processing*, the members' reflections on previous work may also



produce compensatory effects, reducing social loafing and increasing collective effectiveness. During group processing, members need to show respect for the contributions and personalities of other members, which can increase their self-esteem and the belief that they are valued, thus enhancing group members' collective identity and better accomplishing the goals of cooperative learning [18].

1.3 Critical Thinking (CT)

The Delphi Report by [21] concluded that critical thinking involves the cognitive process of actively and skillfully conceptualizing, applying, analyzing, synthesizing, and evaluating information gathered from, or generated by, observation, experience, reflection, reasoning, or communication, as a guide to belief and action. Facione considered CT to have two dimensions: operational cognitive skills and a frame of mind or a quest for thinking (disposition).

1.3.1 CT Cognitive Skills (CTCS). Paul and Elder's [22] framework for critical thinking includes **interpretative analysis**, which uses abstract ideas to interpret them effectively. This process involves carefully examining and elucidating the meanings and significances of experiences, data, or information. It emphasizes understanding and making sense of what is being analyzed, often in the context of conceptual frameworks or perspectives. Facione [21] included inference, evaluation, explanation, and self-regulation as critical thinking capabilities that emerged during the learning process, as cited in [23]. **Inference** refers to gathering the necessary information to reach a logical conclusion, including making assumptions and hypotheses, analyzing pertinent information, and drawing conclusions from data, situations, questions, and representations. **Evaluation** involves rechecking each solving step, reviewing identified information, and verifying the referential and supportive evidence. This means reviewing the credibility of questions or other representations through reports or descriptions from perceptions, experiences, situations, judgments, beliefs, or opinions and interpreting the logical power of referential correlation or other intended representations. **Explanation** is a skill that determines and shares reason immediately and logically based on the gained data. This means stating and justifying that reasoning in terms of the evidential, conceptual, methodological, criteriological, and contextual considerations upon which one's results were based and presenting one's reasoning in cogent arguments. **Self-regulation** is a skill to monitor one's cognitive activity, the elements used in solving problems, particularly the analysis and evaluation of one's inferential judgments with a view toward questioning, confirming, validating, or correcting either one's reasoning or one's results

1.3.2 CT Disposition (CTD). In Delphi's Dual Model of [21], CTD is featured in six fields: seeking the truth, opening the mind, analyzing problems, synthesizing facts, showing confidence, and aspiring to knowledge. **Confidence** is persevering in difficulties and being active in communication. **Open Mindset** is being ready to welcome different opinions, evaluate the dissent, and take the reasonable part. Synthesizing facts means being able to collect various factual evidence and then working out the differences, similarities, or rules [24]. Shin et al. [25] measured CTD in seven sub-scales: objectivity, prudence, systematicity, intellectual eagerness/curiosity, intellectual fairness, healthy skepticism, and self-confidence. "**Objectivity** is a tendency to eliminate personal biases, and prudence is the habit of seeing the complexity of issues. **Intellectual fairness** is the tendency to think with the viewpoints of others, while **healthy skepticism** is the habit of always seeking the best possible understanding of any given situation. **Systematicity** is the tendency of striving to approach problems in a systematic way."

1.4 L2 Learning Motivation & Critical Thinking

The Critical Thinking Motivational Scale (CTMS), created by [26], measured the relationship between critical thinking and motivation. The results indicated correlations between the components of motivation and critical thinking. Galishnikova [6] presented that motivation correlates with creative and critical thinking, but no direct evidence in his research can prove this assumption. In another research, Fahim and Hajimaghsoodi [27] reported a positive relationship between motivation and critical thinking of EFL students. According to Soodmand et al. [28], although both critical thinking and instrumental motivation have positive relationships with academic achievement, no significant correlation was found between instrumental motivation and critical thinking.

1.5 Cooperative Learning & Critical Thinking



Previous studies support the positive relationship between cooperative learning and critical thinking. Students who participated in cooperative learning activities demonstrated enhanced critical thinking skills compared to those in traditional, non-collaborative settings [29]. Cooperative learning methodologies create an environment that encourages active participation, collaboration, and critical analysis [30]. The cooperative learning groups provided a supportive environment where students could actively question, analyze, and evaluate information, leading to improved critical thinking abilities. Test analysis of critical thinking skills showed that group work students have better critical thinking skills than those who study in the conventional class pattern [31]. Students develop their ability to think critically, evaluate information, and make informed decisions by working in groups. This combination of cooperative learning and critical thinking ultimately enhances students' overall learning experience and prepares them for future challenges.

2. Methodology

The study used descriptive-correlational and cross-sectional research designs to investigate the relationships between L2 learning motivation, collaborative learning, and critical thinking. The study involved 400 Chinese ESL students in Wenzhou and Ningbo, with 197 (49.25%) from Chinese traditional universities and 203 (50.75%) from Sino-Foreign universities. The study used convenience and snowball sampling approaches. The 42-item self-constructed questionnaire was distributed through an online survey via Wenjuanwang.com and WeChat. Cronbach's alpha testing showed strong reliability alpha coefficients for L2 motivation, cooperative learning, and critical thinking, with 0.813, 0.848, and 0.859, respectively. The instrument used a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

3. Results and Discussion

3.1 Descriptive Analysis

Integrative motivation sub-dimensions are shown in Table 1. Participants were very motivated in their desire to integrate into the community (\bar{X} = 3.68) and L2 Ideal Self (\bar{X} = 3.57) but moderately motivated in their desire to study the culture (\bar{X} = 3.34). Similarly, in instrumental motivation, the participants were very motivated in the sub-dimensions of external requirements (\bar{X} = 3.65) and learning situations (\bar{X} = 3.51). Overall, L2 learning motivation(\bar{X} = 3.58) reported very motivated participants.

Table 1: L2 Acquisition Motivation Descriptive Analysis

Dimensions	Behavioral Indicators	Mean \bar{X}	Mean of \bar{X} s	SD	Descriptive Interpretation
Desire to integrate into the community	I want to learn English because I want to be able to converse with English speakers when I travel.	3.73	3.68	1.05	Very Motivated
	I want to learn English because I want to use it with English-speaking friends.	3.63		1.07	Very Motivated
Desire to learn the culture	I want to learn English because I am interested in the culture, history, and literature of English-speaking countries.	3.34	3.34	1.14	Moderately Motivated
L2 Ideal Self	I can imagine myself living abroad and having a discussion in English.	3.59	3.57	1.14	Very Motivated
	Whenever I think of my future career, I imagine myself using English.	3.38		1.16	Moderately Motivated
	I want to learn English because I want to be able to speak more languages than just Mandarin.	3.73		1.06	Very Motivated
External Requirements	I want to learn English because I feel English is an important language in the world.	3.26	3.65	1.12	Moderately Motivated
	I want to learn English because I think foreign language study is part of a well-rounded education	3.66		1.01	Very Motivated
	I want to learn English because I need it to fulfill the university's foreign language requirement.	3.82		0.98	Very Motivated
	I want to learn English because it may make me a more qualified job candidate.	3.88		1.02	Very Motivated
Learning Situation	I want to learn English because I have good relationships with classmates, which makes the class climate relaxing.	3.42	3.51	1.11	Moderately Motivated
	I want to learn English because the enthusiastic personality of teachers makes them easy to talk and interact with.	3.59		1.11	Very Motivated
Overall L2 Learning Motivation		3.58			Very Motivated

Legend: Extremely Motivated (4.51-5.00); Very Motivated(3.51-4.50); Moderately Motivated (2.51-3.50); Slightly Motivated



(1.51-2.50); Not Motivated (1.00-1.50).

Based on the highest means, participants are very motivated to learn English as a second language to converse with their English-speaking friends and use it when going overseas. Again, participants are very motivated to acquire English as L2 since it will give them a competitive advantage in future employment. They are also very motivated by the necessity of meeting the university's foreign language requirement.

CT Cognitive Skills (CTCS) and CT Disposition (CTD) are shown in Table 2. The CTCS of participants showed high levels of interpretative analysis (\bar{X} =3.53), inference (\bar{X} =3.64), evaluation (\bar{X} =3.63), explanation (\bar{X} =3.69), and self-regulation (\bar{X} =3.60). Likewise, the CTD of the participants showed high levels of fairness and objectivity (\bar{X} = 3.70), skepticism (\bar{X} = 3.61), systematicity (= 3.60), and open mindset (\bar{X} = 3.66). Nevertheless, only confidence (\bar{X} =3.3) is at the average level.

Table 2: CT Cognitive Skills and CT Disposition Descriptive Analysis

Dimensions	Behavioral Indicators	Mean \bar{X}	Mean of \bar{X} s	SD	Descriptive Interpretation
Interpretative Analysis	I can correlate information gained with solving concepts and strategies.	3.65	3.53	0.93	High
	I use abstract ideas to interpret the information effectively.	3.41		0.98	High
Inference	I can identify and ensure the needed elements to draw reasonable conclusions.	3.62	3.64	0.93	High
	I consider relevant information to deduce the consequences flowing from evidence, judgments, beliefs, opinions, or other forms of representation.	3.66		0.94	High
Evaluation	I verify the referential and supportive evidence.	3.70	3.63	0.97	High
	I re-check each solving step and re-reviewing identified information.	3.57		1.03	High
Explanation	I draw conclusions based on logical reasons, supported by attaching evidence.	3.77	3.69	0.96	High
	I present well-reasoned explanations for the statement, descriptions, questions, or other forms of representation.	3.62		0.96	High
Self-Regulation	I can self-consciously monitor my cognitive activities, the elements used in those activities, and the results produced.	3.58	3.60	0.96	High
	I can apply solutions and use gained strategies to solve problems.	3.63		0.96	High
Overall CT Cognitive Skills			3.62	0.75	High
Confidence	I think I can get through any complicated problem.	3.20	3.30	1.03	Average
	I persevere in handling difficult situations and challenges.	3.41		0.97	Average
Open Mindset	I am trying to understand how the unknown thing works.	3.62	3.66	0.97	High
	I continually look for pieces of information related to solving a problem.	3.69		0.93	High
Fairness & Objectivity	I evaluate either my opinion or others' opinions fairly.	3.66	3.70	0.96	High
	I willingly accept the proven truth, though having a different opinion.	3.74		0.98	High
Skepticism	When I see the world, I see it with a questioning mind.	3.56	3.61	1.01	High
	Although something is already set firmly, I have questions about it.	3.65		1.00	High
Systematicity	When I solve or judge a problem, I utilize a collection of data by organizing it systematically.	3.57	3.60	0.93	High
	I am able to collect various factual evidence and then work out the differences, similarities or rules.	3.64		0.91	High
Overall CT Disposition			3.57	0.71	High
Overall Critical Thinking Skills			3.60	0.69	High

Legend: Very High (4.51-5.00); High (3.51-4.50); Average (2.51-3.50); Low (1.51-2.50); Very Low(1.00-1.50)

Participants have high cognitive skills. They make conclusions based on verifiable references and logical reasoning supported by the evidence attached. They also analyze relevant information to deduce the consequences arising from judgments, beliefs, opinions, or other forms of representation. Although the participants' CT disposition is highly characterized by their willingness to accept the proven truth despite having differing viewpoints, they persist in questioning established facts and actively seek additional information to aid in problem-solving

Table 3 illustrates the participants' cooperative learning skills. Positive interdependence ($\bar{X}=4.0$) and individual group accountability ($\bar{X}=3.9$) ranked higher than the promotive interaction ($\bar{X}=3.8$) and group processing ($\bar{X}=3.8$). Interpersonal skills ($\bar{X}=3.7$) ranked the lowest.

Table 3. Collaborative Learning Descriptive Analysis

Dimensions	Behavioral Indicators	Mean \bar{X}	Mean of \bar{X} s	SD	Descriptive Interpretation
Positive Interdependence	In working cooperatively, I think the contribution of each group member is important.	4.20	4.0	1.01	Good
	In working cooperatively, I share resources and information to complete the tasks.	3.79			
Individual Group Accountability	When working cooperatively, I strive to participate in the group's activities.	3.94	3.9	0.965	Good
	In working cooperatively, individual responsibility and accountability can be identified when designing cooperative learning tasks and reward structures.	3.91			
Promotive Interaction	In cooperative activities, I can relate with other members and interact during the tasks.	3.88	3.8	0.971	Good
	In working cooperatively, I work face-to-face with my groupmates.	3.79			
Interpersonal Skills	In working cooperatively, I work on discussing, debating, and listening to others.	4.00	3.7	0.960	Good
	Working cooperatively, I can manage disagreements and conflicts between group members.	3.47			
Group Processing	In working cooperatively, members talk to each other to make sure that everyone in the group knows what is being done.	3.75	3.8	0.996	Good
	In working cooperatively, members make decisions about what behaviors to continue or change to achieving their goals and maintaining effective working relationships.	3.90			
Overall Cooperative Learning Skills		3.86		0.772	Good

Legend: Very good (4.51-5.00); Good (3.51-4.50); Fair (2.51-3.50); Poor (1.51-2.50); Very Poor(1.00-1.50).

Cooperative learning participants value each other's contributions, endeavor to participate in discussions and debates, and listen to others' shared information. They decide which behaviors to modify or continue to achieve their goals and maintain effective working relationships.

3.2 Correlation Analysis

L2 learning motivation and critical thinking have a significantly strong positive correlation ($r = .69$). In *integrative motivation*, the participant's desire to integrate into the community and L2 ideal self have a moderate positive correlation with CTCS self-regulation ($r = .58$) and CTD systematicity ($r = .59$). Overall, integrative motivation and critical thinking ($r = .64$) has a strong positive relationship. When students are motivated to travel in order to make friends, converse with English speakers, speak languages other than Mandarin, and participate in English discussions while living abroad, they tend to be self-conscious about their cognitive activities and the elements used in problem-solving, particularly in analyzing and evaluating their reasoning and the results obtained. In addition, when addressing or judging problems, they typically gather varied factual information and organize the obtained facts systematically by working out to identify differences and similarities.

Table 4. Relationship between 2L Learning Motivation and Critical Thinking

	Critical Thinking Cognitive Skills (CTCS)						Critical Thinking Dispositions (CTD)						Critical Thinking
	Interpretive Analysis	Inference	Evaluation	Explanation	Self-Regulation	Overall CTCS	Confidence	Open Mindset	Fairness & Objectivity	Skepticism	Systematicity	Overall CTD	
Desire to integrate into the community	.47**	.46**	.42**	.49**	.51**	.54**	.48**	.51**	.50**	0.47**	.54**	.60**	.66**
Desire to learn the culture	.38**	.37**	.32**	.39**	.45**	.45**	.51**	.42**	.34**	.38**	.44**	.51**	.50**
L2 Ideal Self	.46**	.50**	.45**	.48**	.53**	.55**	.49**	.53**	.53**	.49**	.56**	.63**	.62**
Integrative Motivation	.50**	.51**	.46**	.52**	.58**	.59**	.58**	.56**	.53**	.52**	.59**	.67**	.64**
External	.45**	.51**	.50**	.50**	.54**	.57**	.46**	.52**	.56**	.47**	.57**	.62**	.63**



Requirements													
Learning Situation	.45**	.41**	.36**	.40**	.47**	.48**	.48**	.46**	.42**	.45**	.54**	.57**	.55**
Instrumental Motivation	.49**	.50**	.46**	.49**	.55**	.57**	.52**	.53**	.53**	.51**	.61**	.65**	.65**
L2 Learning Motivation	.53**	.55**	.51**	.54**	.60**	.62**	.57**	.59**	.58**	.55**	.64**	.71**	.69**

**Correlation is significant at the 0.01 level

Equally important are the findings in *instrumental motivation*, particularly in the external environment. It indicated a significantly moderate positive relationship between the external environment and CTCS self-regulation ($r = .55$) but a strong positive relationship between the external environment and CTD systematicity ($r = .61$). Overall, instrumental motivation and critical thinking ($r = .65$) has a strong positive relationship. This further suggests that having a competitive advantage in work opportunities, meeting course college requirements, and acquiring other languages for a well-rounded education are strong indicators for enhancing CTCS and CTD. However, the correlation between integrative motivation, specifically the desire to learn the culture, ranked low in CTCS evaluation ($r = .32$), inference ($r = .34$), and interpretative analysis ($r = .38$). Similarly, a low correlation between integrative motivation and CTD fairness and objectivity ($r = .34$) and skepticism ($r = .38$). This suggests that learning the culture, history, and literature of English-speaking countries are weak indicators in enhancing CT skills.

3.2 Relationship between Cooperative Learning and Critical Thinking

Overall, cooperative learning and critical thinking have a significantly strong positive correlation ($r = .72$). In particular, group processing has the highest correlation with CTCS evaluation and explanation ($r = .57$). Overall, cooperative learning and CTCS ($r = .64$) has a strong positive relationship. The relationship indicates that in group processing, students who decide which behaviors to continue or change to achieve their goals better and maintain effective working relationships are more likely to use referential and supportive pieces of evidence and re-check and review identified information. As a result, they draw conclusions based on logical reasoning supported by the evidence attached. Furthermore, individual and group accountability had the highest correlation with CTD fairness and objectivity ($r = .61$). Overall, cooperative learning and CTD ($r = .71$) have a strong positive correlation. The relationship implies that students who identified individual responsibility and accountability when designing cooperative learning tasks and reward structures are more inclined to willingly accept the proven truth, even if they had a different perspective during the thinking process.

Table 5. Relationship Between Cooperative Learning and Critical Thinking

Cooperative Learning	Cognitive Skills						Dispositions						Overall Critical Thinking
	Interpretative Analysis	Inference	Evaluation	Explanation	Self-Regulation	Overall CTCS	Confidence	Open Mindset	Fairness & Objectivity	Skepticism	Systematicity	Overall CTD	
Positive interdependence	.38**	.48**	.53**	.50**	.43**	.53**	.33**	.54**	.60**	.46**	.53**	.59*	.59**
Individual and Group Accountability	.44**	.54**	.53**	.56**	.53**	.60**	.41**	.57**	.61**	.54**	.57**	.65**	.66**
Promotive interaction	.42**	.49**	.50**	.52**	.49**	.55**	.40**	.49**	.57**	.48**	.55**	.60**	.61**
Interpersonal skills	.42**	.49**	.52**	.50**	.52**	.56**	.45**	.52**	.56**	.52**	.59**	.63**	.63**
Group processing	.46**	.49**	.57**	.57**	.55**	.60**	.42**	.51**	.59**	.53**	.60**	.64**	.66**
Cooperative learning	.48**	.57**	.60**	.60**	.57**	.64**	.45**	.60**	.66**	.57**	.65**	.71**	.72**

**Correlation is significant at the 0.01 level

On the contrary, there is a weak correlation between positive interdependence and CTCS interpretative analysis ($r = .38$) and CTD confidence ($r = .33$). Despite the students' perseverance and belief that they can handle complex situations and problems, the relationship implies that students are weak with abstract notions and correlating information from shared resources and information.



4. Conclusion and Recommendations

In conclusion, Chinese ESL learners demonstrate strong motivation in acquiring English as a second language, exhibit high levels of critical thinking, and display good cooperative learning skills. The correlation analysis suggests that the desire to integrate into the community, external requirements, and the L2 Ideal self are strong motivators in fostering self-regulation in critical thinking and systematic approaches to learning. In cooperative learning settings, good group dynamics and individual responsibility serve as strong predictors to enhance critical thinking through evaluation, explanation and promoting fairness and objectivity in decision-making.

Given the established strong correlation, it is recommended to implement the following strategies to enhance critical thinking among Chinese ESL learners: A. Foster curiosity in learning about diverse cultures to promote information exchange and resource sharing. B. Maintain a relaxing classroom environment to foster positive interactions between students and instructors. C. Promote proactive communication with instructors by exhibiting enthusiasm and approachability. D. Cultivate a friendly and nurturing classroom environment to appreciate the contributions of each team member. E. Encourage resource and information sharing among students for collaborative task completion. F. Develop interpersonal skills, including conflict resolution and managing disagreements, to enrich learner's abilities. G. Facilitate active participation in discussions and debates and emphasize attentive listening and engagement with others.

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