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Understanding critical thinking in Chinese sociocultural contexts: a case study in a Chinese college

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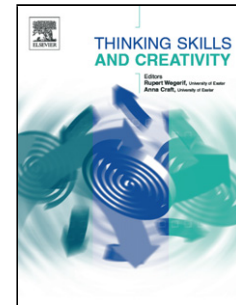
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Abstract

The presented research examines Chinese students' conceptualization of critical thinking through a qualitative study interviewing 46 Chinese college students. This study finds that Chinese students tend to conceptualize critical thinking as a multi-faceted concept. *Cognitive thinking skills, intellectual autonomy,* and *the omnipresence of positive and negative aspects* are commonly mentioned in the students' definitions of critical thinking (among other concepts). The study finds that there are unique qualities in Chinese students' conceptualizations of critical thinking that need to be understood in Chinese sociocultural contexts. This project proposes ways to understand and study Chinese students not previously considered in critical thinking literature.

When an English-speaking professor asks a Chinese student to think *criticall*y, does the Chinese student understand what he or she is required to do?

The term *critical thinking* is one of several "fuzzy" constructs in education frequently used by researchers and practitioners, yet the definition is vague to the point of being regarded as problematic or even unnecessary by some researchers (Atkinson, 1997; Kumaravadivelu, 2003; Vandermensbrugghe, 2004). To make the issue even more complex, critical thinking has been applied to classrooms and studies in other languages and cultures (Davidson, 1995; Shao, 2013;

Zhang & Lambert, 2008). With the increasing number of Chinese students studying abroad in Western universities, there are a growing number of anecdotal accounts of some Western professors complaining about a lack of critical thinking among Chinese students (Clark, 2006; Heng, 2016; Paton, 2005). Some professors and educators question if critical thinking can be applied to a Chinese educational culture which values rote-learning and respects authority and harmony (Li, Rao & Tsea, 2012; Ryan, J., & Slethaug, 2006; Turner, 2006). Some scholars, however, found that Chinese students are not alien to the critical thinking concept and can demonstrate critical thinking when teaching is effectively conducted (Dong, Anderson, Kim, and Li, 2008; Durkin, 2008; Yang, 2015).

At the same time, in several documents and public speeches released by the Chinese government Chinese educators announced that it is highly important to innovate Chinese education to increase the focus on critical thinking (Dong, 2015; Ministry of Education of P.R.C., 2001). Educational researchers are experimenting with various methods that could potentially improve Chinese students' critical thinking (Chan, 2011; Yang, 2015). Thus, projects contextualizing critical thinking in Chinese educational contexts are greatly in demand.

This paper brings literature on the critical thinking concept into conversation with literature on Chinese learner's sociocultural contexts through consideration of these three research questions:
1. Can Chinese students (who have no experience studying in Western universities) provide a definition of *critical thinking*?
2. How do Chinese college students conceptualize *critical thinking* in their academic context?
3. How is such conceptualization affected by their sociocultural backgrounds?

I draw from interviews with 46 Chinese college students to answer these questions. This paper suggests that Chinese students have unique and varied conceptualizations of critical thinking based on their sociocultural contexts. This study raises questions around the practice of regarding critical thinking as a predetermined and universal concept which can be applied in all contexts.

The construction of critical thinking in Western literature

The ways in which critical thinking is defined and constructed in current literature are virtually endless (Atkinson, 1997). Educators, philosophers, psychologists, and many others have proffered varied definitions of critical thinking. At the same time, some scholars regard the construction of critical thinking as dictated by Western philosophical tradition which could be viewed as inherently biased against Eastern cultures. In this section, I review some widely-cited definitions of critical thinking and analyze how current definitions cannot be applied to educational practices which attempt to improve or evaluate students' critical thinking in non-Western backgrounds.

Frequently, critical thinking is defined as a set of cognitive thinking skills including: self-directed reasoning, reflection, and making decisions about what to believe (Ennis, 1996); analyzing and evaluating thinking with a view to improve it (Paul & Elder, 2009); and problem finding as well as problem solving (Wineburg, 1998). Bloom's Taxonomy (Bloom, 1956) includes a hierarchical scale of skills – knowledge, comprehension, application, analysis, synthesis, and evaluation – which has been recognized as connected to critical thinking (Johnston et al., 2011). Some more recent conceptualizations of critical thinking are illustrated in Dwyer et al. (2014) which defines critical thinking as a metacognitive process that may purposefully increase the

chances of producing a logical conclusion to an argument or solution to a problem. In Dwyer et al.'s framework, aside from the analytical skills and inference skills generally mentioned when defining critical thinking, memory, metacognition, and reflective judgment were also essential to the critical thinking concept.

Other scholars have pointed out that some skills in Bloom's Taxonomy, for instance, *analysis* and *problem-solving*, are vague and can include a number of different skills (Wegerif, Li & Kaufman, 2015). Furthermore, what constitutes problem-solving skills is not universal for all people in all cultures. Cultural psychology has demonstrated that in various tasks, Asians apply problem-solving skills differently than Western participants (Ji, Peng & Nisbett, 2000; Miyamoto & Wilken, 2013). To give one example, Ji, Peng and Nisbett (2000) found that East Asians are more likely to incorporate contexts in problem-solving while European-Americans are more likely to focus on the problem alone, ignoring contexts, when completing a Framed-Line Task (FLT). Cultural psychology studies remind critical thinking scholars that Asian cultures may demonstrate or value problem-solving skills and higher-order thinking skills differently from Western cultures.

Atkinson (1997), Thayer-Bacon (2010), and Johnston et al. (2011) critiqued a universal evaluative standard that encourages students to be adventurous and ask questions. Confucian teaching, for instance, believed good students to be self-reflective rather than simply inquisitive. Here is a quote from *The Analects of Confucius*: "The Master said, I have talked with Hui for a whole day, and he has not made any objection to anything I said—as if he were stupid. When he retired, and I have examined him in private, and found him able to elucidate. Hui! -- He is not stupid."(Analects, 2:9) (子曰: "吾与回言终日，不达，如愚。退而省其私，亦足以发。回也不愚。") According to Confucius, the exemplary student does not challenge the teacher with words. Instead, the student should reflect on himself and practice the learned philosophy with action. Pondering the problems quietly is valued more highly than asking the teacher many questions in Confucian cultures.

Atkinson (1997) proposed critical thinking is a social practice. Wider sociocultural contexts, for instance, demonstrate that what is regarded as "good thinking" in a society influences how that culture defines critical thinking. Specifically, three cultural presumptions underlie the Western concepts of critical thinking: Notions of the Individual, Self-Expression, and Using Language to Learn. Based on these three assumptions, Atkinson further proposed that the Western definitions of critical thinking may not be compatible to other cultures.

In more recent studies of the critical thinking concept, scholars are growingly aware that critical thinking is multi-faceted and multi-dimensional. For instance, Ku (2009) wrote that multiple assessments (multiple-choice response format and open ended format) need to be used to assess students' critical thinking. Moore (2013) explored the definitions of critical thinking among 13 university professors and found at least seven different definitions of critical thinking. Howe (2004) compared different definitions of critical thinking from Canadian and Japanese teachers and found that more Japanese teachers defined critical thinking as intellectual engagement than Canadian teachers.

In sum, in agreement with Atkinson's approach, I argue that critical thinking tends to be embedded in the Western ideals of thinking and learning as well as the minds of the practitioners. Thus, it is highly important to examine the definitions of critical thinking espoused by students and teachers, as Moore (2013) and Howe (2004) demonstrated. Examination of how Chinese students define critical thinking may provide significant insights for critical thinking researchers and educators of Chinese students around the globe.

Critical thinking concept in Chinese educational literature

Critical thinking in the Chinese language is a translated phrase about which Chinese scholars have yet to reach an agreement. Interestingly, through the scholars' struggle some underlying cultural assumptions can be observed. The first translation of the word "critique" in Chinese is believed to derive from Renyuan Hu's translation of the English version of Kant's essay *Critique of Pure Reason* in 1935. The Chinese word for *critical* – 批判 (Pi Pan) – is similar to the word *criticize* which has the negative connotation of finding fault in something (Wu, 2011). As a result, Chinese scholars worried that translating *critical thinking* as 批判性思维 (Pi Pan Xing Si Wei) may create unnecessary objections from parents, students, and education officials when this concept was promoted in China. Thus they recommended that instead of *critical* (批判, Pi Pan), the Chinese translation of critical thinking should place more emphasis on the process of logical thinking and making decisions (Wu, 2011). This brief history of translation reveals that Chinese scholars and researchers are concerned that the Western concept of critical thinking might not be easily accepted in Chinese contexts due to a variety of social, cultural, and historical reasons.

There is also disagreement whether and how the critical thinking concept is compatible with Chinese traditional cultures, specifically Confucian culture. Kim (2003) suggests that traditional Chinese culture entails reflexivity, which is essential to critical thinking concepts. Nevertheless, a more commonly accepted judgment on the nature of Confucian teaching is from Graham (1989): Confucius valued learning but not thinking. Or as Kim restated, Confucius was more interested in *how* people *should* conduct their personal, social, and political life than the *decision making process* of what kind of life to live. Confucius did not believe that one can reach the truth through individual thinking. Unlike some Western definitions of critical thinking that emphasize the students' ability to make judgments (Ennis, 1996), critical thinking in Confucian contexts seems to emphasize self-reflexivity, but not judgment of what kind of life to live.

Chinese literature on the critical thinking concept demonstrates that considering Chinese contexts when defining critical thinking is important as this concept is foreign, borrowed, and might be incompatible with Chinese students' sociocultural contexts. Thus, it is highly important to understand how Chinese students perceive this topic through empirical studies.

Sociocultural theories of thinking and learning

In sociocultural theories of thinking, individual efforts and sociocultural institutions and practices are constituted by and of each other (Rogoff, 2003). Learning is affected by the interactive, institutional, social, cultural, and historical contexts of the learning activity (Lave & Wenger, 1991). According to Rogoff (2003), a child's development is affected by the norms, regulations, and lifestyles of the sociocultural environment in which the child lives. For instance, the concept of freedom is different in East and West in terms of childrearing. While for Caucasian Americans, freedom of self-expression is valued, for Chinese immigrants in the U.S., the ability to become self-sustaining and to make contributions to family and society is more important (p. 194). Sociocultural scholars also examined school cultures and minority students' home cultures in the U.S. Minority students who were once regarded as incapable of effective learning were the victims of cultural mismatch between school and home cultures (Caffarella & Merriam, 2000). Thus, from a sociocultural approach, to understand Chinese students' critical thinking it is important to examine how students' social, cultural, and educational settings shape their understanding and conceptualization of critical thinking.

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Methods

Participants

This project features interview data collected at a Chinese college campus during the 2012 spring semester. The research setting was a university in Guangzhou, a Southern metropolitan city. The participants of the study were from a variety of majors including Business, Literature, Education, and Engineering. Among the 46 student participants, 22 students were freshmen, 18 students were sophomore, 6 students were juniors; 33 were females, 13 were males. All of the participants were in their early twenties and came from middle to upper middle class families in cosmopolitan or suburban areas. All of the students were of Han ethnicity (the majority ethnicity in the People's Republic of China). None of the students had studied abroad. The examination score required to enter this college is above the first-tier college entrance standard (一本线), meaning that student motivation and the standard of learning in this university is above average in the nation. This is a large and comprehensive university. Most of the courses conducted in the university follow and meet national standards. In the English language courses I observed in the university, the faculty used government approved textbooks and urged students to prepare for the College English Test Band Four (CET-4). During the time this study was conducted in the university, no specific courses about critical thinking or other thinking skills were offered. However, most students were able to mention a few faculty members who used innovative methods to teach based on the faculty's personal interests in teaching.

As this is an exploratory case study, the participants were volunteers. Five faculty members and approximately 200 students in the freshman, sophomore, and junior classes in the university were contacted for the purpose of participant recruiting. Among the 200 students, 46 students volunteered. The variety in gender and fields of study of participants allowed me to examine a range of opinions that might exist among Chinese college students. Studies demonstrate that understanding of critical thinking may be varied among different majors (Johnston et al., 2011). Therefore, it is important that students of four different areas of studies were presented. With that said, since all 46 students are from one college and are volunteers, their answers may not represent all college students around China. This is a case study that proposes interesting perspectives rather than providing generalized claims about how all Chinese college students think.

Interviews

All interviews were conducted in the Chinese language and recorded, then translated and transcribed. The interviews were semi-structured. The interview protocol is attached as Appendix 1.

Prior to the interviews, I spent several weeks auditing classes, eating, and talking with students in dining halls to familiarize myself with the students. All interviews were conducted in classrooms and student dorm rooms to ensure that the students were comfortable talking with me.

In the interviews, students were invited to discuss their perception of critical thinking. I used both English, *critical thinking*, and Chinese, 批判性思维 (Pi Pan Xing Si Wei), when I first mentioned the concept in every interview. In my first one or two interviews where I explicitly used the word *define* (定义), the students assumed I was asking for a formal definition of *critical thinking* and replied that they did not know how to define it. When I switched to more informal

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wording and asked "What do you guess critical thinking means?" or "What do you suppose critical thinking means?" students appeared to be more open to sharing their personal opinions on critical thinking.

After the Chinese students offered their definitions of critical thinking, I asked them to offer an example of critical thinking in their life and in their study. I also asked the students' opinions on how critical thinking influenced their educational experiences and might influence their future careers. While the students' definitions of critical thinking usually consisted of a few concise words and phrases, the specific descriptions provided by the Chinese students offered further reference to interpret their definitions of critical thinking.

Analysis

In this study the purpose of the data analysis is to explore and identify patterns of conceptualizing and discussing critical thinking among Chinese college students. I adopted a multi-step open-coding strategy to identify potential patterns in the data. In the initial analysis process, I used open-coding strategy and developed in-vivo codes that summarize student definitions (Strauss, 1987). Examples of in-vivo codes include: *logical thinking, problem-solving, my ideas are unique, I have my own judgment*. In the second round of analysis, using the constant comparative method (Strauss, 1987), I categorized coding into a few different categories and ensured that I captured all the possible concepts of critical thinking discussed by the interviewed Chinese students. Then I read the coded excerpts selectively to develop themes about Chinese social and cultural backgrounds which characterize the interview data. The themes, examples of in-vivo codes, and examples of interview excerpts are presented in Appendix 3.

To ensure that my interpretations of the data were valid, I communicated with participants and confirmed my interpretations through email. Member checking is an important technique for establishing credibility in qualitative research (Lincoln & Guba, 1985; Hammersley & Atkinson, 1995; Cho & Trent, 2006). In this study, each participant was contacted at least twice during the analysis. The first time, I contacted my participants to check the categories I assigned for their definitions. The second time, I contacted them to discuss my analysis of the way in which their reflections about critical thinking are influenced by Chinese social, cultural, historical, and educational contexts. While students agreed with most of my interpretations, their disagreements concerning some of the interpretations are discussed in the Results section.

In addition, two teachers were interviewed to triangulate the data analysis (Creswell & Clarks, 2007). Both Chinese teachers had more than five years of college teaching experience and received graduate degrees in foreign studies and intercultural communication. These two interviews were conducted after the student interviews were coded. In these two interviews, I presented the teachers with Table II and asked if they agreed with my interpretations of the students' definitions. This project used teacher interviews to triangulate the interpretations of students' interviews since the teachers were familiar with the participants as well as the Chinese cultural contexts. This dialogic method of conducting intercultural research is adopted from Tobin, Hsueh & Karasawa (2008) who recorded pre-school scenarios in three cultures and invited local teachers to comment on each scenario as well as other people's comments.

I was aware that I enjoyed some privileges as a Chinese graduate student in a U.S. university during the time I was conducting the interviews. My status was respected by the students. However, there are problems being intimate with the participants. The fact that I was interested in the topic of critical thinking could have increased their interest and drawn their attention to the topic. My

personal knowledge about Chinese education and Confucian culture might assist my interpretation of the students' experiences because I had an insider point of view. At the same time, such knowledge could delude my interpretation of the participants' experiences and interfere with interpretation of the data. The limitations and implications of my analysis are discussed in the conclusion section.

Results

The Chinese college students' abilities to define critical thinking

The majority of the students in this project did not have difficulty providing definitions of critical thinking and were able to provide examples from their own experiences to illustrate critical thinking. However, in two interviews, students explicitly told me that they were not familiar with the critical thinking concept and refused to offer any definitions of critical thinking. Both of the students were freshmen and believed they had never heard about the critical thinking concept in their previous educational experiences. In both interviews, I asked the students why they would volunteer if they had no idea what the critical thinking concept meant. The students expressed that they were interested to learn the concept of critical thinking and would like me to define the concept for them. I offered a few definitions of critical thinking such as higher-order thinking, intellectual autonomy, argumentation, etc. Both students understood the explanations and were able to give examples of such based on their own understanding. However, they refused to tell me which definitions most aligned with their conceptions of critical thinking. One Chinese student provided a definition but could not provide any supporting examples. After I repeatedly prompted her to try, she said she wasn't sure about the definition and would rather that I provided a definition and an example for her. The students' abilities to provide a definition of critical thinking is listed in Table I.

The Chinese students' ability to define critical thinking demonstrates that critical thinking is not alien to Chinese college students. Although two students could not define critical thinking, they did understand the concepts related to critical thinking. Note again that all the participants were volunteers and the percentage provided in this study might not represent the ability to define critical thinking by all Chinese college students.

The multiplicity of students' definitions

In the interviews, most students mentioned several different themes. For instance, a student said in her interview, "First of all, I have my own judgment, and also, I have a reason to support my own judgment." According to my analysis, two themes – cognitive thinking skills and intellectual autonomy – were mentioned in her short, one sentence answer. Sometimes, a student would define critical thinking in one way when asked to provide a definition and another way when giving an example of critical thinking or discussing real life cases in which critical thinking is important. During the member checking process, I checked with students if all definitions in their answers were valid conceptualizations of critical thinking. I also verified that there were no other ways to define critical thinking other than what they had mentioned.

In one interview, the student specified that her conceptualization was the *only* way to define critical thinking. She stated "*Only* great writers have critical thinking." When I asked her if a college student could have critical thinking skills, she noted in very rare cases, when a college

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student produced publishable work, that would be an example of critical thinking. She was the only student that conceptualized critical thinking with one absolute definition.

The popular themes among Chinese students' definitions of critical thinking

The themes and frequency of Chinese students' definitions are presented in Table 2. Note that most of the Chinese students mentioned more than one theme in the interviews so the total frequency is greater than 100%. The most popular conceptualization is critical thinking as a *cognitive skill*. 75% of the students mentioned some cognitive terms such as *reasoning, evidence, or backing up claims* in their definitions of critical thinking. 27 students conceptualized critical thinking concept as *intellectual autonomy*, making it the second most commonly mentioned definition among the Chinese college students in this project. 22 students mentioned *the omnipresence of the opposite point of view*, and 10 students mentioned some concept of *thinking with multiple perspectives*. 7 students mentioned *revolutionary thoughts in art, science, and other fields* as *critical thinking*, and one student mentioned *knowledge and skills that are useful in life, but cannot be tested in schools* as *critical thinking*. I will explain in the following sections each concept used to characterize the Chinese students' definitions.

As this is a case study conducted with volunteers, the various ways critical thinking was defined by the Chinese students in this project does not represent how critical thinking would be defined by all Chinese students across the nation. However, the analysis of the unique features of Chinese students' definitions of critical thinking may indicate how Chinese culture could influence Chinese students' understanding of critical thinking.

Cognitive thinking skills *Cognitive thinking skills*, including *logical thinking*, *problem-solving*, and other higher-order thinking strategies, were mentioned by 36 students in the interviews making it the most commonly mentioned way of conceptualizing the critical thinking concept. The Chinese students offered a variety of examples demonstrating the use of some cognitive thinking skills in academic settings as critical thinking. For instance, five students regarded *logical thinking* and *problem-solving* in math studies as examples of critical thinking. Six students described *decision making* using certain thinking strategies in extra curriculum activities, student groups, internship, selecting their majors, and various other contexts to illustrate their understanding of critical thinking.

Critical thinking defined as *cognitive thinking skills* is consistent with the definition provided by many educational scholars (Ennis, 1996; Paul & Elder, 2009). This similarity demonstrates that despite the Confucian cultural influence which values different methods of reasoning compared to Western reasoning, the concept of logical reasoning is not alien to Chinese college students. Chinese college students do not live in a bubble of Chinese traditional culture. They understand the importance of *logical thinking*, *problem-solving*, and *reasoning based upon evidence*, at least theoretically. Similar results have been found in other studies; in Jones (2004), Chinese students taking an economic class in Australia demonstrated an understanding of the faculty's critical thinking requirements similar to the Australian students.

However, there is disagreement among Chinese students whether *cognitive thinking skills* can capture the critical thinking concept in this project. While in member checking, most students confirmed that the thinking skills they mentioned are critical thinking; however, one student explicitly said, "No, reasoning is like thinking according to certain logic, *there's nothing critical*

in that." When I showed this case to the Chinese teachers, both teachers said they were surprised but found the student's position understandable. This example demonstrates that defining critical thinking as higher order thinking skills is not agreed upon by every Chinese student in this project.

Intellectual Autonomy In this project, 27 students spoke of their conceptions of critical thinking as *having their own ideas*. They provided examples when their opinions disagreed with their parents or teachers to emphasize the originality of their own ideas. This is the second most common definition that Chinese students provided in this project after cognitive thinking skills. Intellectual autonomy is essential in Kantian philosophy, which proposes that man should be capable of using his own understanding in truth seeking without the guidance of another person (Kant, 1996). Students' confidence to disagree with authority, to want freedom, and to believe in their own ability to make judgments is a demonstration of the intellectual autonomy valued by Kant and many other Western educators (Paul, 2009; Howe, 2004; Facione et al., 1995).

Intellectual autonomy shares some similarities and differences with the critical thinking disposition (Ennis, 1996) – people's *willingness* to seek "scientific" conceptualizations of a subject or problem. A critical thinking disposition includes being "broad and adventurous," the desire to "clarify and seek understanding" (p.169), and to "seek alternatives and be open to them" (p. 165). In my analysis, there are similarities between critical thinking as a disposition and the intellectual autonomy emphasized in Chinese students' definitions of critical thinking. Both concepts emphasize students' willingness, courage, and motivation to question preexisting assumptions. However, there are differences in the emphasis of the two concepts. Whereas in Chinese students' definitions the emphasis lays in students' ownership of their ideas, in the critical thinking disposition the emphasis is on using scientific methods to seek truth. The Chinese students emphasized that their ideas of critical thinking are set against an authority's perspective, which can be scientific or not.

Following is an excerpt from a female student, Jin. Jin was the first student who volunteered to be interviewed and very outspoken. Throughout the interviews, she expressed her personal opinions on a few different issues, including the Chinese educational system, the management of her university, and the economic development of her hometown. Jin defined critical thinking as follows:

> Author: What do you think the term critical thinking means to your understanding?
> Jin: The first thing [in defining critical thinking] is *critical*, to critique or criticize. Critique, to me, means *I have* my own opinions. *I have* my own opinions towards a particular topic, and *my ideas* are different from other people, from my teachers and my parents. And then, *I have* evidence. *I have* a reason to support my opinions. That's it pretty much. [05/15/2012]

In Jin's interview, she emphasized that *having her own opinions different from the authority* is crucial to the critical thinking concept, and then she had to *support her own idea with evidence,* which is a demonstration that she valued higher order logical thinking as part of critical thinking at the same time. When I asked Jin to give an example of what she meant by *her own ideas*, she gave an example in which she disagreed with the school policy of mandatory internship at the end of senior year.

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Jin: …You know that, when the college students do the internship, they [college students] are treated as cheap labor. A lot of them [students] are not doing major-related work. They [students] are working for better resume, or school credit. *I think* this is not worth it. [05/15/2012]

Jin emphasized the words "I," "my," and "I think" with intonation in the interview. Those words demonstrate the freedom of thought that she valued as critical thinking. Her opinions about mandatory internship were against the opinion of the authority.

Another female student, Hui, expressed similar ideas in her interview.

Author: ……What do you suppose critical thinking means?
Hui: Critical thinking emphasizes having opinion of my own. The teacher does not put restrictions on me. I have the freedom to make my own judgment. [05/28/2012]

In Hui's answer, she regarded her teacher as the authority and critical thinking as the freedom to make her own judgment without teacher or authority interference, scientifically or not. Hui later gave an example of answering open-ended questions in social studies classes as an example of critical thinking. In this sense, unlike Jin whose concept of intellectual freedom is against authority, Hui's freedom was granted by authority.

In the following example, Shipeng, a male student, discusses his idea of critical thinking. He expressed suspicion of the teachers' professional competence to illustrate his conceptualization of critical thinking, although from his point of view, this spirit of suspicion might not help him in his studies.

Author: What do you think critical thinking means?
Shipeng: Critical thinking is, when your teacher taught something, you don't take things for granted, but think about it…Sometimes it may interfere with your study.
Author: Why is that?
Shipeng: Sometimes, *I have doubt in what the teacher is talking about in class, I will not listen to the rest of it; I will ignore it. I would rather search on the Internet for it and learn the stuff myself.* Sometimes, maybe the teacher was right, (in that case) I would miss it (what the teacher has to say)...Those things may be tested. So to some extent critical thinking may interfere with my study. But not absolutely. If I can learn everything after the class, then that's fine. [05/30/2012]

Shipeng questioned his teachers in class and developed his own method to test his hypothesis. Instead of regarding critical thinking as the desire to seek a scientific conceptualization of a problem (Ennis, 1996), Shipeng emphasized discovering the conceptualization of a problem *in his own way*. In the interview, it seems that Shipeng believed his pursuit of critical thinking might be punished with low scores on tests which value reproduction of the detailed knowledge the teacher imparted rather than the process of finding out information (Dong, 2015).

During member checking, interviewed students reiterated that they emphasized "having their own ideas" as critical thinking, while some students reminded me that they defined critical thinking as a multi-faceted concept and "being able to offer evidence for their own ideas" is also important.

In the interviews with Chinese teachers, one commented on Jin's definition, "this (students' ownership of ideas) *can* be critical thinking, *but this is too simple*. *It is not enough* for students to have their own opinions to demonstrate critical thinking. The students' opinions need to be

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properly defended, reasoned, and examined" (Interview, 09/02/2012). After some discussion, we agreed that it was not for the researcher or the teachers to judge the students' definitions, but to seek to understand them. Thus, the Chinese students' understanding of *critical thinking* that emphasizes *having their own ideas* was theorized by this project as *intellectual autonomy*.

The omnipresence of opposite point of views 19 (40%) Chinese students in the interviews defined critical thinking as consideration of diverse aspects of an issue when making a judgment. Those students explicitly mentioned "considering multiple aspects of an issue when making a judgment" or "being aware that there is (a) con coming with every pro."

On the surface, such definitions are in agreement with some Western scholars of critical thinking. Blodgett-McDeavitt (1995) as cited in Johnston et al. (2011) defines critical thinking as "thinking about other alternatives" and "looking at the bigger scheme of things" (p. 38). However, in my interpretation there is something special about the Chinese version of "thinking about other alternatives". Among the 19 students who mentioned *considering multiple perspectives/angles*, 11 (23% of overall sample) specifically indicated or offered examples of "positive and negative aspects" (正反两方面) when defining critical thinking. This description of *pros and cons* is influenced by the Chinese indigenous philosophy of dialectics in my analysis.

For example, Pingmei described the process of making a decision about whether to join an extracurricular student group as an example of critical thinking. The positive side of joining a student group is practicing social skills, and the negative side is wasting time that should be spent on study. I asked her if, with the co-existence of positive and negative sides, she could make up her mind. She said the decision could not be made because there was always cons. Eventually, she said the wise decision could only be made a year later when she became more experienced with college life. Thus, in my analysis, critical thinking as *omnipresence of pros and cons* helps the students to realize their own limitations while not necessarily assisting in decision making.

Shan gave another example where she made a decision based on her need, while critical thinking as the *omnipresence of pros and cons* helped her realize her limitations:

> Shan: I think critical thinking is a way of thinking, you don't always think about things in positive ways, there is negative side in everything too…For example, people around me talk about going to graduate school after college. *With critical thinking, I think about the negative things about it, I won't be able to earn income for long.*
> Author: So, how are you going to make the decision based on the pros and cons?
> Shan: Actually, I am preparing to apply to graduate school…I think in college, you only learned some surface information about a particular field. I want to learn more in-depth things.
> Author: *So you made a decision against your critical thinking*?
> Shan: *That's right. I made a decision according to my need. Critical thinking helps me be aware of the negative side of my decision.* [05/28/2012, The emphasis is the author's.]

In this example, Shan tried to make a decision for herself instead of following the people around her. This can be understood as *intellectual autonomy*. Shan also sees critical thinking as an awareness that she needs to think about both the pros and cons of going to graduate school. However, after weighing the pros and cons, her decision was made based on other factors.

In another example, Meiru explicitly stated that the term she used for defining critical thinking, the *theory of two sides (两面性)*, is adopted from her Chinese high school philosophy curriculum.

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Author: What do you think critical thinking means?

Meiru: It is like *in the politics and philosophy class*…[We learned that] when thinking about something, you cannot just look at it from one side, you have to think about it according to the *theory of two sides (两面性)*. For one single matter, it is possible that we would see it from different positions, and perspectives. [05/23/2012]

Meiru adopted a key concept from her Chinese high school philosophy curriculum to illustrate critical thinking. The key concept was "considering a problem by dividing it into two (一分为二的看问题)" (Philosophical Textbook, 2010).

According to Peng et al. (2007), the Chinese high school philosophy curriculum covers Chinese Indigenous Philosophy, which was widely misattributed and politically propagated under the cover of Marxism. Meiru's understanding of critical thinking was a reflection of Chinese Indigenous Philosophy, although she remembered it as part of philosophy class.

Nisbett (2003) described the Chinese dialectic (Chinese Indigenous Philosophy) and its difference with Western philosophy in the following passage:

[In Western philosophy], thesis is followed by antithesis, which is resolved by synthesis, and which is "aggressive" in the sense that the ultimate goal of reasoning is to resolve contradiction. The Chinese dialectic instead uses contradiction to understand relations among objects or events… In the Chinese intellectual tradition there is no necessary incompatibility between the belief that A is the case and the belief that not-A is the case…A can actually imply that not-A is also the case, or at any rate soon will be the case. ("物极必反") …It is the Middle Way that is the goal of reasoning."

Chinese Indigenous Philosophy was adopted by some Chinese students to illustrate their conceptualization of critical thinking in this project. Chinese Indigenous Philosophy states that in life, matter, and the world, there are always contradictions. In everything black, there is something white. In everything white, there is something black, as illustrated by Yin-Yang symbol. The balanced harmony is emphasized rather than contradictions. Chinese Indigenous Philosophy has been cited by many cultural psychology studies to illustrate and understand the thinking process of Chinese lay people (Boucher et al., 2009; Needham, 1954; Peng et al., 2007).

There is a similar concept about contradictions in Western philosophy. For instance, Janusian thinking, named for the Roman god Janus who has two faces, each looking at the opposite direction. However, as Nisbett (2003) described, the Western idea of contradiction emphasizes the conflict and reasoning process necessary to resolve the contradiction. Janusian thinking is regarded as a source of creativity by many Western scholars (Rothenberg, 1971). This is quite different from Chinese Indigenous Philosophy's emphasis on the harmonious state of two opposites. Chinese Indigenous Philosophy has been said to have a negative influence on creativity (Heng, 2016) – since there are always going to be cons, it is better to make peace rather than resolve them. This may explain why interviewed students in this study did not find Indigenous philosophy to be very useful in decision making.

It is important to point out that not all the interviewed students thought about critical thinking in the context of Chinese Indigenous Philosophy. Eight noted that they understood the complexities and contradictions between the "positive" and "negative" sides. Many of them

mentioned "one question leads to another" and "there is no answer" in defining critical thinking. These answers demonstrate an effort to explore and resolve the contradiction, similar to the Western ideas of critical thinking such as "to be broad and adventurous," to "clarify and seek understanding" (Ennis, 1996, p.169), and to "seek alternatives and be open to them" (p. 165).

In member checking, the Chinese students and both Chinese teachers confirmed that critical thinking can be defined as *considering a problem by dividing it into two* (一分为二的看问题), the principle learned from philosophy classes and Chinese Indigenous Philosophy.

Conclusion

Scholars who write about critical thinking concepts rarely consider the voices of students, especially Chinese students, and even those scholars that do focus on Chinese students' learning habits rarely problematize the concept of critical thinking. This project fills this gap and hopes to make Chinese student voices available to researchers. The case study of 46 Chinese students increases our knowledge of Chinese students' understanding of the critical thinking concept and how it may be influenced by sociocultural contexts. This study raises questions around the practice of regarding critical thinking as a predetermined and universal concept that can be applied in all contexts.

The students in this project tend to mention several ways to conceptualize critical thinking simultaneously in one interview. Very few students were unable to define critical thinking or provide suitable definitions in the interviews. Furthermore, those students were interested to learn about the concept of critical thinking and were able to understand different concepts related to critical thinking such as evidence-based reasoning and logical thinking.

When asked to define critical thinking, *cognitive thinking skills*, *intellectual autonomy* and *the omnipresence of positive and negative sides* were commonly mentioned by the interviewed students. The emphasis on ownership of ideas against authority is characterized as *intellectual autonomy* in this project. The students' understanding of pros and cons and the significance of harmony was also discussed. *Intellectual autonomy* and *the omnipresence of positive and negative sides* reflect the influences of Chinese Indigenous Philosophy and the Western concept of individualism, among many other influences.

This study challenges the stereotype that Chinese students tend to be obedient, which has been refuted in other studies such as Grimshaw (2007), an ethnographic study in a university in China. Grimshaw found some Chinese college students read books on their own instead of paying attention to lectures when they disliked the professor's teaching. The result of this study echoes previous research conducted on Japanese teachers' conceptualization of critical thinking (Howe, 2004); critical thinking defined as individualistic thinking was highly valued in East Asian contexts. Further studies are needed to examine in more detail how Asian social and cultural contexts affect/promote students' intellectual autonomy. Furthermore, studies are needed to analyze how to meet the need of teachers and students to express their authentic opinions in the classroom.

Another feature of the Chinese student definitions of critical thinking is *the omnipresence of opposite points of views.* It seems that, influenced by Chinese culture and the high school philosophical curriculum, Chinese students have a tendency to understand that problems and issues can be analyzed in terms of positive and negative sides. However, some Chinese students appeared to lack the understanding of the complexities involved in such dichotomy, leading to reluctance in decision making since there would always be some negative result. This is discussed as a limitation of Chinese Indigenous Philosophy by some researchers (Dong, 2015). Further studies are needed

to explore how to promote thinking beyond merely the existence of positive and negative sides when teaching Chinese students.

This finding highlights the complexities and conflicts in defining critical thinking. Some concepts were regarded as a demonstration of critical thinking for some students, but a lack of it for others. Some students regarded logical reasoning as critical thinking while others dismissed the idea. It is possible that a Chinese student stating their personal opinions on a controversial topic may be regarded as a demonstration of critical thinking in the student's perspective. However, faculty may not consider this statement critical thinking because it lacks sufficient evidence and reasoning. The ambiguity and complexities in defining critical thinking often found by scholars can also be found in the opinions of students and teachers (Kumaravadivelu, 2003; Vandermensbrugghe, 2004).

This project is aware that overemphasizing the differences between Chinese and Western students with regards to critical thinking may contribute to stereotyping Chinese students, especially in international education. There are important parallels in how critical thinking is defined by Chinese students and the Western definitions of critical thinking. The most commonly mentioned concept in all the interviews was critical thinking as *cognitive thinking skill*s. This is similar to how critical thinking is defined by Western scholars (Bloom, 1956; Ennis, 1996; Paul & Elder, 2009).

There are limitations in this study. The sample in this project is too small to make generalized claims about how Chinese students think across China. The project was conducted by a single author instead of a team. Further study with a larger data set is needed to examine if there are other prominent patterns in the definitions of critical thinking among Chinese students. This project is a teaser proposing methods to study critical thinking from student perspectives rather than establishing critical thinking as a standardized and pre-determined concept.

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Appendix 2 Chinese transcript of the selected interview

作者: 你觉得 "critical thinking" 是什么意思呢？

瑾: 首先是 critical, 批评或者批判。批判我觉得意思就是我有我自己的想法。我对一个特点的问题有我自己的想法，我的想法和别人的是不同的。并且我可以证明自己，我可以有理由说明我为什么这么想。基本就是这些吧。

瑾：你知道的，大学生实习的时候都被当作廉价劳动力。他们（大学生）做的都是和专业没有关系的事情。他们（大学生）就是想让简历看上去好看一点。我觉得根本不值得。

作者：你估计一下 critical thinking 是什么意思呢？

慧：*Critical thinking* 强调要有我自己的观点吧。老师没有限制我，我能够自由地做自己的判断。

作者：你觉得 critical thinking 对于你的学习和日常生活重要吗？

石鹏：有的时候可能会影响我的学习。

作者：为什么这么说？

石鹏：有时候我会怀疑老师上课讲的东西，她后面讲的我就都不听了，我听不进去了。我宁愿自己上网查，就是自学。有时候可能老师是对的，我就错过了……错过的又是考点 。所以(critical thinking 会影响我学习)。但也不是绝对的。要是我可以自己学起来那就不要紧。

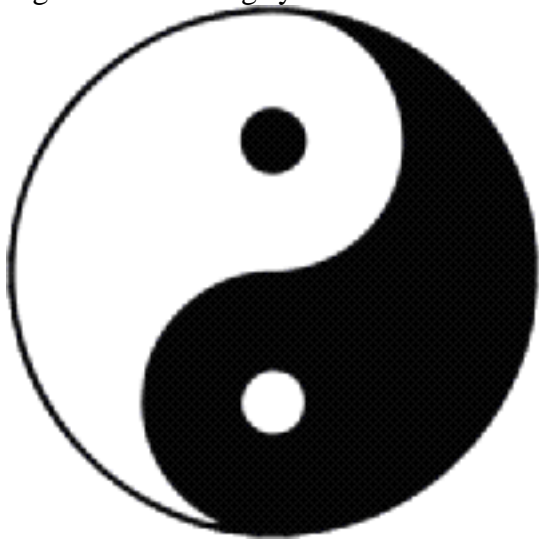梅茹：就像是在政治课里学的，看问题的时候，不能只从一个方面看问题，要考虑到问题的两面性。对任何一个问题，都可以从多个角度来看它。

Figure 1. Yin-Yang symbol

Table 1.

Chinese students' abilities to provide a definition of critical thinking

	Number of students	Frequency
Were able to provide one or more definitions of critical thinking and provide examples	43	93%
Did not provide any definitions of critical thinking	2	5%
Were able to provide a definition but were unable to support it with an example	1	2%

Table 2

Themes in Chinese students' definitions of critical thinking

Themes	Codes	Frequency
Cognitive thinking skills	Quality reasoning and sound judgment; Logical thinking; Problem-solving; Evidence based thinking; Deliberate and controlled thinking strategies.	36 students 75%
Intellectual autonomy	Having their own ideas; Unique ideas; Freedom to make own judgment; Conduct own research; Freedom to use imagination.	27 students 56%
Omnipresence of the opposite point of view	Positive and negative; Pros and cons.	11 students 23%
Multiple perspectives (More than two, and aware of conflicts)	Thinking in a variety of perspectives; Torn between different perspectives.	8 students 17%
Revolutionary thoughts in art, science, and other fields.	Revolutionary ideas; People who bring revolutions to their fields.	7 students 15%
Knowledge and skills outside the scope of standard examination	The knowledge and skills that are useful in real life, but cannot be tested.	1 student 2%

Appendix 1 Interview protocol

• What is your major of study?   • How far are you in your study?
• Have you heard the term "critical thinking" before?   • Have you taken any courses concerning critical thinking or other thinking skills?   • What do you think "critical thinking" means?   • Can you give an example of "critical thinking"?   • Can you give an example when you applied "critical thinking" in your work?   • Do you think "critical thinking" is useful for your study? How?   • Can you give an example when your teacher nurtured your "critical thinking"?   • Do you think critical thinking might be useful for your future career?

Appendix 3
Examples of codes and interview transcripts

Themes	Examples of Students' definitions (In-vivo codes)	Examples of critical thinking given by the students in the interviews	Frequency
Cognitive thinking skills	Quality reasoning and sound judgment	"Try to look at an issue from different perspectives so you can be more objective."	36 students. 75%
	Logical thinking		
	Problem-solving	"Solving a math problem with your own method."	
	Evidence based thinking	"I have a reason to support my opinion."	
	Deliberate and controlled thinking strategies	"When I make a decision, it is not just according to my feeling, but I write it down, think (it) over carefully, and evaluate different choices."	
		"To solve a math problem, I ask myself, what do I need to know to answer this question? It's a controlled process, step by step."	
	Argumentative writing	"In writing class, the teacher tried to make us argue with him about a variety of issues, like, is using Weibo (Chinese Twitter) a positive or negative thing for a college student?"	
		"I think my writing teacher really wants us to develop critical thinking and he looks for that when he evaluates students' work."	
		"Critical thinking skill is used a lot in debate competition."	
Intellectual Autonomy	Having my own ideas.	"I think mandatory internship is hurtful to students' development."	27 students. 56%
	My ideas are unique.		
	I have the freedom to make my own judgment.	"I want to apply to graduate school but my parents want me to find a job. I will continue with my	

	I have an idea that is different than the teachers or the parents. I do my own research. The students have freedom to use their imagination. There is no suppressing the students.	own plan despite their disagreement." "I have doubt about what the teacher is talking about in class, I would stop listening to her and do my own research." "When the teacher introduces us to something, especially some opinions, I shall not just accept it, but also think about it."	
Omnipresence of the opposite point of view	Not always thinking something as positive, but also seeing the negative side in it. You agree with something, and disagree with it at the same time. Not one-sided opinion. There is something good and something bad about everything. Critique the things that are bad, and continue with the things that are good. Evaluate the pros and cons	"For instance, in the history class, whenever you are asked to evaluate something, you always say the positive side and the negative side of the issue. The positive side of the revolution is that it leads the country to a better society; the bad side is many people sacrificed in the wars." "I can only give an example of my action that lacks critical thinking. During the first semester in freshman year, I planned to join a student group. I thought about what kind of benefits those student groups can offer me. I didn't really pay attention to the disadvantages of joining them."	11 students. 23%
Multiple perspectives (More than two, and aware of the conflicts)	Thinking in a variety of perspectives. Torn apart between different perspectives	"Some movies or novels made me think critically, like…Fight Club?" "In some novels, there are no bad people but there's no real solution to the problem in the novel. I am torn between different perspectives." "Sometimes, the teacher in social studies may present us with a social problem that just inspires us to think, like the vast difference between cities and countryside in China, what	8 students. 17%

25

		caused the problem, what is the solution, one question leads to another? No easy answer.”	
Revolutionary thoughts in art, science and other fields	Writers. Scientists. Philosophers. People who bring revolutions to their fields.	“Only great writers have critical thinking, like Lu Xun. He critiqued the society of his time with deep insight.” “I think what Copernicus did, that was an example of critical thinking.” “Critical thinking makes me think of philosophers like Kant, Descartes, and Marx.”	7 students 15%
Self-explorative study	I did my own research	“Sometimes, we will be asked to do a project, a research project on a certain topic. There’s no definite answer. We just looked for different sources. It is true inquiry.”	2 students. 4%
Knowledge and skills outside the scope of standard examination	The knowledge and skills that are useful in real life, but cannot be tested.	“I didn’t come to college to pass the exams. University is not just about studying, or exams. The stuff that is useful in real life but cannot be tested, the extra stuff, that is critical thinking.”	1 students 2%