Article

A Mixed Study of Beliefs about Critical Thinking in a Sample of Trainee Teachers in Argentina and Spain

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Abstract: Critical thinking is a competence that is recommended to be learned with increasing emphasis from different national and international organizations in the fields of education and employability. The aim of this study was to analyze and describe the beliefs that Argentine and Spanish teachers who have received training in socioeducational intervention have about critical competence. A mixed-methods research study was developed by administering questionnaires and conducting focus group sessions in a sample of 153 trainee secondary school teachers holding different degrees. The results indicated that the sample subjects unanimously considered critical thinking to be essential for their professional development, but few teachers considered these skills to have been sufficiently developed. There were no significant differences between nationalities or between genders except for some variables linked to the role of universities. As a practical implication of these results, the importance of developing specific teaching–learning programs about critical competence in universities must be emphasized, especially in the degree programs whose ultimate aim is to educate individuals and groups.

Keywords: critical thinking; beliefs; university; teachers; mixed methods; cross-national

1. Introduction

Critical thinking (CT) is a type of competence that has taken on special prominence due to its strategic importance as well as its function as a prerequisite for different national, international, and supranational institutions in higher education as a strategy for seeking answers to the problems of the current reality [1–6]. CT is a strategic competence that can address the problems of the 21st century [7,8] and is associated with attitudes of change and personal and social improvement [9]. This competence could provide more possibilities to improve individuals' coping skills when handling new challenges and difficulties, as well as learning new abilities for their own wellbeing and for others' [5,6,10].

The role of CT has been investigated as a prerequisite for the development of good citizenship through a critical reading of the problem of hatred in societies [11]; as a crucial competence that enables responsible behavior and a critical attitude toward balanced and adequate financial management [12]; as a possible element associated with the wellbeing of people, both individually and socially [13]; as a much more comprehensive element for understanding the world and taking action than visions based on intelligence per se [14]; as a key skill that guarantees the competitive advantage of organizations [15]; as a catalytic element in the face of the irruption of artificial intelligence [16]; as a key component in higher education to prepare future professionals for both today's and the upcoming competitive labor markets [17]; as a fundamental skill, together with academic self-efficacy, that can regulate generalized anxiety and dissatisfaction with studies [18]; and as an

element that contributes to the achievement of goals in both careers and higher education and may be more important than professional content knowledge [19]. CT, along with the ability to interact in an appropriate and positive way, has become an essential element of employability for many industries [20]; it can be a generator of psychological distress when mindfulness is low, although it has positive associations with cognitive functioning [8]. Additionally, CT helps with decision making [21]; is related to creativity [22] and the transformational behaviors of leaders [23]; and increases the competence of professionals such as teachers, helping them to become more autonomous [24,25] and providing a protective element against professional burnout [26].

There is a lack of consensus on the concept of CT [27], and some difficulty has been observed in its evaluation due to the complexity of its theoretical framework, although some instruments have emerged that have offered interesting answers for its study [28–34].

The object of the present study, critical competence, requires action or problem solving in an effective, argued, and efficient manner through a set of skills and dispositions [10,29], confronting a person with what is presented to them through reasoned judgment and with the motivation to decide and act accordingly [35]. Its development, nowadys, is fundamental, as evidenced by the exponential increase in research on the subject, specifically with respect to teaching values and the importance of argumentation, reasoning, and decision-making skills [36].

With respect to the teaching–learning process in higher education, there is some interesting evidence that underlines the importance of our study; in this sense, there is no agreement as to whether CT can really be taught in higher education [37,38]; whether it is developed through simply maturing and through experiences lived and not through university education [39]; or whether it is dependent on areas of study or research [40]. In the last sense, there is research that has shown that the practical use of simulated scenarios [41]; reflecting on the teaching and learning process itself, emphasizing the application of theory in practice [42]; using methodologies in classes that are characterized by being participatory and dynamic, encouraging the active involvement of students in the classroom [43,44]; and improving critical reasoning and problem-solving skills, as well as self-efficacy, favor the learning of critical thinking.

There are studies that have sought to delve deeper into critical thinking in relation to the beliefs that people may have [45–47], showing that beliefs have an impact on the skills that are inherent to critical thinking, playing an important role in its development [48], such as the case of argumentation itself and also analysis [49], reading [50], essay writing, and even sharing feedback between peers [51].

Hence, while there are different ways of approaching the concept of belief, this study focuses on recognizing beliefs that are personal and epistemic and behave as one's own theories about knowledge that influence that knowledge [52] and how one learns [53], in line with other studies that have also addressed the link between epistemic beliefs and critical thinking, finding different connections [54] and relationships [55] that may also be significant in terms of the critical thinking dispositions of future teachers [56], especially because people's interactions with knowledge are influenced by the way they perceive it [57].

People orient their lives and their actions according to a more or less complex system of coherent beliefs, knowledge, and values with strong internal consistency [58], such that lines of research on this subject have indicated that people do not use scientific theories when solving practical problems [59] but a set of more or less consistent beliefs that contingently influence an individual's actions. This set of beliefs comprises what are called "implicit theories". Rodriguez and Gonzalez [58] have established five hypotheses about implicit theories: that they are structurally similar to other social knowledge schemes, such as natural categories; their implicit character refers both to a set of propositions and to their internal organization; they are relatively stable and resistant to change; they constitute an inevitable point of reference in the processes of prediction and decision making; and they reflect and are the result of cultural particularities.

We are referring to mental representations: ways of seeing, understanding, apprehending, and acting on the world that are part of a person's knowledge system. They are general schemes of action that help us to interpret events and predict actions or behaviors. They are based on the accumulation of personal experiences obtained within a group and in a given social context. Macchiarola and Martín [57] have indicated that they are a set of underlying epistemological, ontological, and conceptual assumptions that influence the establishment of predictions, judgments, interpretations, decisions, actions, etc., which are the products of the construction of the world, through the closest, most intimate personal experience. These theories go beyond opinions or assessments, although they encompass and contemplate them, and focus on beliefs, that is, not on what is said but on what is assumed. They comprise semantic, schematic, and prototypical knowledge related to a domain of interpretative reality [60]. They are made not in a vacuum but in a given social context that influences their construction process; in this area, social influence is a determinant insofar as it is a representation that a person acquires from the experience acquired fundamentally in social contexts and through cultural activities and practices that take place within social interactions.

From a theoretical perspective, beliefs play a role in differentiating between assertions and knowledge [61], and since the relationships of prospective teachers' critical thinking to perceived beliefs, such as epistemological beliefs [62], can be observed, it is necessary to study those teachers' beliefs to better understand them in relation to critical thinking [63].

CT appears to broaden teachers' professional competence, enhancing their autonomy [24] and resilience and buffering stressful effects [26].

The aim of this research was to describe the beliefs of a sample of secondary school teachers in training, from Argentina and Spain, about CT: how they define it, characterize it, and link it to universities; what importance they attach to it both in their lives and in their future jobs as teachers; and whether there are differences according to gender and age and according to the context of each country.

2. Materials and Methods

2.1. Sample Characteristics

We aimed to investigate the beliefs about CT of 153 graduate students training to be teachers in secondary education during the 2022–2023 academic year. In the total sample, 90 (58.8%) participants were women and 63 (41.2%) were men. The ages were grouped into 4 intervals as follows: 24 respondents (41.8%) from 18 to 25 years old, 48 respondents (31.4%) from 16 to 30 years old, 19 respondents (12.4%) from 31 to 35 years old, and 22 (14.4%) respondents over 35 years old. Moreover, two nationalities were examined with the aim of analyzing cultural weight in the beliefs about CT; there were 74 (48.4%) Spanish participants and 79 (51.6%) Argentine participants. In addition, the basic specialties of the students surveyed, relevant to their training, were sciences (mathematics, chemistry, architecture, medicine; 40 participants, 26.1%); social sciences (history, journalism; 81 participants, 52.9%); and educational sciences (32 participants, 20.9%).

2.2. Procedure

The research design was of a mixed nature, based on, on one hand, a descriptive–correlational analysis of several variables related to CT by administering a questionnaire constructed ad hoc and, on the other hand, conducting focus group sessions by applying research questions.

2.2.1. Quantitative Study

The questionnaire was administered using the Google Forms resource. Different questions were written, both Likert-type and open-ended, to analyze the degrees of agreement that respondents had with aspects related to CT in society, in universities, in their career, and in themselves. As shown in Table 1, the questions were designed to investigate the beliefs that the students investigated had about the concept of CT, its characteristics, and the consequences it entails.

Table 1. Questionnaire items.

Questionnaire Items
1. Gender
2. Age
3. Nationality
4. With whom do you live?
5. Where do you live?
6. Do you have a partner?
7. Do you work?
8. Studies
9. How is your academic performance?
10. How much are you overwhelmed by the tasks at the university?
11. Do you consider that your education aims to help make the world a better place?
12. I am able to accept responsibility for my actions when I make a mistake.
13. I do what I believe is right even when I don't feel supported by my loved ones.
14. I am popular among my classmates.
15. I am very happy being the way I am.
16. What grades do you get in your career?
17. How would you define critical thinking?
18. What are the characteristics that you think define a critical thinker?
19. I have taken courses in college in critical thinking.
20. What or who do you think can develop critical thinking in people the most?
21. I consider my level of knowledge of critical thinking to be good.
22. I think that the university favors critical thinking.
23. I think that today's society gives a lot of importance to critical thinking.
24. In general, the subjects taken at the university favor critical thinking.
25. The situation of today's society requires people with critical thinking skills.
26. I know how to discriminate the essential from the circumstantial.
27. I consider that critical thinking is essential for my life.
28. I think that the knowledge is not necessary to be a good critical thinker.
29. Critical thinking is something you developed.
30. Critical thinking is something you are born with.
31. I think I have good critical competence.
32. Empathy is not necessary for critical thinking.
33. Critical thinking takes more effort on the part of the person.
34. I have taken or am taking specific training courses in critical thinking.
35. Having critical thinking makes you popular with others.

Own elaboration.

It should be borne in mind that, in degree curricula, this CT competency does not appear as a subject of study, except in degrees related to education, so the knowledge—a priori—of the students analyzed was, where existing, mainly derived from self-training actions. The reliability of the scale of beliefs about CT was acceptable (α = 0.72).

For the elaboration of this questionnaire, the two components generally accepted by the scientific community to make up CT, namely skills and dispositions [64–68], were considered, adding important elements to this research, such as the knowledge of what is being talked about [28,68] and motivational aspects [69,70]. In addition, it was of interest to analyze the relationship of CT to significant elements such as personal wellbeing, popularity, academic performance, society, universities, and ethics, with the aim of describing not only what CT is believed to be but also what a person with critical competence is like.

2.2.2. Qualitative Study

Two focus group sessions were conducted, ensuring gender parity: one in Argentina and the other in Spain, each composed of 6 secondary school teachers in training. The topics addressed in the two focus groups were those shown in Table 2, which elaborate on the open-ended questions of the questionnaire (items 17, 18, and 20).

Table 2. Questions posed for focus group analysis.

Questions
1. If you had to give your future students an easily understandable definition of critical thinking, what would it be?
2. What qualities or characteristics do you think a critical person has and what characteristics do you think do not define a critical person?
3. With what people or from where do you think critical thinking is favored?

Own elaboration.

2.3. Data Analysis Design

Concerning quantitative study, in the analysis of the descriptive data as well as the quantitative data, non-parametric tests and Pearson correlations were used with the SPSS version 23 statistical package. Regarding qualitative study, the ATLAS.ti.7.5.7 software was used for the procedure of identifying units and propositions with significance in the proposed subject matter, coding these units and propositions in order to group them according to thematic nuclei that would allow the construction of categories that would make their analysis possible, as is typical of structured content analysis.

3. Results

3.1. Quantitative Results

3.1.1. Descriptive Statistics

Beginning with the descriptive analysis of the quantitative results, 53.6% considered themselves to have an acceptable knowledge of CT, while 7.8% recognized that they knew nothing about the subject. Continuing with the beliefs of the sample, 62.1% expressed their agreement with the fact that universities do favor CT, while 15.7% indicated their total disagreement with that statement. On that topic, 49% of the sample believed that the subjects taken throughout their degree courses favored CT in general; on the contrary, 20.3% expressed disagreement, while 100% said CT is important in their work and lives.

With respect to the opinion of the current society, 5.2% considered that it gives considerable importance to CT; 64.7% indicated total disagreement. However, when the subjects were asked if they believed that the current situation of society requires people with CT, the trend changed, with 69.9% expressing agreement compared to the 15.7% who believed the opposite. Focusing on CT skills and dispositions, 64.7% believed that they knew how to discriminate what is important from what is not; 50.3% believed that prior knowledge is necessary to develop this competence; and empathy was also necessary to be a good critical thinker for 60.8%. All this means that 69.9% considered developing this thinking to involve great effort for people and that, as a possible effect, it affects popularity with others (52.3%). Finally, 47.8% believed they had good critical competence, while 11.8% said they did not. The remainder was unsure.

In relation to the question of who or what favors CT, 30.07% of those surveyed considered teachers in general or some teachers they had met during their studies to favor CT; 27.45% believed that it is the studies that favor it, understood as formal self-learning, access to information, and knowledge specific to their careers and not their relationships with people. Up to 23.53% believed that society, understood as groups of friends, the community, etc., develops it. In the last position, behind those who said they did not know, were those who thought that family, both fathers and mothers, favors CT (8.5%).

3.1.2. Non-Parametric Tests of Differences by Country and Gender

The percentages obtained according to sex and nationality are shown in Table 3.

Table 3. Case summary of gender and nationality.

Gender			I Consider My Level of Knowledge of Critical Thinking to Be Good.	I Think That the University Favors Critical Thinking.	I Think that Today's Society Gives a Lot of Importance to Critical Thinking.	In General. the Subjects Taken at the University Favor Critical Thinking.	The Situation of Today's Society Requires People with Critical Thinking.	I Know How to Discriminate the Essential from the Circumstantial.	I Consider that Critical Thinking Is Essential for My Life.	I Believe that Knowledge is Not Necessary to Be a Good Critical Thinker.	Critical Thinking Is Something You Are Born with.	I Believe I Have Good Critical Competence.	Empathy Is Not Necessary to Be a Critical Thinker.	Critical Thinking Requires More Effort on the Part of the Individual.	I Have Taken or Am Taking Specific Critical Thinking Training Courses.	Critical Thinking Makes You Popular with Others.	Critical Thinking Is an Attitude of Going around Criticizing Everything.
Man	Spain	N	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42
		%	27.50%	27.50%	27.50%	27.50%	27.50%	27.50%	27.50%	27.50%	27.50%	27.50%	27.50%	27.50%	27.50%	27.50%	27.50%
	Argentina	N	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21
		%	13.70%	13.70%	13.70%	13.70%	13.70%	13.70%	13.70%	13.70%	13.70%	13.70%	13.70%	13.70%	13.70%	13.70%	13.70%
	Total	N	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63
		%	41.20%	41.20%	41.20%	41.20%	41.20%	41.20%	41.20%	41.20%	41.20%	41.20%	41.20%	41.20%	41.20%	41.20%	41.20%
Woman	Spain	N	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
		%	20.90%	20.90%	20.90%	20.90%	20.90%	20.90%	20.90%	20.90%	20.90%	20.90%	20.90%	20.90%	20.90%	20.90%	20.90%
	Argentina	N	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58
		%	37.90%	37.90%	37.90%	37.90%	37.90%	37.90%	37.90%	37.90%	37.90%	37.90%	37.90%	37.90%	37.90%	37.90%	37.90%
	Total	N	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90
		%	58.80%	58.80%	58.80%	58.80%	58.80%	58.80%	58.80%	58.80%	58.80%	58.80%	58.80%	58.80%	58.80%	58.80%	58.80%

Considering that, when comparing samples, we could not use parametric tests, since they do not comply with the principle of the homogeneity of the variances of the analyzed dependent variables, we used non-parametric tests to assess the possible differences between samples, with nationality and sex as dependent variables. In this sense, when analyzing the weight of Spanish and Argentine nationality with the variables studied, we obtained that the respondents from Argentina believed that universities favor CT more than did Spanish university students (Figure 1).

Total N	153
Mann-Whitney U	4019.500
Wilcoxon W	7179.500
Test Statistic	4019.500
Standard Error	216.118
Standardized Test Statistic	4.199
Asymptotic Sig. (2-sided test)	0.000
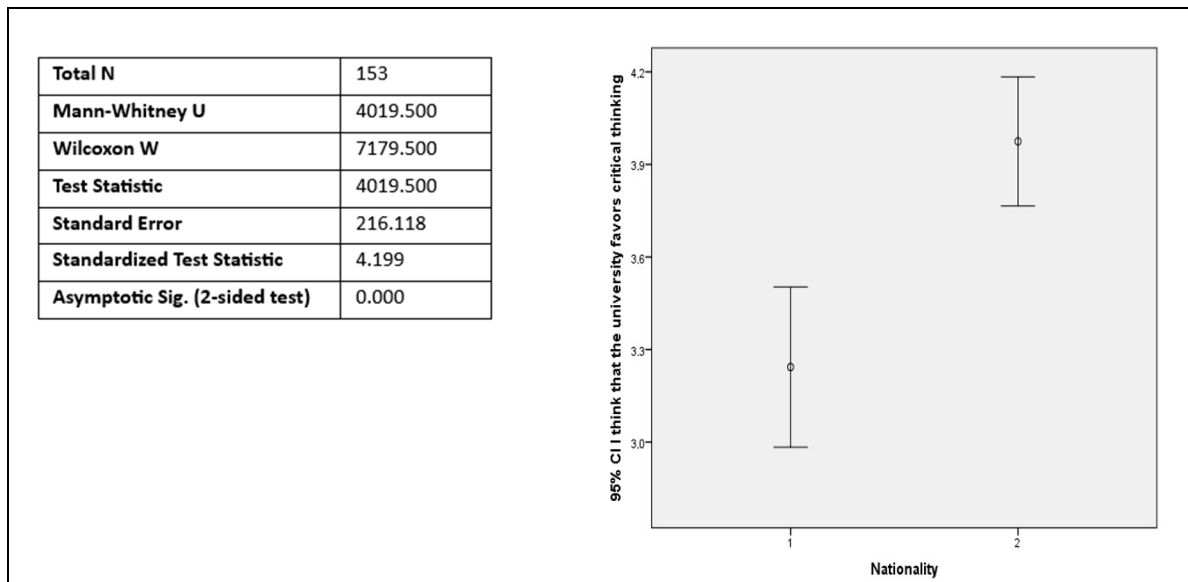
Figure 1. Nationality—I think that the university favors CT.

Along the same lines, there was also a significant difference between the two groups when it came to believing that the different subjects taken at universities have favored CT (Figure 2).

Total N	153
Mann-Whitney U	4708.500
Wilcoxon W	7868.500
Test Statistic	4708.500
Standard Error	262.857
Standardized Test Statistic	6.793
Asymptotic Sig. (2-sided test)	0.000
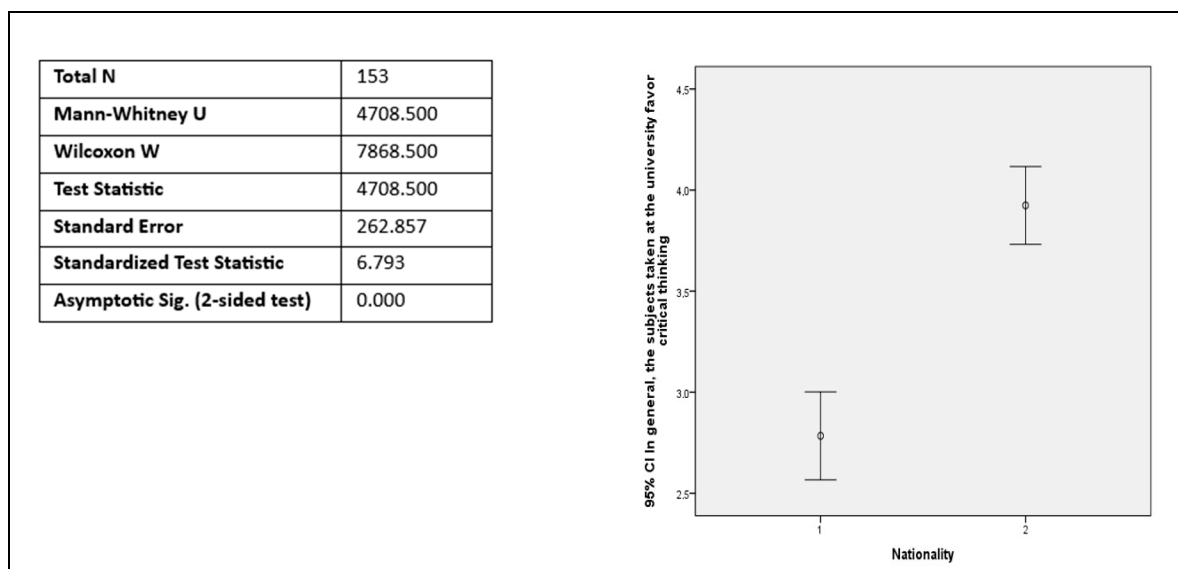
Figure 2. Nationality—In general, the subjects taken at the university favor CT.

Focusing on gender, significant differences were observed between men and women in valuing the importance of the subjects taken at universities in the development of CT; thus, the women were more convinced than the men of this fact (Figure 3).
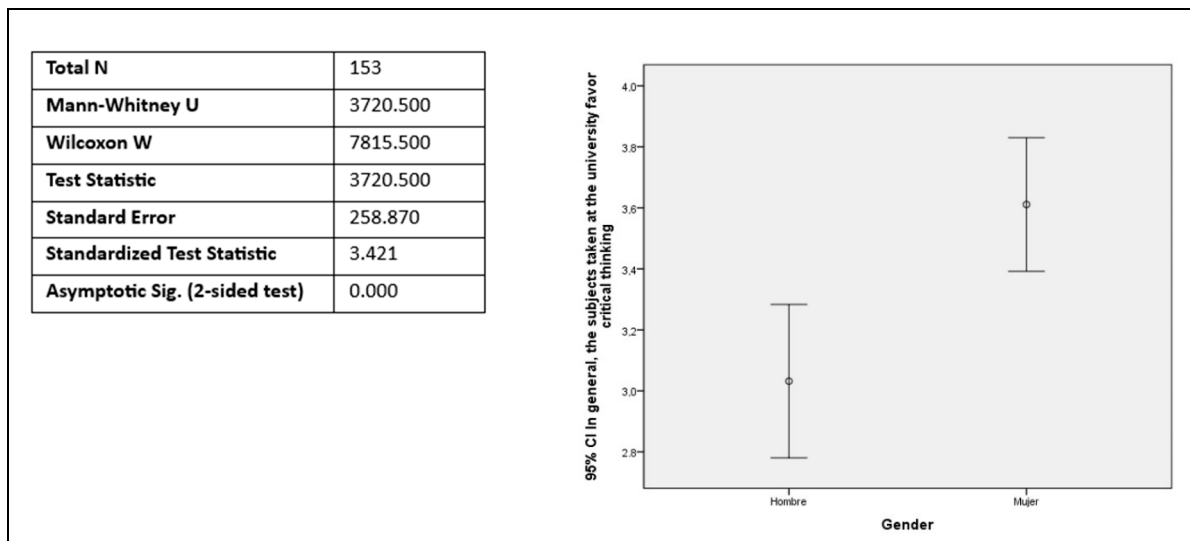
Total N	153
Mann-Whitney U	3720.500
Wilcoxon W	7815.500
Test Statistic	3720.500
Standard Error	258.870
Standardized Test Statistic	3.421
Asymptotic Sig. (2-sided test)	0.000

Figure 3. Gender—In general, the subjects taken at the university favor CT.

Interestingly, women scored lower than men in terms of believing that they had good CT levels (Figure 4).
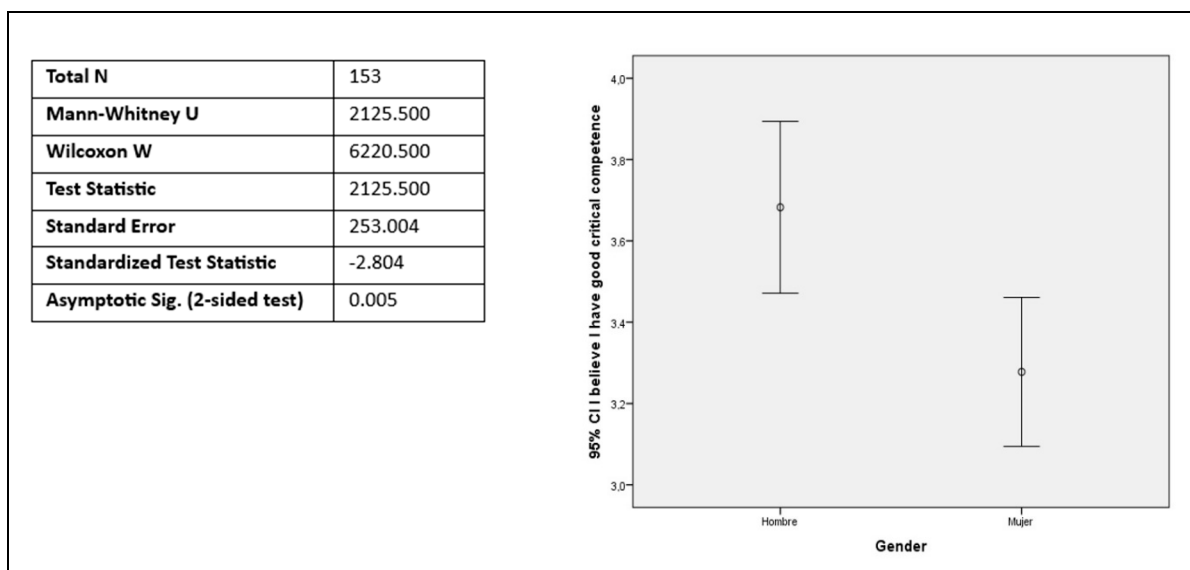

Total N	153
Mann-Whitney U	2125.500
Wilcoxon W	6220.500
Test Statistic	2125.500
Standard Error	253.004
Standardized Test Statistic	-2.804
Asymptotic Sig. (2-sided test)	0.005

Figure 4. Gender—I have good critical competence.

Significant differences were also found across age groups in the responses to "I have taken or am taking specific CT training courses", specifically between the age groups of 18 to 25 years and those over 35 years, the latter being those who have taken more specific courses to develop CT—χ^2 (3, N = 153) = 8.475, p = 0.037.

Interestingly, it was the youngest respondents who were least in agreement when it came to not valuing knowledge as a necessary element to develop good critical competence; on the contrary, those over 35 years of age believed that knowledge is not so necessary—χ^2 (3, N = 133) = 9.321, p = 0.025.

Consistent with the above idea, those over 35 years of age considered CT to be something people are born with, a notion with which the group of respondents aged 18 to 25 disagreed—χ^2 (3, N = 153) = 8.099, p = 0.044.

3.1.3. Correlations

The students whose academic performance in the degree program was very good (43.1%) did not feel very burdened with the tasks involved in university studies (r = −0.280 p = 0.001), carried out what they believed was necessary even when they did not feel supported by their loved ones (r = −0.225 p = 0.005), felt happy most of the time (r = −0.325 p = 0.001), and did not agree that knowledge is not necessary to be a critically competent person (r = −0.190 p = 0.019).

Furthermore, the students who considered their level of knowledge of CT to be good believed that this competence is favored at universities (r = 0.202 p = 0.012) and is essential for their lives (r = 0.381 p = 0.001); believed that they knew how to discriminate what is important from what is not (r = 0.349 p = 0.001) and that CT is a concept that they use in their daily lives (r = 0.343 p = 0.001); and also considered it necessary to continue training in this sense, so they have taken improvement courses on that subject (r = 0.252 p = 0.002).

Those who considered that universities do favor CT among students, stating that the subjects taken in degrees do favor CT (r = 0.726 p = 0.001), considered their role in society to be to make the world a better place (r = 0.265 p = 0.001); they also felt very supported in the institutions where they studied (r = 0.275 p = 0.001), and they believed that their degrees of knowledge of CT were quite high (r = 0.202 p = 0.012). They had even taken advanced courses on that subject (r = 0.208 p = 0.001) and believed that current society gives great importance to this type of thinking (r = 0.262 p = 0.001), demanding people who are capable of critically interpreting social events (r = 0.348 p = 0.001).

Concerning the components of CT, students who considered themselves able to discriminate the essential from the circumstantial thought that they had good levels of CT (r = 0.477 p = 0.001) and that it is also essential for their lives (r = 0.389 p = 0.001). With respect to the importance of "knowledge" as a necessary component of CT, those who downplayed its importance also subtracted it from empathy (r = 0.276 p = 0.001) (Table 4).

Table 4. Correlations.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. I consider my level of knowledge of critical thinking to be good.	1														
2. I think that the university favors critical thinking.	0.202 *	1													
3. I think that today's society gives a lot of importance to critical thinking.	0.026	0.262 **	1												
4. In general, the subjects taken at the university favor critical thinking.	0.257 **	0.726 **	0.303 **	1											
5. The situation of today's society requires people with critical thinking.	0.190 *	0.348 **	0.103	0.309 **	1										
6. I know how to discriminate the essential from the circumstantial.	0.349 **	0.203 *	−0.036	0.128	0.161 *	1									
7. I consider that critical thinking is essential for my life.	0.381 **	0.163 *	−0.043	0.175 *	0.270 **	0.389 **	1								
8. I believe that knowledge is not necessary to be a good critical thinker.	0.110	0.018	0.145	0.132	0.092	−0.006	0.193 *	1							
9. Critical thinking is something you are born with.	−0.049	−0.039	0.085	−0.008	−0.030	−0.118	−0.052	0.278 **	1						
10. I believe I have good critical competence.	0.343 **	0.019	−0.049	0.047	0.129	0.377 **	0.477 **	0.181 *	0.111	1					
11. Empathy is not necessary to be a critical thinker.	−0.138	0.060	0.128	0.069	−0.023	−0.076	−0.017	0.276 **	0.240 **	−0.011	1				
12. Critical thinking requires more effort on the part of the individual.	0.114	0.036	0.064	0.014	−0.039	0.164 *	0.178 *	0.023	−0.085	0.140	0.138	1			
13. I have taken or am taking specific critical thinking training courses.	0.252 **	0.208**	0.149	0.246 **	0.263 **	0.055	0.202 *	0.264 **	0.207 *	0.304 **	0.165 *	0.089	1		
14. Critical thinking makes you popular with others.	−0.093	0.017	0.242 **	0.030	0.036	−0.045	0.014	0.122	0.273 **	0.116	0.132	0.121	0.262 **	1	
15. Critical thinking is an attitude of going around criticizing everything.	0.029	−0.083	0.166 *	−0.016	−0.046	−0.061	−0.094	0.168*	0.356 **	0.185 *	0.167*	0.029	0.332 **	0.321 **	1

Note: * Correlation is significant at the 0.05 level (two-tailed); ** Correlation is significant at the 0.01 level (two-tailed).

3.2. Qualitative Study

3.2.1. Open-Ended Questions

We focused on the two open-ended questions of the questionnaire that interested us for our analysis (Table 5), transcribing them into the ATLAS.ti program and performing a hermeneutic analysis of them, establishing 466 analysis codes.

Table 5. Results of the open-ended questions of the questionnaire.

Open-Ended Questions of the Form
1. How would you define critical thinking?
2. What are the characteristics that you think define a critical thinker?

Of the 153 definitions obtained, the most elaborate were selected, discarding those that did not focus on a definition of CT or have a clear meaning and those from respondents who simply did not know what it was. After this process, we were left with 19 definitions, as shown in Table 6. No differences were observed in the responses of the respondents in terms of gender, studies, or nationality, which may be interesting due to cultural components.

Table 6. Definitions of CT.

How Would you Define CT?
1. A construction of thought based on questioning and reflecting on it.
2. Ability to think, reason, doubt, debate, argue, etc.
3. Ability to discern between what is true and false about a specific topic, considering one's knowledge.
4. To be able to think for oneself, to inquire, to ask questions, to be informed beyond what we are taught.
5. To be able to analyze and evaluate the consistency of the thoughts that people usually have, to be able to draw your own conclusions about something and say what you think, without passing the barrier of respect.
6. Ability to question things, in depth, and to be able to draw your own conclusions without being influenced by the subject in question.
7. Ability to evaluate reasoning.
8. Thinking allows us to review our behaviors and attitudes.
9. Being able to see the reality of each person.
10. Ability to reflect, to reformulate and draw conclusions with reasoning.
11. The ability to see the different aspects of life objectively and to draw your own conclusions and make your own decisions based on observations as unbiased as possible.
12. Ability to analyze one's own or social reality from all possible perspectives.
13. Tools that allow me to analyze in a fair and integral way the different contexts (social, cultural, political, educational).
14. Ability to analyze and create our own objections and beliefs about what we live or what we are told (create our own paradigm).
15. Thinking promotes reasoning and stimulates people's cognitive abilities to solve problems or situations in the most objective way possible.
16. A way of seeing the good and the bad, marking mistakes to improve or find solutions in different aspects.
17. A way of thinking that promotes reflection and self-criticism about the different aspects of life.
18. Mental capacity to decide what is right or wrong, as well as to judge procedures or attitudes, both one's own and those of others.
19. Ability to reason about something after having made a previous study of what one wants to know.

To analyze the characteristics of the critical thinker according to the respondents, we followed the classic division of Facione [64], which already reflects the agreement of the expert panel on CT, in which two basic dimensions have been identified for its configuration (Table 7).

Table 7. Basic dimensions of CT—Facione.

Basic Dimensions of CT

1. Cognitive skills:
   - a. Interpretation.
   - b. Analysis.
   - c. Evaluation.
   - d. Inference.
   - e. Explanation.
   - f. Self-regulation
2. Personal dispositions or attitudes:
   - a. Inquisitive.
   - b. Systemic.
   - c. Judgmental.
   - d. Truth-seeking.
   - e. Analytical.
   - f. Open-minded.
   - g. Confident in reasoning.

Note: Adapted from Facione [64].

Following the content analysis of the open-ended questions, we obtained a total of five components characteristic of the critical thinker according to the respondents. In this regard, in addition to skills and personal dispositions or attitudes, respondents added motivation, knowledge, and ethics. Specifically, the critical thinker is defined and characterized as shown in Table 8, considering that only the most significant characteristics are transcribed.

Table 8. Dimensions and characteristics of CT.

Dimensions and Characteristics of CT

1. Cognitive skills: the ability to
   - a. Analyze.
   - b. Reflect.
   - c. Reason.
   - d. Question things.
   - e. Evaluate.
   - f. Interpret.
   - g. Understand.
   - h. Express.
   - i. Argue.
2. Personal dispositions or attitudes
   - a. Inquisitive.
   - b. Systemic.
   - c. Judgmental.
   - d. Truth-seeking.
   - e. Analytical.
   - f. Open-minded.
   - g. Confident in reasoning.
3. Knowledge
   - a. Ideas formed from prior knowledge, with a theoretical basis.
   - b. Requirement of broad knowledge.
   - c. Contrasting with different sources.
   - d. Not acting without knowledge.
4. Motivation
   - a. Motivation to do things.
5. Ethics
   - a. Non-conformist thinking that seeks to improve injustices.
   - b. A way of being awake in a world in need of change.
   - c. Thinking that should be based on justice.
   - d. Self-criticism about the different aspects of life.
   - e. Open and respectful attitude toward any opinion.
   - f. The necessity of changing the reality of the world.

3.2.2. Focus Groups

Finally, we present the results obtained after the content analysis of the focus groups. When analyzing them, we also based our analysis on the division of Facione [64] as a starting point to be able to order ideas and construct new knowledge. The three questions posed were those in Table 2.

To the question "If you had to give your future students an easily understandable definition of CT, what would it be?", the expected reaction of the participants was one of difficulty, starting with short answers basically focused on skills: "analyze...[FG1-2]", "reflect on what is there [FG1-4]" and "a strategy for interpreting...[FG2-1]". As the discussion proceeded, more elaborate ideas emerged that began to show the difficulty and richness of the concept: "a means to know what is right from what is wrong, beyond one's own interests [FG1-6]" and "a necessary requirement to improve the world we are in through knowledge, responsibility and involvement [FG2-2]". All the participants expressed their agreement in valuing CT as something fundamental to their professional performance and for the students they will teach in the future: "...it should be a compulsory subject in the studies, and not only with a transversal character [FG1-5]" and "If we want changes we have to teach how to think, even if it seems that nowadays that doesn't count for much [FG1-6]".

Regarding the question "What qualities or characteristics do you think a critical person has and what characteristics do you think do not define a critical person?", ideas such as those transcribed below were brought out: "I think that CT is confused with criticizing everything... people confuse the terms... [FG1-3]"; "it seems that if you are not rude, you are not a good critic. I think that respect for everything that is different is fundamental... [FG1-4]"; "empathy, knowing what you are talking about, knowing how to argue, knowing how to listen and I think that the ability to decide is very important... [FG2-3]"; "I think that something very important is that you should not be afraid to give your opinion;... it could be that someone is critical and is very shy and cannot express what they believe... [FG2-5]"; "I think that the most important thing is that you should not be afraid to give your opinion... [FG2-4]"; and "I think that the most important thing is that you should not be afraid to give your opinion... [FG2-4]".

Finally, in relation to the question of from which people or from where the participants thought CT is favored, the respondents were initially asked to share with the rest of the group what or whom they believed favored CT, if anything. Of the twelve participants, three considered that they had not developed CT, but 100% had known people who were characterized by having it and who had left their mark, with teachers or the institutions where they have taught appearing in first place.

4. Discussion

Education, being related to professional performance, requires critical competence, a generalized recommendation by competent institutions and organizations in the field [1–7], but it is interesting to note how the general assessment of the surveyed sample points to a very different reality. It is true that 100% considered CT fundamental for their career, but the degree of knowledge of it and the number of respondents reporting being trained in this sense were very low; the participants even assumed a certain weakness when it came to thinking critically [38]. Even in relation to the question of whether the respondents considered themselves to have adequate CT abilities, no significant differences were observed between the younger and older respondents; even considering that all of them had developed university careers, no improvement in CT was reported over time. We would agree with Bejarano, Galván, and López [38] in this sense on the idea that it cannot be assumed that the academic curriculum favors the development of CT. There are obviously studies in which significant differences have been observed in relation to CT in students in the first and third years; however, these differences may have been mediated by contextual variables [71].

Research by Al-Mahrooqi and Denman [72] has analyzed the levels of the CT skills of Omani tertiary-level students enrolled in humanities and science faculties. The results have indicated limited use of CT. Female participants obtained higher overall test scores than their male peers, although there were no differences based on the university they studied at. In this area, the differences we found in terms of sex in our study are related to the fact that women consider universities to develop CT but, curiously, consider themselves inferior in this competence with respect to men. In this sense, the differences presented in the disposition toward CT according to sex were in the areas of disposition toward CT among others, with men presenting better results than women; nevertheless, as the authors have pointed out, the results achieved could be due to the social influences of upbringing and the differentiated contextual development presented by the participants [73].

One of the interesting aspects that has emerged from the present work as an element for reflection is that, when CT is defined, although it is true that it coincides with the components that are generally accepted [64], mention is also made of another component that always appears in the background due to its obviousness: specifically, knowledge [27]. The motivational component is also highlighted, although in the present sample, it was somewhat residual, though not so much in other works [69]. However, what seemed interesting to us was the ethical component, since in the group in question, it was considered an important element in training and professional dedication [74]. It was not a question of being critical but of why to be critical, the response being the good of others and of society, one of the central elements of the discourse. It was not a criticism to boast, not even to identify falsehoods, but to transform and to improve.

The cultural component of education was assumed; however, no differences were observed between the Argentine and Spanish samples except for the value they explicitly gave to universities as a context conducive to learning CT, producing a significant difference in favor of the Argentine population when the roles of universities in this sense and of the subjects taught there were positively valued. On the contrary, the Spanish sample did not positively value the leading roles of universities in this sense; notwithstanding the above, when asked what or who most develops CT, the majority in both cases pointed to the academic context and teaching staff, this having more to do with contextual variables and/or personal attitudes than with the specific presence of critical thinkers.

The results show a certain general competence of the sample investigated in terms of knowledge of what CT is and means and a coherent relationship between what they say and what the theoretical development of CT refers to. In addition, they gave value to acquiring critical competence as well as the need for training; these results coincide with those obtained by Díaz et al. [75] in their research with student teachers. However, although CT is a recurrent discourse in universities, it has little replication in the educational practices that are carried out [28,76], and, in this sense, it seems fundamental to us that university education and teachers in particular promote the development of CT in their students. We agree with Valenzuela, Nieto, and Muñoz [69] when they concluded that intervention to promote CT in students involves not only the cognitive component but also the fact that students really want to use it. Thus, students have acknowledged that they present important gaps and limitations in the application of CT skills, although they admit the importance of this competence for their professional development.

5. Conclusions

The study presented here sheds light on the CT beliefs of teachers in training in Argentina and Spain. It shows many similarities in the beliefs and ways of proceeding in this field, although these results cannot be generalized, since it did not involve a probabilistic sample; instead, this research was based on a purposive sample.

The developed study reflects the presence of an acceptable knowledge of CT. There is broad agreement that universities favor CT and that it has importance in work and in life; hence, it is also appreciated that most students believe that they know how to discriminate what is important from what is not.

From the qualitative analysis, the interest in trying to define critical thinking and its characteristics on the part of the sample is evident, with no differences in relation to cultural components and the context of countries nor the gender or age of the students. It is possible to highlight the presence of the concept of capacity as outstanding and the presence of components that, according to the students, are believed to be characteristic of the critical thinker, such as skills and dispositions or personal attitudes, motivation, knowledge, and ethics.

In summary, critical thinking is fundamental for the professional development of students, although it is also a relevant fact that many consider these skills, for different reasons, to not have been sufficiently developed. The importance of developing specific teaching–learning programs on critical competence in universities must be emphasized, especially in degrees whose ultimate objective is the education of individuals and groups. Merely knowing a concept does not entail its consequences in practice. In this sense, future teachers value the importance of CT very positively, but their knowledge of it and their training in it are scarce.

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