A Pilot Study of Critical Thinking Disposition and Self-Efficacy with English Majors in China

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Abstract. This pilot survey study is intended to investigate tertiary learners’ critical thinking disposition and self-efficacy as well as the relationship between these two variables. Participants were 135 English majors from non-key universities in Shanxi, China. Two 6-point Likert scales were chosen as measures: one is the Self-efficacy Inventory particularly designed to measure tertiary students’ general self-efficacy; the other is the Critical Thinking Disposition Inventory which focuses on four aspects of intellectualness, emotionality, rationality and morality. Findings indicate that students exhibited medium self-efficacy and low critical thinking disposition, with a significant difference between each pair of the four aspects. It was strikingly noticeable that students of lower English proficiency demonstrated higher level of both critical thinking disposition and self-efficacy than peers. Self-efficacy and critical thinking were found positively correlated at significant level. There was clear indication that emotionality served as the strongest predictors of self-efficacy while morality demonstrated least predictive power.

1. Introduction

Over the past few decades, researchers and practitioners in education have acknowledged the importance of life-long learning and learner autonomy, which urgently call for learners’ potential for developing a genuine belief in their competence to fulfill designated tasks as well as implementing critical reflections in their learning experiences. There is broad consensus that higher education should aim at preparing persons who willingly and skillfully engage in critical thinking, which is well recognized as a liberating force and valuable resource in one’s personal and civic life [1]. Therefore, learners’ critical thinking disposition (CTD) and self-efficacy (SE) have become the two valuable quality emphasized in tertiary education world-wide.

CTD is defined as consistent willingness, motivation, inclination and intention to be engaged in a cognitive process involving analyzing, interpreting, evaluating, explaining, making inference and judgment [1]. There is a growing consensus that nurturing CTD is crucial to developing tertiary students into good critical thinkers. The most commonly-accepted constructs of CTD comprise eight factors of inquisitiveness, analyticity, self-confidence, systematicity, truth-seeking, cognitive maturity, open-mindedness and altruism, which were further categorized into four aspects [1, 2]. These four aspects are intellectualness (i.e. intellectual curiosity, desire to learn, analyzing by using evidence and reason), emotionality (i.e. confidence in one’s reasoning process and judgments, being organized, focused, persevering and diligent), rationality (i.e. seeking truth, being honesty, cognitively mature and sensible), and morality (i.e. being tolerant of divergent views and sensitive of one’s own bias, pursuing justice and righteousness). Although empirical studies on CTD are few in number, there is evidence of a positive relationship with professional performance [3] and academic success such as students’ ACT, SAT and GPA scores [4, 5].
SE is defined as the beliefs individuals hold about their own competence to carry out the specific tasks they undertake in their lives [6]. Emotions, perceptions and professional or academic performance were found conducive to moderating personal efficacy in diverse domains of life [7]. There is adequate evidence that a high-level self-perceived efficacy is typically associated with successful action and good performance while a doubt usually leads to failure or inaction. Individuals with high SE are also considered more likely to be equipped with CTD, which indicates a positive association between the two dimensions [3, 8]. Pervious research suggests that SE plays a potent role in human agency, which has been showed to be a powerful determinant and mediator of academic outcomes and motivational effects [3].

In China, the major of English is a common specialty in more than 95% of colleges and universities, attracting about 250,000 enrollments each year. There are nearly one million tertiary English majors, which ranks the second in the number of students among all majors and specialties in tertiary education in China. However, a careful literature review has found a very limited number of studies on English majors especially in the areas of critical thinking and perceived efficacy, though their relevant performance has been questioned [9]. There is argument that English majors suffered the syndrome of critical thinking absence in that they are traditionally exposed to simple language learning materials and rote learning [10]. On the other hand, a nation-wide survey found that English majors were no inferior to students of other specialties in their critical thinking [2]. However, caution should be exercised in generalizing these research findings since majority of English majors participants in Wen’s survey were selected from key universities. In addition, English majors’ general SE is a rarely researched and no study has been located to investigate the relationship between CTD and SE with English majors in China.

The aim of this pilot study is three folds, which involves following research questions:

1) What is the current situation of English majors’ critical thinking disposition? Do students of different English proficiency present different critical thinking disposition?
2) What is the current situation of English majors’ self-efficacy? Do students of different English proficiency present different self-efficacy?
3) What is the relationship between critical thinking disposition and self-efficacy?

2. Methodology

2.1. Participants

The participants were 315 English majors from three non-key universities in Shanxi Province, who are aged from 18 to 23. Over 80% of them are females, which is quite a common ratio in the departments of English or other foreign languages. For English majors, the TEM-4 (Test for English Majors-Band 4) is widely used as an assessment of their overall English proficiency. Among these participants, 80 students were willing to give the information about their TEM-4 results: 42 passed and 38 failed. There is the possibility that they refused to respond because they failed in the test, which is quite understandable given the prevalence of face-saving in China.

2.2. Measures

This survey is based on two measures: the Critical Thinking Disposition Inventory (CTDI) and the Self-Efficacy Inventory (SEI). The CTDI was adapted from California Critical Thinking Disposition Inventory by Wen et al., especially with characteristics of Chinese tertiary learners taken into consideration [2]. The adapted version consists of 50 items and is intended to measure four aspects: intellectualness, emotionality, rationality and morality. Each aspect is comprised of two factors; that is, analyticity and inquisitiveness are included in intellectualness, systematicity and self-confidence into emotionality, truth-seeking and cognitive maturity into rationality, open-mindedness and altruism into
morality. The SEI is developed by Wang and includes 21 items particularly designed to measure tertiary students’ general self-efficacy [11].

The CTDI and the SEI are both 6-point Likert scales, ranging from one to six (respectively from absolutely disagree to absolutely agree) for scoring. Example items are “I prefer exams that demand analytical thinking rather than simply rote-learning” (analyticity in CTDI) and “I prefer to choose a task which is more demanding and challenging” (self-efficacy). The two sets of data from the CTDI and the SEI indicate good internal reliability, with Cronbach’s alphas above 0.8.

2.3. Data Analysis

The 25th version of SPSS was employed to analyze the data collected by the CTDI and the SEI. Preliminary assumption testing was conducted to ensure no violation of the assumptions of normality, linearity, as well as homogeneity of variances, inter-correlations and regression slopes. A one-way repeated measure ANOVA was conducted to examine the current situation of the students’ CTD and differences between the four aspects of intellectualness, emotionality, rationality and morality. Independent samples t-tests were used to locate differences in CTD and SE between the students of different English proficiency. Correlation and regression analysis were employed to investigate the relationship between CTD and SE.

3. Results and Discussion

3.1. Results from the CTDI and the SEI

A one-way repeated measure ANOVA was conducted to examine the current situation of students’ critical thinking disposition (see Table 1). Multivariate tests show there was a significant difference among the four aspects, Wilks’ lambda = 0.345, F (3, 312) =197.14, $p < 0.001$, multivariate partial eta squared = 0.66, which suggests a very large effect size. Results of pair-wise comparisons show significant differences exist between each pair of the four aspects, with all Sig. values less than 0.001; this indicates students’ development of CTD was substantially imbalance in favor of emotionality, which, however, merely achieved medium level. These findings suggest students exhibited low CTD, for mean scores were generally below average of 3 especially in the aspects of intellectualness and morality. This echoes Huang’s assumption about serious inadequacy in critical thinking among English majors [11]. In comparison with a previous nation-wide survey by Wen and her colleagues, who reported a mean of 4.44 in CTD [2], it seems that the general disposition toward critical thinking has considerably declined ever since. However, interpretation of the findings should also take sampling into consideration—universities in Shanxi Province ranks relatively low in higher education while a great number of participants were from high-ranking institutions. Therefore, the likelihood is that low CTD has been true situation with English majors in many non-key universities.

Table 1. Descriptive Statistics for the CTD and SE (N=315).

| Variables    | Mean | Standard Deviation |
|--------------|------|--------------------|
| Intellectualness | 2.53 | 0.49               |
| Emotionality  | 3.26 | 0.53               |
| Rationality   | 2.85 | 0.45               |
| Morality      | 2.73 | 0.44               |
| Overall CTD   | 2.84 | 0.33               |
| Self-Efficacy | 3.13 | 0.46               |
An independent samples t-test is conducted to examine the impact of English proficiency on English majors’ CTD. The statistics (see Table 2) showed the two groups were not substantially different apart from an unexpected finding in the aspect of emotionality; that is, the students who failed in the TEM-4 (indicating a lower level of English proficiency) reported significantly better emotionality. Since the measurement of emotionality involves two factors—self-confidence and systematicity, it is assumed that English lower-achievers outperformed those higher-achievers in perseverance, diligence, persistence, resilience and self-confidence. The explanation may lies in the possibility that willingness to give the information of failure in the TEM reflects the respondents’ positive emotional inclination, especially considering TEM result was an optional choice in the survey and only a very small number of students provided responses. In other words, those who did not feel emotionally comfortable in their TEM failure may have chosen not to respond. Thus different results may appear if more participants are included. On the other hand, since previous studies show positive correlation between CTD and academic achievement [4, 5], the conflicting finding of this current study is also likely to suggest that English proficiency does not serve as a crucial factor to determine learners’ academic success as well as CTD, even among English majors. In the long run, it is considered reasonable and favorable not to over-emphasize the role of a foreign language test in education, personal achievement and success.

| Variables     | TEM-4 performance | N  | Mean | Standard Deviation | t    | p    |
|---------------|-------------------|----|------|-------------------|------|------|
| Intellectualness | Pass              | 42 | 2.45 | 0.48              |      |      |
|               | Fail              | 38 | 2.55 | 0.49              | -0.88| 0.38 |
|               | Total             | 80 | 2.50 | 0.49              |      |      |
| Emotionality  | Pass              | 42 | 3.11 | 0.52              |      |      |
|               | Fail              | 38 | 3.45 | 0.54              | -2.98| 0.00 |
|               | Total             | 80 | 3.27 | 0.55              |      |      |
| Rationality   | Pass              | 42 | 2.92 | 0.42              |      |      |
|               | Fail              | 38 | 2.86 | 0.44              | 0.84 | 0.41 |
|               | Total             | 80 | 2.89 | 0.42              |      |      |
| Morality      | Pass              | 42 | 2.76 | 0.36              |      |      |
|               | Fail              | 38 | 2.72 | 0.47              | 0.39 | 0.70 |
|               | Total             | 80 | 2.74 | 0.41              |      |      |
| Self-efficacy | Pass              | 42 | 3.07 | 0.42              |      |      |
|               | Fail              | 38 | 3.22 | 0.40              | -1.55| 0.13 |
|               | Total             | 80 | 3.14 | 0.41              |      |      |

Results show that mean scores of students’ SE was above the average of 3 (see Table 1), which indicates a substantially stronger belief in their competence to perform designated tasks than in their CTD. Results of a paired-samples t-test reveals that students responded significantly higher in SE than in CTD, t (314) = 14.06, p < 0.001, the eta square = 0.37 (a large effect size based on Cohen’s guideline). An independent-sample t-test shows no difference in SE between higher- and lower-achievers although mean scores are slightly different in favor of the group who failed in the TEM (see Table 2). This finding conflicts the previous studies [3, 6, 7], which indicate positive association between SE, learning motivation and academic achievements. The possible reasons for the unexpected findings about emotionality, which have been discussion in the previous paragraph, may similarly apply to this surprising phenomenon. On the other hand, further exploration, especially qualitative research in the area
should be engaged to provide a better understanding about what is happening to those who are majoring in English or other foreign languages.

3.2. Results on the Relationship Between CTD and SE

A Pearson correlation model was used to analyze the relationship between CTD and SE. As statistics showed in Table 3, each aspect of CTD was positively correlated with SE on a significant level, with p values all below 0.001. According to Cohen’s guidelines, a strong relationship (r = 0.50 to 1.0) was found between emotionality and SE, intellectualness and SE, as well as overall CTD and SE. There was a medium correlation (r = 0.30 to 0.49) between rationality and SE. It was noticeable that the value of correlation coefficient was small (r =0.10 to 0.30) between morality and SE.

Statistics from regression analysis (see Table 4) further confirm the findings from the correlation analysis. The model, which includes the four aspects of CTD as predictors, explains 51% of variance in SE, a quite respectable result in education. However, the values of Beta, t and p clearly indicate that only emotionality and intellectualness made a substantial unique contribution to explaining the dependent variable, while morality and rationality exhibited extremely small predicting power.

Table 3. Statistics of Correlation between CTD and SE (N = 135).

| Variable 1 - Variable 2     | r   | p   |
|-----------------------------|-----|-----|
| Intellectualness - SE      | 0.50| 0.00|
| Emotionality - SE          | 0.68| 0.00|
| Rationality - SE           | 0.34| 0.00|
| Morality - SE              | 0.24| 0.00|
| Overall CTD - SE           | 0.62| 0.00|

Emotionality, most substantially correlated to SE, was found to be the strongest predictor of SE. This echoes the previous findings that emotional competencies are importance factors to predict self-efficacy [7]. In this case, students who saw themselves as confident, assertive, strong-willed and persevering were more likely to feel competent in coping with difficulties and challenges. What specially worth discussing lies in the result is that morality, as an extremely minor predictor, was least associated with SE. This implies students’ general judgment on their general capability was not much related to their perceived level of morality. In other words, morality involving altruism, open-mindedness, righteousness and justice was not deemed crucial in assessing one’s competence. This tendency should cause serious concerns in higher education especially considering the ultimate purpose of education and graduates’ potential roles as social pillars with standard ethics in the future.

Table 4. Statistics from Regression Analysis (N = 135).

| Dependent Variable | Predictors | Beta | t     | p     |
|--------------------|------------|------|-------|-------|
|                    | Intellectualness  | 0.23 | 5.00  | 0.00  |
|                    | Emotionality     | 0.53 | 11.52 | 0.00  |
| Self-efficacy.     | Rationality     | 0.09 | 1.81  | 0.07  |
|                    | Morality        | 0.04 | 0.89  | 0.38  |

\( R^2 =0.51 \)

\( F (4,310) = 79.79 \)

\( P < 0.001 \)
4. Conclusion

This pilot study investigated English majors’ CTD and SE, as well as the relationship between the two attributes. The findings of general low CTD suggest that more attention should be shifted to cultivating students’ critical thinking, especially in the aspect of morality. Morality also demonstrated extremely minor predictive power of SE, which is particularly of educational significance. This is because, when morality is negligible or absent, one’s power or competence may lose its constructive effect and become detrimental to life and society. It is hard to deny a connection of this finding to relatively widespread occurrences of behaviors against academic ethics, for instance, cheating in the exam, plagiarism in publication, data fabrication and deception in authorship. Another interesting finding that English proficiency produced a negative impact on English majors’ CTD and SE definitely conflicts with existing literature as well as common sense. There is no doubt that he reliability of this research calls for a larger-scale survey involving more participants especially from ordinary and non-key universities. In addition, a mixed methods research design, including qualitative interview data, is strongly recommended for future research, aiming at a better and comprehensive understanding of phenomena of interest.

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