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Exploring metacognitive beliefs of postgraduates in an EFL context

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Abstract

Learner beliefs may promote or inhibit language learning. This experimental study explores metacognitive beliefs of EFL postgraduates majoring in science and technology (China), examining whether metacognitive beliefs change according to experimental conditions. The quantitative data comprise the responses of 90 postgraduates to a questionnaire on EFL learners' metacognitive beliefs (QELMB) at pre-test and post-test. The total metacognitive beliefs scores and the related twelve subscales were analyzed using SPSS version 15. The results indicate that some metacognitive beliefs tend to change with the experimental conditions while others show no significant change. The findings from the semi-structured interviews confirm the quantitative results, suggesting that metacognitive beliefs are vital to the development of language proficiency.

Keywords: metacognitive beliefs; experimental study; postgraduates; EFL context

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1. Introduction

Metacognitive beliefs (MCBs) refer to "expectations learners hold with regard to their thinking and learning" (Paris & Winograd, 1990, p.27). In recent years, there has been an increasing amount of literature to investigate language learner beliefs in general and metacognitive beliefs in particular (e.g., Amuzie & Winke, 2009；Graham 2006; Ushioda, 2008; Wang, Spencer, & Xing, 2009). Given that English learners hold a variety of learning beliefs, which are likely to promote or prevent students from language learning (Cotterall, 1995, 1999), this prospect has generated our interest in exploring EFL students' metacognitive beliefs. This paper attempts to investigate metacognitive beliefs of postgraduates in a university of science and technology (China), and examines whether metacognitive beliefs change according to experimental conditions. It starts with a brief and critical literature review on the previous studies. Followed are the findings of the experimental study, with conclusions presented and future research recommended.

2. Literature review

2.1 Conceptualisation of metacognitive beliefs

Much research has been conducted to investigate metacognitive beliefs of language learners (e.g., Graham 2003, 2006; Paris & Winograd, 1990; Wang, Spencer, & Xing, 2009). As early as 1990, Paris & Winograd conceptualised metacognitive beliefs in terms of agency, instrumentality, control, and purpose. Agency refers to the quality of being an active force and producing an effect. Psychologically speaking, a learner is an agent with such quality (Oxford, 2003). Students need to develop beliefs about themselves as learners and understand their own cognitive capabilities. They may perceive themselves as skilful and competent in a particular domain or the opposite (unskilful or incompetent). Then they develop beliefs about their ability to use particular strategies. To varying degrees, their metacognitive beliefs mirror their view on themselves as intentional and self-directed learners.

In terms of instrumentality, it refers to the instrumental relation between learner strategies and learning outcomes. Learners need to recognize the cognitive utility of strategies. Failure to recognize the usefulness of strategies may bring about learners' maladaptive beliefs, which are likely to reduce their effort and affect their achievement.

Learners also need to take control over their learning activities. To avoid learner helplessness, they need to believe that their control is vital to successful performance. Failure is a normal part of learning, which may be reshaped by future efforts (Clifford, 1984). Without the sense of control, passive or negative attitudes toward learning may arise (Johnston & Winograd, 1985).

As far as purpose is concerned, learners need to set their learning goals in the foreign or second language learning. Their positive expectations for their performance and success are necessary and crucial. Goal oriented as it is, learning might be undermined by a variety of undesirable purposes. For example, learning English for examinations rather than for communication seems to be undesirable in an EFL context.

2.2 Metacognition in relation to language learning

Metacognition is defined as knowledge and regulatory skills used to control one's cognition, embracing "knowledge of cognition" and "regulation of cognition" (Schraw, 2001, p.6). The former involves what individuals know about their own cognition or about cognition in general, and the latter contains a set of

activities that help students control their learning.

In his pioneering research on metacognition, Flavell (1979) holds that

> *Metacognitive knowledge can have a number of concrete and important effects on the cognitive enterprises of children and adults. It can lead you to select, evaluate, revise, and abandon cognitive tasks, goals, and strategies in light of their relationships with one another and with your own abilities and interests with respect to that enterprise (p.908).*

Metacognitive knowledge is classified into three categories (Flavell, 1979): person knowledge, task knowledge, and strategy knowledge. Person knowledge refers to "the individual beliefs about himself/herself and other people" (Gabillon, 2005, p.233). It involves the "general knowledge learners have acquired about human factors that facilitate or inhibit learning" (Wenden, 1998, p.518), including universal attributes of learners, socio-cultural factors, intra-individual factors, and self-assessment, e.g., proficiency, learning strength, problems, and weaknesses (Victori & Lockhart, 1995). It is believed that person knowledge consists of judgments about one's learning abilities and knowledge about internal and external factors that affect the success or failure in one's learning (Vandergrift, Goh, & Marreschal, 2006).

Task knowledge is described as "the individual's knowledge about a given task" (Gabillon, 2005, p.233), which embraces knowledge about the purpose, demand and nature of the learning task (Goh & Taib, 2006). It requires the learner to consider whether the task is interesting, familiar, and whether it is within the capabilities of the individual to accomplish, coupled with time needed to learn, and degree of difficulty inherent in the learning.

Strategy knowledge is depicted as "approaches and techniques that are likely to be effective in accomplishing a task or a goal" (Goh & Taib, 2006, p.223). It is the general knowledge about "what strategies are and why they are useful", and the specific knowledge about "when and how to use them" (Wenden, 1998, p.519). Strategy knowledge involves cognitive and metacognitive strategies, concerning selection of appropriate cognitive process to fulfil a task. For example, it requires the individual to decide whether to summarise, analyse, and clarify or not. Hence, strategy knowledge helps the learner to choose strategies and achieve the learning goals (Flavell, 1979; Vandergrift et al., 2006).

Metacognition is related to "knowledge about cognitive states and abilities that can be shared among individuals" (Paris & Winograd, 1990, p.15). With an emphasis on self-appraisal and self-management, Paris and Winograd (1990) explored how metacognition promoted academic learning and instruction. Self-appraisal is regarded as "personal reflection about one's knowledge states and abilities" (p.17), that is, judgment about one's personal cognitive abilities and strategies that may facilitate or impede learning performance. In answer to questions such as what I know, how I think, when and why to apply knowledge or strategy, self-appraisal points to an individual's knowledge and ability in hypothetical situations, associated with declarative and procedural knowledge. With respect to self-management, it is reckoned as 'metacognitions in action' or 'executive action', concerned with the ability to plan, to regulate, to monitor, to revise and evaluate performance. Self-management helps to "orchestrate an individual's cognitive aspects of problem solving" (Paris & Winograd, 1990, p.23). In view of this, metacognition may provide students with knowledge and confidence that help them to manage their own learning and "empower them to be inquisitive and zealous in their pursuits" (p.22).

Of considerable interest is the link between metacognition and language learning. Learning a foreign language or second language relies upon the learner's awareness, such as subject matter awareness (i.e. of the target language), and learning process awareness (i.e. how to learn a foreign language) (Sinclair, 2000). Such awareness involves a high degree of experienced choice with respect to the initiation and regulation of one's own behaviour. With such awareness, learners are able to exercise self-determination and organize their actions on the basis of personal goals and interests (Deci & Ryan, 2000). Without it, language learners may not be in a position to make informed decisions about their own learning (Sinclair, 2000). It is argued that language learners'

metacognitive awareness may affect the process and the outcome of their learning (Vandergrift et al., 2006).

2.3 Recent research pertinent to metacognitive beliefs

Encouragingly, some progress has been made towards a better understanding of metacognitive beliefs (e.g., Amuzie & Winke, 2009；Graham, 2006, 2007; Ushioda, 2008). Amuzie and Winke (2009) administered learner belief questionnaires to 70 English language learners while studying in the United States. The learners were put into two groups according to their amount of time so as to see whether the amount of time abroad may produce an effect on belief changes. Factor analysis identified three underlying dimensions of the learner belief system, which involved the teacher's role, learner autonomy, and self-efficacy. Comparisons between pre- and during study-abroad beliefs suggested that overseas students experienced changes in their beliefs on learner autonomy and the role of the teacher. Those with more time abroad are more likely to change their beliefs, indicating that "learner beliefs are dynamic, socially constructed, and responsive to context" (Amuzie & Winke, 2009, p. 366).

Ushioda (2008) employed I-statement analysis to probe learner autonomy in an EFL context. In her study, Chinese university academics took part in a course of training in English for academic purposes within a project termed as CUTE 2, which was part of the e-China-UK programme, a collaborative e-learning initiative funded in the UK by the Higher Education Funding Council for England (HEFCE) and supported by the Chinese Ministry of Education (MoE). The research focus is how Chinese university academics think about themselves as learners and users of English. A key issue in her study is to what extent the participants in the course might experience changes in language learning awareness or metacognitive knowledge, and whether such changes may reflect growth in autonomy.

Likewise, Graham (2003, 2006) scrutinized language learners' metacognitive beliefs, which appear to be pertinent to a positive self-concept in relation to language learning. In her view, language learning may be motivated by "a sense of achievement in the subject, a belief in the possibility of continued achievement, a sense of control over one's own learning and the capacity to overcome any difficulties experienced" (Graham, 2003, p.9). Centring upon agency, instrumentality and purpose, she adopted semi-structured interviews to gain insights into British students' metacognitive beliefs. Graham (2003) maintained that metacognitive beliefs may provide a meaningful interpretative framework.

It is worth noting that Yang (1999) proposed a theoretical construct of learners' beliefs, which embrace metacognitive and motivational dimensions. Learners' metacognitive belief or knowledge is considered to comprise 1) what learners know about themselves as second language learners (e.g., their own language proficiency, aptitude, learning style, personality, and social role in the second language learning environment); 2) what learners think about the task of second language learning (e.g., the general issue of foreign language aptitude, the nature and focus of language learning, the difficulty of language learning); and 3) what they believe about how best to learn a second or foreign language (e.g., knowledge about language learning strategies). Language learners' beliefs were found to be connected with the use of strategies, which in turn reshaped the beliefs about language learning.

As can be seen, researchers and practitioners have shown an increased interest in learner beliefs, especially metacognitive beliefs, yet little research has been carried out to examine whether metacognitive beliefs change according to experimental conditions. For this reason, the current study was conducted.

3. Methodology

3.1 Design of the study

This is an experimental study designed to examine whether metacognitive beliefs change according to experimental conditions. To achieve this goal, data from questionnaires on EFL learners' metacognitive beliefs

(QELMB) at pre-test and post-test were collected. For the purpose of triangulation, data from semi-structured interviews (focus group interview and individual interviews) were used to illustrate the quantitative findings. The mixed methods approach is considered appropriate for allowing the investigators to integrate the findings, and draw inferences using both qualitative and quantitative approaches in a single study (Tashakkori & Creswell, 2007). In the present study, two research questions are raised: RQ 1: How do the participants perceive themselves as English learners? RQ 2: whether their metacognitive beliefs change according to experimental conditions?

3.2 Participants and experiment

The participants in the current study were postgraduates learning English as a foreign language (EFL) in a university of science and technology, China. By stratified sampling, 90 students were chosen as participants, and they were divided into three groups, with each group comprising equal numbers of high, medium, and low level proficiency students based on their national College English Test (CET) Band 4 scores (see Appendix A).

All the participants had normal classroom English teaching once a week plus extra study time after class. The participants in the intervention group (IG) were provided with access to the ICT. Participants in the control group A (CGA) were given traditional textbooks for use during extra study time, and the participants in control group B (CGB) worked without ICT or textbooks. All the participants involved in this study were asked to fill in the questionnaires (see Appendix B) at pre-test and post-test.

3.3 Research instruments

The research instruments used in the study were questionnaires on EFL learners' metacognitive beliefs and semi-structured interviews. A 48-statement questionnaire was constructed to explore EFL students' metacognitive beliefs in terms of twelve constructs: 1) sense of responsibility, 2) motivation orientation, 3) metacognitive strategies, 4) attributional awareness, 5) effort/outcome, 6) perceived ability, 7) the role of the teacher 8) the role of feedback, 9) learner independence, 10) perceived usefulness of ICT, 11) perceived enjoyment/fun, 12) collaborative learning. The questionnaire drew on a range of constructs from previous surveys regarding language learners' beliefs (Cotterall, 1995,1999), motivation orientations (Williams, 2003), and perceived usefulness of ICT (Cheung & Huang, 2005) due to the fact that the rating of those constructs tend be reliable and valid in terms of measurement. The participants were asked to indicate agreement or disagreement with each statement on a 7-point Likert scale. The questionnaire was utilised to measure any changes of English learners' metacognitive beliefs during the experimental period.

Semi-structured interviews (in the form of focus group and individual interview) were used to triangulate the findings from the questionnaires. As a research tool, semi-structured interviews were used to "add detail and depth" (Denscombe, 2001, p.113). They were used to encourage the participants to speak more widely on the issues raised by the researchers. Through semi-structured interviews, voices of Chinese postgraduates at different English proficiency levels could be heard. Through personal contact, semi-structured interviews may allow the investigators to stay in close touch with the participants, and help to establish a sense of rapport, eliciting qualitative data regarding their metacognitive beliefs in an EFL context. To enhance the quality of the study, both focus group interview and individual interviews were carried out with interview guides (Appendix C and Appendix D).

3.4 Data collection procedure

In the experimental study, quantitative data concerning EFL postgraduates' metacognitive beliefs at pre-test and post-test were collected. For triangulation purpose, qualitative data from semi-structured interviews were gathered. During the course of the study, three focus groups and nine sessions of individual interviews were conducted. All of the semi-structured interviews were tape-recorded, transcribed, and coded by the researchers.

3.4.1 Collecting quantitative data

The pre-test questionnaires were administered to the participants at the beginning of the spring semester, with the post-test questionnaires completed at the end of the spring semester (time span: 15 weeks) at Harbin Institute of Technology (HIT), China. At pre-test, each participant from the three groups (IG, CGA, and CGB) was asked to fill in the questionnaire on EFL learners' metacognitive beliefs in 20 minutes. At post-test, the same questionnaire was assigned to all participants to measure any change of their metacognitive beliefs, again with a 20 minute time limit. All of the questionnaires were completed and gathered for data analysis.

3.4.2 Collecting qualitative data

A week after the post-test, three focus group interviews were held for the informants from the IG, CGA, and CGB groups. Each session of focus group interviews lasted 45 minutes. Additionally, a 30-minute individual interview was conducted with nine informants (three from each group). The semi-structured interviews were carried out with the interview guides aforementioned.

4. Data analysis and results

In the study, data analysis consists of two parts. For the quantitative part, data from the questionnaires on EFL students' metacognitive beliefs at pre-test and post-test were analysed using the statistical package for the social science (SPSS), Version 15. For the qualitative part, data from the semi-structured interviews (i.e. focus group and individual interviews) were analysed by analytic induction and constant comparative methods (Maykut & Morehouse, 1994).

4.1 Quantitative results

Two-way analysis of variance (ANOVA) was conducted on the total metacognitive beliefs and the related twelve subscales with group and proficiency as the independent variables, and the post-test score as the dependent variable. The two-way ANOVA test indicated that there was no significant difference concerning the total metacognitive belief scores at pre-test: $F(2, 81) = .15$, $p = .858$. With respect to the constructs for which ANOVA was appropriate, there were no statistically significant differences at pre-test: construct 3, $F(2, 81) = .24$, $p = .789$; construct 9, $F(2, 81) = .30$, $p = .740$; construct 10, $F(2, 81) = .16$, $p = .854$; construct 11, $F(2, 81) = .10$, $p = .906$; and construct 12, $F(2, 81) = .05$, $p = .953$. In this case, the post-test values (or mean scores) could be used to determine whether metacognitive beliefs changed according to experimental conditions or not.

For those dependent variables which were not normally distributed, a Kruskal-Wallis test was carried out to check whether there was significant difference at pre-test. With no differences identified at pre-test (see Appendix E), the post-test values (i.e. mean scores) were used to determine whether metacognitive beliefs changed or not during the course of the experimental study. The quantitative results are summarized in Table 1 which presents the mean and standard deviations (SD) of each dependent variable at pre-test and post-test for IG, CGA, and CGB. In the present study, the alpha level was set at .05 for most tests and at .017 when a Bonferroni correction was applied, unless otherwise specified.

The results of statistical analysis (i.e. the Kruskal-Wallis test) showed that there was a statistically significant difference between groups on some metacognitive beliefs at post-test. The post hoc Mann-Whitney U tests with Bonferroni correction showed there was a statistically significant difference between the IG and the CGA for construct 3 ($z = 4.17$, $p < .017$, $p = .001$) and construct 7 ($z = 2.59$, $p < .017$, $p = .010$), and there were statistically significant differences between the IG and the CGB for construct 3 ($z = 3.90$, $p < .017$, $p = .001$), construct 8 ($z = 2.43$, $p < .017$, $p = .015$) and construct 10 ($z = 2.52$, $p < .017$, $p = .012$). To be specific, the EFL students in the CGA and the CGB used more metacognitive strategies to find their own ways of learning English than those in the IG (with no significant difference identified between the CGA and the CGB). Compared with those in the CGA, the EFL students in the IG showed more willingness to communicate with their teachers and

expect them to direct his or her English learning. With regard to the students in the CGB, they expect to have more feedback from their teachers than those in the IG; and their perceived usefulness of ICT is higher than those in the IG. The findings suggest that some metacognitive beliefs of EFL postgraduates tend to change with the experimental conditions.

Table 1

Mean and standard deviations of each dependent variable at pre-test and post-test for each group.

	Pre-test						Post-test					
MCB subscale	**IG**		**CGA**		**CGB**		**IG**		**CGA**		**CGB**	
	Mean	***SD***	**Mean**	***SD***	**Mean**	***SD***	**Mean**	***SD***	**Mean**	***SD***	**Mean**	***SD***
C 1	9.43	3.05	8.53	2.67	9.67	5.067	8.57	3.49	7.97	3.44	9.30	3.47
C 2	8.60	4.45	8.27	2.84	8.93	5.74	7.30	4.28	7.37	3.77	8.30	3.33
C 3	13.83	3.42	13.30	4.52	14.07	5.22	9.57	2.37	13.27	3.60	13.27	3.95
C 4	10.97	4.30	10.77	3.39	10.63	4.82	9.80	4.48	10.13	4.31	10.07	3.75
C 5	8.53	3.41	8.13	2.66	8.30	5.44	7.80	3.01	7.07	3.26	8.47	4.57
C 6	13.37	4.01	12.93	4.01	13.20	4.62	13.27	4.56	12.77	3.74	12.23	3.71
C 7	12.60	4.88	12.27	4.95	13.33	6.82	14.70	4.14	11.60	4.69	13.10	5.67
C 8	9.27	3.85	8.93	5.58	9.13	3.95	8.13	4.82	8.63	4.00	11.43	5.62
C 9	9.93	4.83	9.60	4.21	8.87	3.79	8.53	3.84	9.43	3.87	11.07	4.95
C10	10.13	2.64	9.77	4.95	10.30	3.90	8.67	3.90	11.43	4.71	11.27	4.02
C11	9.40	3.78	8.97	3.96	9.23	4.02	9.17	4.07	9.93	4.70	11.17	4.36
C12	9.83	2.83	9.57	4.93	9.57	3.80	8.70	3.81	9.37	4.17	9.70	4.36
Total	125.89	45.45	121.04	48.67	125.23	57.19	114.21	46.77	118.97	48.26	129.38	51.76

Note. * $p < .05$

4.2 Qualitative results

In the semi-structured interviews, the informants in the IG, CGA, and CGB tended to share a common belief that their identity of 'English exam-takers' faded away. Now they learn English for communication, and perceive themselves as 'communication-oriented English learners'. To develop their English proficiency, they expected to learn English from native speakers. In their extra English study, they longed for opportunities to exchange ideas with native speakers of English or someone more competent in English. Yet in an EFL context, such opportunities were rare, leading them to learn English through ICT.

The personal interviews showed that some informants in the IG displayed a growing awareness of metacognitive strategies in their extra English study. Hongtao, a low proficiency EFL postgraduate confessed that in the past he was weak in management of his English learning, and he seldom took part in English communication outside the classroom. Now he recognized that "learning to communicate in English requires long and painstaking efforts, and there is no short-cut". To be a postgraduate capable of communicating with others in English, he managed to get involved in English communication online.

Liudong, a high proficiency level informant revealed that in the past he learned English in the classroom but found it hard to use English. "Through ICT, specifically the e-forum, I exchanged ideas with others in English outside the classroom". Every Thursday evening, he took part in the English discussion via the online chatting tool QQ [Chinese version of 'Open I seek you' (OICQ)]. Interacting with his peers, Liudong felt that he got involved in real English communication. In his view, both sides of the communication achieved the goal to

improve their English proficiency. Without interacting with each other, the accomplishment of the goal would be impossible for either of them.

In the focus group interview, several informants in the IG hold the view that ICT made it possible for them to seek multi-source feedback in their writing process. To improve her English writing, Chenmin, an informant with medium proficiency in the IG, sent her English essays via e-mail to three more significant others: her sister who was pursuing her doctoral study at the University of Sheffield (UK), her former classmate studying at the Hong Kong University of Science and Technology, and an American teacher working in the School of Foreign Languages. She reflected on her sister's comment and learned to develop an English essay in response to the question raised. From her former classmate, she learned to argue cogently and consistently. For her, cogency and consistency meant that each point of the argument was used to support the central idea, without wandering off into an irrelevant or contradictory statement. From the feedback of the American teacher, she learned to come straight to the point and expressed ideas with a variety of sentence structures. As she remarked, "without their feedback, I could achieve little progress in my English writing". As becomes obvious, the informants in the IG showed a tendency to use ICT which appears to facilitate their English learning in an EFL context.

Without the use of ICT, the informants in the CGA admitted that the lack of English environment was an inhibiting factor in their English learning. The teacher of English was expected to provide them with more opportunities to communicate in English. In view of this, the teacher of English was regarded as a facilitator in their extra English study.

Apart from the facilitating role, the teacher of English was deemed to be an adviser in their English study. Several informants in the CGA said that they needed advice from the teacher. This was echoed in the remark of the informants who sought a marked difference in their academic writing performance: "The hardest part of my English writing is position statement, which was not prized in my undergraduate English study. To develop my argument, I consulted my English teacher and learned how to construct a position statement in an English essay". Shaojing, an informant with medium proficiency stated that "it is difficult to express exactly what I want to say while writing in English. I often get lost in a whirlpool of ideas. It is the counseling from the teacher that enables me to arrange ideas in the most logical order".

Textbook-based, a number of the informants in the CGA tended to perceive the teacher as a helpful guide in their English study. Asked whether they would become more effective without the teacher involved in their English learning, most informants in the CGA disagreed because EFL students, especially the students with low and medium proficiency, viewed the teacher as a navigator in their self-directed English study. Such a tendency was reflected in the following quote:

> *My past learning experience has convinced me that the teacher has an important role to play in my English study. For example, the learning resources from the teacher are very useful for my English writing.*

Some informants tended to perceive the teacher as a coach because English learning was taken as a complex and challenging intellectual-linguistic process. Li Lin said that "English writing requires our EFL students to organize ideas in a foreign language, and cultivates our ability to summarise, analyse, and criticise. For this reason, we need the teacher to direct our English learning". The semi-structured interview data showed that the students in the CGA tended to view the teacher as a helpful guide, navigator, and coach, suggesting some reliance on the teacher.

It is interesting to note that the informants in the CGB were offered no support of ICT or textbooks, and expected to exercise learner control in their extra English study. A number of informants demonstrated a tendency to seek support from their teachers as they considered the feedback from their English teachers insightful and specific. This was mirrored in the remark of a medium proficiency student, Weixin, "For writing research paper, the feedback of my English teacher helped me most." What impressed him was the teacher's

feedback for qualifying or moderating a claim in technical writing. From his English teacher, he learned how to make claims with caution, modesty, and precision (avoiding any imposition on readers). The feedback from the teacher was perceived as vital to the development of his English proficiency. In the words of Weixin, "without the teacher's feedback, I would have no idea how to take off and how to land, wasting much more time to find the right way".

Some EFL students in the CGB valued highly the learning resources from the teacher because they were regarded as conducive to their productivity in English. As Chunyan an informant with medium proficiency commented:

> *Thanks to the English resources from my teacher, I learned how to develop a piece of informative writing and how to conclude a piece of argumentative writing. Without such resources, I felt that I got lost in my English learning.*

Worthy of note is that other informants in the CGB tended to adjust their metacognitive strategies to fit their actual needs. Ning Lei, a high proficiency informant, planned to write a research paper in English, and he changed his way of English learning. He revealed that "in the past, I thought that if I followed the teacher, I would make rapid progress in English learning". Now he realised that it was only partially true, and he had to carry out his own self-directed English learning so as to compose a good quality research paper in English. To achieve his objective, Ning Lei squeezed more time for reading extensively research papers in his field. He read by underlining the key points, marking the transitional devices and good expressions. In this way, he familiarised himself with the academic English writing genre and improved his English writing skills.

Likewise, Jun Hui, a medium proficiency informant, reported managing to attend campus English corner where students irrespective of their academic status and English proficiency communicate with each other so as to improve their spoken English. Jun Hui enjoyed interacting with different English speakers. He reflected that

> *In the past, I relied heavily on the classroom English learning, but I could not exchange ideas with others in English. When I get involved in real life communication, I feel that I make steady progress in thinking on my own feet and expressing ideas in my own words. Although my English is far from perfect, I enjoy learning in this way.*

Data from semi-structured interviews indicate that without the support of ICT or textbook, a small number of informants in the CGB, especially those EFL students of medium or high proficiency, tended to learn English in their own style and exercise more learner control over their extra English learning. Such learning appears to involve transferring responsibility of learning from the teacher to the learner, demonstrating a tendency, weak or strong, towards learner autonomy.

4.3 Validity of the study

Several steps were taken to ensure the validity of the study. With respect to content validity, all constructs used in the study were derived from previous studies pertinent to foreign language learners' metacognitive beliefs such as perceived ability, agency, metacognitive strategies, learner independence, sense of responsibility, and learning-management (e.g., Benson, 2001, 2005; Cotterall, 1995, 1999; Dickinson, 1987, 1995; Graham, 2003, 2006; Paris & Winograd, 1990).

At the level of measurement, the researchers strove to maximise validity through careful sampling (e.g., stratified random sampling), appropriate instrumentation (e.g., questionnaires and semi-structured interviews), and statistical treatment of the data (e.g., ANOVA and Kruskal-Wallis test). All this was done to ensure that the study was reliable and replicable, viz. if another researcher did the study again, s/he would obtain the same or similar results.

A range of qualitative data was collected through semi-structured interviews in the form of focus group and

individual interviews. To ensure the validity of the qualitative data, a peer researcher (a colleague with a PhD from a Canadian university) was invited to double-check the qualitative data analyses (e.g., coding, categorising and analysing). All this helped to avoid potential oversimplifications and reduce the possible subjectivity or bias of the investigator (Babbie, 2008), ensuring that the conclusions reflected the complexity of the phenomenon under study.

The researchers were aware of the possible alternative explanations for the same metacognitive beliefs in question, especially one-side reporting involved (e.g., the interpretation of EFL students' perceptions of the role of the teacher). The researcher showed a serious concern for how far the findings fit with the existing knowledge (external validity). Hence, triangulation was used to enhance the validity and reliability of the study. In contrast to a single-method approach, triangulation involves two or more methods of data collection, seeking to explain more fully the richness and complexity of human behaviour (Cohen, Manion, & Morrison, 2000).

To answer the research questions raised in the study, combined research methods were employed: questionnaires and semi-structured interviews, ranging from quantitative to qualitative. Questionnaires provided some insight into, but maybe a limited view of the complexity of EFL learners' metacognitive beliefs. Hence semi-structured interviews were utilized for methodological triangulation, revealing not only individuals' perceptions but also group views. With triangulation, a more holistic view on EFL students' metacognitive beliefs became possible. In brief, different methods were used to corroborate findings, enhance the validity of the data, and bolster up the confidence of the researcher in data analyses.

5. Discussion

This study examined whether the metacognitive beliefs of EFL postgraduates changed according to experimental conditions. The quantitative results indicated that some metacognitive beliefs changed with the experimental conditions (i.e. metacognitive strategies, the role of the teacher, the role of feedback, and perceived usefulness of ICT, see 4.1), whereas other metacognitive beliefs (i.e. construct 1, construct 2, construct 5, construct 6, construct 7, and construct 8) showed no significant change.

The absence of a significant change in those metacognitive beliefs seemed hardly surprising. The limited time span (i.e. merely fifteen weeks) may partially account for the lack of statistical significance. As learner beliefs are context-dependent and changeable (Gallibon, 2005), more significant changes might be observed with a longer study. An alternative interpretation for the lack of statistical significance is that some metacognitive beliefs appear to be subject to gradual change, while others (such as perceived ability, learner independence) might be better explored through personal interviews. This suggests that the study of metacognitive beliefs may draw upon both quantitative and qualitative approaches.

To gain further insight into the metacognitive beliefs of EFL learners, questions for future research may be raised: 1) If metacognitive beliefs are modifiable, what educational intervention is needed to prompt their change for the purpose of learner autonomy (e.g., technology-supported language learning, textbook-based learning, or just leaving learners free to make their own choices)? 2) If metacognitive beliefs are dynamic as indicated in the present study, could longitudinal studies be more effective to gauge the far-reaching effect of metacognitive beliefs on foreign language learning? 3) Can the change in metacognitive beliefs lead to more effective learning strategies if instrumentality matters? Research of this nature may motivate and inspire more researchers and practitioners to explore the link between metacognitive beliefs and language learning, thus throwing new light on foreign language learning.

5.1 Limitations of the study

Some limitations of the study must be acknowledged. Firstly, the samples used in this study were postgraduates alone, who came from a university of science and technology (China). If postgraduates or undergraduates in social sciences, humanities and arts were involved, a broader and better view of EFL learners'

metacognitive beliefs might be gained.

Secondly, this research concentrated merely on EFL students' extra English study outside the classroom rather than classroom English learning. Before any claim can be made about EFL students' metacognitive beliefs in China's higher education, additional study is needed.

Thirdly, all data were collected and analysed by two Chinese teachers of English, who may run the risk of insider bias in their study. Although the researcher's self may offer a privileged insight into the EFL students' learning process, this may be seen as a limitation to the research (May, 1997) due to the fact that in the context of Confucian heritage culture, teachers are usually respected as parents, and the students are likely to avoid expressing too much about their feelings and opinions before their teachers. Thus, an insider bias was likely to arise.

6. Conclusion

This experimental study was designed to investigate metacognitive beliefs of EFL postgraduates in an EFL context. The results of the study indicated that some of the EFL students' metacognitive beliefs changed with the experimental conditions, as evidenced in construct 3 (metacognitive strategies) and construct 7 (the role of the teacher), construct 8 (the role of feedback) and construct 10 (perceived usefulness of ICT). Hence, the findings of the current study may answer the research question - whether metacognitive beliefs change according to experimental conditions: some metacognitive beliefs of EFL postgraduates tend to change with the experimental conditions.

With regard to the research question - how do the participants perceive themselves as English learners: the findings from the semi-structured interviews indicate that most of the EFL students in the IG, the CGA and the CGB tend to view themselves as 'English communicators', rather than 'English exam-takers'. As non-native English speakers, they seem to become aware of their weakness and difficulties. To achieve their learning objectives, they tend to adjust their metacognitive strategies and exercise more learner control in different ways. They employ a range of English learning strategies and manage to become active English learners.

To have a better understanding of metacognitive beliefs of EFL learners, future research work needs to be carried out to explore Chinese model of learning from an emic perspective (i.e. views of those being investigated). Noteworthy is that the model of learning places an emphasis on the Chinese folk term of hao-xue-xin – heart and mind for wanting to learn, stressing diligence, perseverance, application of knowledge, use of effective methods, self-cultivation, and self-perfection (Li, 2002). The Chinese model of learning appears to be connected with 'personal agency' (Lamb & Coleman, 2008), which refers to the socioculturally mediated capacity or willingness to act (Hall, 2005). Associated with metacognitive beliefs (i.e. agency, instrumentality, purpose and control), personal agency may lead EFL students to overcome a variety of obstacles and different constraints on learner autonomy (Benson, 2008). Whether the Chinese model of learning may work as a directive force for EFL students to conduct autonomous English learning merits an in-depth investigation.

6.1 Implications for teaching and learning

The pedagogical implications of this study are triple-fold. The first one is the role of the teacher. Given that the role of the teacher shifts from knowledge transmitter to facilitator and adviser at the stage of postgraduate English learning, teachers need to provide EFL students with more opportunities to take control of their own learning. The role of the teacher is emphasized because the decision to promote autonomy usually comes from the teacher (Benson, 2001). As classroom English teaching hours are reduced, EFL students need a regular helping hand from the teacher (e.g., mediated-learning or scaffolding).

Within the framework of Feuerstein's (1990) theory of mediated learning, mediations should be tailored to learners' needs. Mediators are required to provide the learning situation with purpose and intentionality. The

mediator is asked to help learners find meaning in their learning experiences. Instead of following the mechanical way of learning, EFL students need to do constant thinking about learning goals, appropriate learning strategies, and other relevant factors in their learning process. The mediator is expected to help learners move beyond their present concerns and apply what they have learnt to other settings (transcendence).

The second implication is how to meet student expectations. As Lebeau observes, "they [English learners] want to be 21st century, international citizens and participate actively in modern, globalised society" (2009, p.132). To achieve their aspirations, English teaching needs to help students develop their transferrable skills and communication skills because they need to communicate across national borders.

To transfer learning responsibility to the learner, the teacher needs to listen to the students with empathy, and provide them with opportunities to communicate in English. "The teacher must seek ways of enabling learners to take control of their learning, to build up an appropriate positive level of self-esteem, to see what happens to them in their lives as within their control, and therefore, to view their success and failures as unstable and controllable" (Williams & Burden, 1997, p.108). By empowering the learner in this way, the teacher can help students practice self-management skills, assume responsibility for their own learning, and become truly autonomous.

The third pedagogical implication is "ICT-supported learning" (Yuvienco, 2012). The increasing application of technology in English language teaching and learning tends to "make virtual learning environments work for us as teachers" (Skinner, 2009, p. 139). As ICT is viewed by university students as a partner of their English study, teachers are expected to capitalize on technology-supported English learning resources, and "guide learners' learning in a scaffold manner" (Yuvienco, 2012, p.49). With multimedia learning resources, EFL students are not necessarily confined to classroom learning. In a digitalized age (Figura & Jarvis, 2007), teachers of English should direct more attention to technology-supported English learning outside the classroom so as to "free us [teachers] from the restrictions of space and time", and "increase student participation and autonomy" (Beaven, 2009, p.10).

As more effort is spent on technology-assisted English teaching and learning in higher education, teachers of English are faced with dramatic changes that new technologies bring about. The new possibilities created by technologies should be used to strengthen student-teacher and peer-peer interaction in an EFL context. To sustain self-directed and socially-mediated learning, teachers of English should use technology to provide EFL students with a novel environment to communicate and collaborate in English. Supported by new technologies, teachers should "encourage them to voice their opinion" (Zafar & Meenakshi, 2012, p. 39), and "exercise autonomy in different ways" (Tschirhart & Rigler, 2009, p.71). Although creating an English-rich environment is time–consuming, yet it is worth the effort because it allows EFL students to "fully exploit the advantages and opportunities offered by ICT" (Reguzzoni, 2009, p. 144). More importantly, creating an inexpensive but effective virtual learning environment (VLE) may cater for different learning styles, boost motivation, and maximise English learning opportunities in an EFL context (Reguzzoni, 2009).

7. References

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Appendixes

Appendix A: Matrix of the participants in the three experimental groups

Group	Female	Male	Total
IG	9 (L 3, M3, H3)	21 (L 7, M7, H7)	30 (L 10, M10, H10)
CGA	9 (L 3, M3, H3)	21 (L 7, M7, H7)	30 (L 10, M10, H10)
CGB	9 (L 3, M3, H3)	21 (L 7, M7, H7)	30 (L 10, M10, H10)
Total	27 (L 9, M9, H9)	63 (L21,M21,H 21)	90 (L 30, M30, H30)

Note: L = low proficiency students, M = medium proficiency students, H = high proficiency students

Appendix B: Questionnaire on EFL learners' metacognitive beliefs (QELMB)

Name:_____ Gender: M/F ____ Age: _____ National English Test Score: _____

Please stick your responses using the following scale. [7—point scale rating from 1 (Agree) to 7 (Disagree)]

		Agree						Disagree
1	I think I'm good at English.							
2	I'd like to visit English speaking countries.							
3	I know what the reason is when I do well in English.							
4	Doing well in English is up to me.							
5	I'm good at learning languages.							
6	I'd like to be able to talk to English people.							
7	When I get good marks in English I usually know why.							
8	If I do badly in English it's my own fault.							
9	If I had the choice I'd give up learning English.							
10	I need the teacher to tell me how I am progressing.							
11	However hard I try, I'll never do well in English.							
12	I usually know what the reason is when I do badly in English							
13	I am the person who is most responsible for how well I do in English.							
14	I try to find my own ways of learning English.							
15	I'm no good at English.							
16	There's no point trying hard in English as I won't improve.							
17	When I get things wrong in English I can't understand why							
18	I'd choose to learn English even if there were no exams.							
19	I am confident about my ability to do well at English.							
20	If I made a big effort, I could be good at English.							
21	If I try hard at English, I can do well.							
22	It is my own responsibility to do well in English.							
23	I plan my English studies carefully.							
24	I try to set myself goals when I study English.							
25	I often check my own progress in learning English.							
26	I like the teacher to offer help to me.							
27	I like the teacher to tell me what my difficulties are.							
28	The feedback from my teacher is important to me.							
29	I like the teacher to direct my English learning.							
30	I find it helpful for the teacher to give me regular feedback.							
31	It is important for me to get feedback in my learning.							
32	I have a clear idea of what I need English for.							
33	I like trying my own ways of English learning.							
34	I like to make use of the English learning resources outside the classroom							
35	Use of ICT will have no impact in my English study.							
36	Use of ICT can decrease the time needed for my study.							
37	Use of ICT can give me more choices to improve my English.							

38	Exchanging ideas with peers on the internet makes my English learning ejoyable.							
39	I'm interested in English learning via ICT.							
40	Considering all asks, the use of ICT helps improve my Eglish learning							
41	Use of ICT may enhance my verbal communication skills in collaborative learning.							
42	Use of ICT may enhance my interpersonal skills in collaborative learning.							
43	ICT makes my English learning boring.							
44	Working/studying with ICT is fun.							
45	ICT makes collaborative learning easier.							
46	Feedback helps me to improve my English learning.							
47	ICT enables me to work with more capable peers.							
48	I like to create opportunities to practise my English.							

Appendix C: Individual interview guide

1. Do you set goals in your English study?
2. Do you consider yourself competent in English communication?
3. How do you improve your English proficiency outside the classroom?
4. What's your understanding of learner autonomy?
5. What are the differences between your past English study and your present English study?
6. What strategies do you use to improve your English productivity (Speaking and writing in English)?

Appendix D: Focus group interview guide

1. What motivates you to study English?
2. How do you perceive yourself as an English learner?
3. How do you improve your English proficiency in your extra English study?
4. Which do you prefer, self-directed or socially-mediated learning?
5. How do you overcome the hurdles in your English study?
6. Do you think you have become more autonomous than before? in what way?

Appendix E: No significant differences between the 3 groups for the 12 constructs at pre-test

Test Statistics[b,c]

			Construct 1 pretest	Construct 2 pretest	Construct 3 pretest	Construct 4 pretest	Construct 5 pretest	Construct 6 pretest	Construct 7 pretest	Construct 8 pretest	Construct 9 pretest	Construct 10 pretest	Construct 11 pretest	Construct 12 pretest	Total Metacognitive belief Pretest
Chi-Square			1.207	.387	.623	.209	2.362	.313	.214	.733	.629	1.143	.206	.738	.318
df			2	2	2	2	2	2	2	2	2	2	2	2	2
Asymp. Sig.			.547	.824	.732	.901	.307	.855	.899	.693	.730	.565	.902	.692	.853
Monte Carlo Sig.	Sig.		.547[a]	.827[a]	.733[a]	.905[a]	.303[a]	.856[a]	.898[a]	.695[a]	.732[a]	.566[a]	.899[a]	.694[a]	.853[a]
	99% Confidence Interval	Lower Bound	.534	.817	.722	.897	.291	.847	.891	.684	.721	.553	.891	.682	.844
		Upper Bound	.560	.836	.744	.913	.314	.865	.906	.707	.743	.578	.907	.706	.862

a. Based on 10000 sampled tables with starting seed 2000000.

b. Kruskal Wallis Test

c. Grouping Variable: Group