Motivation and English Achievement: An Exploratory and Confirmatory Factor Analysis of a New Measure for Chinese Students of English Learning

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Guided by self-determination theory, the present study sought to (1) construct a scale of English learning motivation in a particular Chinese context, the Intrinsic /Extrinsic Motivation Scale of English Learning (I/EMSEL) and (2) explore the relationship between intrinsic motivation, extrinsic motivation and English achievement. The I/EMSEL scale was administered to two samples of first-year non-English-majors. Factor analysis of the results revealed a multidimensional construct composed of motivation for knowledge, motivation for challenge, internal fulfillment regulation and external utility regulation, together explaining 53.3% of the variance. Pearson correlations and multiple regressions were then performed between different kinds of motivation and English achievement. Results indicated that autonomous extrinsic motivation correlated positively with intrinsic motivation and achievement, while controlled extrinsic motivation correlated negatively with them. The results were discussed from the aspect of self-determination theory and the reference to their relevance in the EFL classroom.

In the field of second language acquisition (SLA) there have been various attempts to define second language acquisition motivation and to discover the relationship between motivation and English achievement. It has been argued that learning a second language differs from learning other school subjects because of its social nature (Dörnyei, 2003). Many theories of language learning motivation tend to be social-psychological, among which the most influential is Gardner's socio-educational model, including attitudes, motivations and anxiety variables (Gardner, 1988; Gardner, Masgoret, Tennant, & Mihic, 2004; Masgoret & Gardner, 2003). Integrative orientation and instrumental orientation are two important factors in his theory. An integrative orientation occurs when learners hold favorable attitudes to the language/culture, and wish to identify with the culture of speakers of that language. An instrumental orientation refers to the utility value of learning a second/foreign language, such as passing examinations, financial rewards or future

career. Burke (2004) found that aspects of integrative motivation are related to greater motivational effort as well as better language competence in learning a second language. An instrumental orientation was likely related to outcomes such as job-seeking and social status.

In recent years Gardner's socio-educational model has met with some criticism. Much of the criticism seems to question the importance of social aspects of second language learning motivation, and its relevance in different contexts (Mori & Gobel, 2006). Furthermore, Csizé and Dörnyei (2005) found that the term integrativeness was not so much related to any actual integration into a second language community as to a more basic identification process within the individual's self-concept. It is necessary to seek potential new conceptualizations and interpretations.

In the 1990s guided by self-determination theory (SDT) some researchers tried to explore the motivation of SLA (Noels, 2003, 2005; Noels, Pelletier, Clément, & Vallerand, 2001; Shaikholeslami, 2006; Tae-II, 2008). Moreover, psychology researchers have become increasingly aware of the importance of contextual and cultural variables affecting motivational processes, especially the difference between Asian students and American or European students (Yi-Guang, McKeachie, & Yung, 2003). In China, English is regarded as a foreign language (EFL) and Chinese culture is somewhat different from American culture on account of its booming economy, rapidly growing international trade and expanding presence in the world science and technology market, so it is very important to investigate the English learning motivation of Chinese students. Furthermore, most researchers focus on western culture and there is no appropriate scale to assess the motivation of English learning of Chinese students. Therefore, one important purpose of the study is to construct a new measure of English learning motivation.

Intrinsic motivation originates from within the individual and results in enjoyment of the process of increasing one's competency in regard to particular academic tasks. Extrinsic motivation is motivation induced by rewards or punishment dependent upon success or failure in the task (Deci & Ryan 2000; Walker, Greene, & Mansell, 2006). Contrasted with intrinsically motivated students, who work for the feeling of satisfaction or accomplishment, extrinsically motivated students will perform mainly for the attainment of a desired external reward or to avoid external punishment.

Are extrinsic and intrinsic motives necessarily incompatible? In the past, researchers found that extrinsic motivation sometimes has a destructive impact on intrinsic motivation by perceived constraints on autonomy (Lepper, Greene, & Nisbett, 1973). Hennessey and Amabile (1998) also found that a promised reward for non-specific performance lessened intrinsic motivation by reducing perceived self-determination or

increasing attention to the reward. However, the external reward contingency (requiring a high level of performance or novel performance) may increase perceived competence and self-determination, thus increasing intrinsic motivation. Researchers (Covington, 2000a, 2000b; Eisenberger & Shanock, 2003) found that if external rewards function as feedback for how they can improve and learn more, external rewards may improve intrinsic motivation.

Why do those results seemingly conflict with each other? Firstly, researchers use different methodology and procedures to define intrinsic and extrinsic motivation (Eisenberger & Shanock, 2003). Secondly, it is suggested that researchers should investigate the effects of different kinds of external rewards on intrinsic motivation. A meta-analysis showed that different kinds of rewards function differently (Deci, Koestner, & Ryan, 1999).

Self-Determination Theory. Self-determination theory has proposed that individuals have three innate, psychological needs. These are the need for autonomy, which concerns experiencing choice and feeling like the initiator of one's own actions; the need for competence, which is the need to succeed at optimally challenging tasks and to be able to attain desired outcomes; and the need for relatedness, a social need concerned with establishing a sense of mutual respect and relatedness with others (Baard, Deci, & Ryan, 2004; Ryan & Deci, 2000b). External factors which fulfill those three basic psychological needs would enhance intrinsic motivation and those factors which reduce them would decrease intrinsic motivation. What's more, autonomy support is the most important social-contextual factor for predicting autonomous behavior. Indeed, many studies have found that autonomy-supportive interpersonal environments could promote internalization and integration of extrinsic motivation and in turn lead to positive outcomes (Black & Deci, 2000; Deci, Koestner, & Ryan, 2001; Matsumoto & Takenaka, 2004).

In SDT internalization is the process of taking in a value or regulation, and integration is the process by which individuals more fully transform the regulation into their own. According to the degree of internalization, extrinsic motivation can range from unwillingness, to passive compliance, to active personal commitment. That is (a) amotivation, which is the state of lacking an intension to act; (b) external regulation, under which behaviors are performed to satisfy an external demand or obtain an externally imposed reward contingency; (c) introjected regulation, which refers to a partial internalization in which external regulations are taken in by the individual but are not accepted as his or her own (Black & Deci, 2000); (d) identification, which refers to a fuller internalization in which the person identifies with the value of a behavior and accepts it as his or her own; (e) integrated motivation, when

one fully internalizes the reasons for an action and assimilates them to the self, when extrinsically motivated actions became integrated and self-determined (Gagné & Deci, 2005; Ryan & Deci, 2000a, 2000b, 2006; Vansteenkiste, Lens, & Deci, 2006).

Motivation to Learn a Second Language Noels et al. (2001) found that external regulation strongly correlated with instrumental orientation, identified regulation and intrinsic motivation correlated with travel, friendship and knowledge orientation in second language learning. He also suggested (2003) that integrativeness is an intergroup substrate and intrinsic/extrinsic motivation is an interpersonal motivational substrate. Tae-II Pae (2008) found that instrumental orientation and external regulation are basically the same, whereas integrative orientation and intrinsic motivation are different. I think there is some difference between integrative and intrinsic motivation. The former concerns not only intrinsic motivation (e.g. the favorable attitude toward the language), but extrinsic motivation as well.

In general current motivational theories of SLA have been developed from a western perspective and most data that have been collected are based on learners who are from western cultures. Very little research has investigated motivational factors of students who are from Asian backgrounds, such as China. I believe that the implications of Deci's model needed to be re-examined in reference to Chinese learners.

The wide international use of English leads to the importance of English learning for most Chinese students. But teachers have found that it is difficult to motivate them in the classroom. In addition, most teachers spend more time teaching grammar and language points, ignoring the communication between teachers and students, so students have little chance to practice English in the class (Zeng & Murph, 2007). Even worse, examinations play a very important role in English learning. Getting a good grade or passing an examination is an overriding motivation in courses for most students. In China examination of CET- 4 is very important for college students because it is a baseline to graduate from a university and a stepping-stone for future work.

Guided by SDT the present study involved the development of a new instrument to assess English learning motivation. It also explored the link between motivational factors and English achievement. There were two questions: (1) what constitutes English learning motivation in a sample of university students in China? (2) What is the relationship between intrinsic motivation, extrinsic motivation and English achievement?

METHOD

Participants

There were two samples in the survey. The size of Sample 1 was 140 and participants were freshmen from several non-English majors (for example, educational technology, journalism, and education) at a comprehensive university in China. Males constituted about 45.6% of the sample with a total mean age of about 20. The participants in Sample 2 were 329 freshmen from the same university and they were randomly selected from several non-English-majors, such as mathematics, physics, education, computer science, Chinese literature, and art. The participants were about equal numbers of men and women between the ages of 18 and 20 years.

Measures and Procedure

Motivation Questionnaire   Most items of the scale were written based on the constructs proposed in SDT and SLA motivation (Mori & Gobel, 2006). The questionnaire, consisting of 24 five-point Likert scale items, was developed and group administered to two samples, Sample 1 for exploratory factor analysis and Sample 2 for confirmatory factor analysis (see Appendix for the English translation of the questionnaire). The constructs are (a) motivation for knowledge, learning English that is driven by curiosity and mastery, (b) motivation to challenge, preference for hard or challenging tasks and striving for competence and mastery in intrinsic motivation (Eccles & Wigfield, 2002). Meanwhile, there are two subscales in extrinsic motivation based on SDT: External utility regulation, and internal fulfillment regulation. The mark on the final English examination of the semester was used as an indication of English achievement.

RESULTS

Exploratory Factor Analysis of the Questionnaire. In order to determine the interrelationships among the questionnaire items, a principal components analysis was performed with sample one. The number of factors to be extracted was based on the following criteria: minimum eigenvalues of 1.0; each factor contains individual items with a minimum loading of 0.32 (Tabachnick & Fidell, 1996, as cited in Mori & Gobel, 2006); and eigenvalues appear before the decrease of eigenvalues level off on the scree plot.

In order to determine the best items for each of the motivational subscales, any items which did not load on any factors at >.45, and/or items which seemed to be rather confusing based on the previous administrations of the questionnaire were eliminated (see Appendix for the mean of each item and the eliminated items), and the correlation matrix was reanalyzed.

After varimax rotation, a four-factor solution was chosen, which accounted for 53.5% of the total variance in the motivation scale (see Table 2). The reliability of the I/EMSEL after eliminating the confusing items using Cronbach's alpha was .80.

TABLE 1 Principal Components Analysis Summaries: Eigenvalues and Percent of Variance Explained

Factor	Eigenvalue	Pct of Var	Cum Pct
1	5.54	26.39	26.39
2	3.07	14.61	41.00
3	1.46	6.95	47.94
4	1.17	5.55	53.50

Most of the items loaded on Factor 1 are concerned with interest in learning English. Thus Factor 1 is referred to as motivation for knowledge. Factor 3 is concerned with the motivation for challenge subscale, in which students prefer challenging tasks and hold positive attitudes toward English examination. Item 17, "*it is very challenging to communicate with foreign speakers*", may seem a little confusing. It belongs to the "motivation for challenge" subscale because most students are not confident of oral English, even though they might have scored high on the English examination. When meeting with foreigners they are afraid to talk with them directly and they may struggle a long time to initiate a conversation, so it is challenging to communicate with foreigners. These two subscales were used as indicators for the latent variable intrinsic motivation (see Table 2).

The item "*I like English movies*" originally was classified as "motivation for knowledge" subscale, but it is loaded on the motivation for challenge subscale. One possible reason is that English language movies are a little difficult for Chinese students, thus challenging for students. In addition, the items "*I will persist when facing difficulties in English learning*" and "*I feel more confident in English learning compared with my classmates,*" which originally were classified as motivation for challenge subscale, actually loaded on the "motivation for knowledge" subscale. Those items may also be indicators of interest in English learning.

There are two extrinsic motivation subscales. Most items that loaded on Factor 2 are concerned with the internal fulfillment regulation of English learning. Students with high scores on Factor 2 have internalized the importance of English learning. Factor 4 is mainly concerned with the external utility of learning English. Students with high scores on factor 4

study English mainly for external rewards, such as praise from the teacher, graduation, and passing the examination.

Confirmatory Factor Analysis of the Questionnaire. The final scale was group administered to Sample 2 and confirmatory factor analysis using Lisrel 8.70 was done to assess its construct validity. The chi-square statistic and three relative fit indices, namely, the non-normed fit index (NNFI), the comparative fit index (CFI), and the root mean square error of approximation (RMSEA) was used. It has been found that a good fit would be indicated by a non significant chi-square test statistic, values greater than or equal to .90 for the NNFI and CFI, and a value less than or equal to .10 for the RMSEA(Hau, Wen, and Cheng, 2004). In this study NNFI=.91, CFI=.92, RMSRA=.079. Based on the fit indices the construct validity of the questionnaire is good (the correlation matrix is omitted).

TABLE 2 Principal Components Analysis Summaries: Factor Loadings

	1	2	3	4
Factor 1 motivation for knowledge				
1. I like learning English.	*.61*	.09	-.04	-.05
2. I will persist when facing difficulties in English learning.	*.75*	.04	.30	.03
4. I like listening to English speech.	*.46*	.20	.40	-.20
5. I like reading English articles.	*.70*	.04	.35	-.16
6.I feel more confident in English learning compared with my classmates.	*.73*	.08	.13	.05
7. I work on my English assignments according to a planned schedule.	*.53*	.32	.22	-.21
Factor 2 internal fulfillment regulation				
8. I study English diligently for potential development in the future.	.18	*.67*	.22	-.01
18. In order to know the recent development in my major, I study English diligently.	.29	*.32*	.20	.29
21. English is a very important tool for communication so I study it diligently.	.26	*.76*	.23	-.04
22. In order to get an ideal job in the future I study English diligently.	-.02	*.77*	-.07	.33
23. English learning takes great advantage on the future work.	.03	*.78*	.14	.18
Factor3 motivation to challenge				
9. I like challenging to difficult tasks.	.18	-.01	*.64*	.08
10. I treat English examination as an evaluation of what I have learned about English.	.41	.14	*.60*	.13

11. I like English movies.	.26	.01	*.53*	-.15
12. I am excited when I have accomplished a difficult task in English learning.	-.05	.22	*.74*	-.14
3. I can finish my English homework actively.	.36	.26	*.45*	-.07
17. It is very challenging to communicate with foreign speakers.	.07	.38	*.59*	.09
Factor 4 external utility regulation				
13. I study English hard for the praise of the teacher.	.18	-.06	-.01	*.68*
15. I study English only to pass CET 4 or CET 6.	-.26	.13	-.01	*.71*
19. The English achievement is a crucial factor in getting the scholarship, so I study English diligently.	-.00	.18	.02	*.74*
20. I study English diligently merely to graduate from university.	-.30	.13	-.17	*.69*

TABLE 3 Pearson Correlations among Intrinsic Subscales, Extrinsic Subscales and English Achievement

	1	2	3	4
1. Motivation for knowledge				
2. Motivation to accomplish	.62**			
3. External utility regulation	-.14**	-.05		
4. Internal fulfillment regulation	.59**	.40**	.01	
5. English Achievement	.49**	.31**	-.23**	.22**

N =329;**p<.01 level (2-tailed); *p<.05 level (2-tailed)

The Relationship between Intrinsic Motivation, Extrinsic Motivation and English Achievement To determine the relative importance for English achievement, multiple regressions were computed with motivation for knowledge, motivation to accomplish, external utility regulation and internal fulfilment regulation as predictors and English achievement as the dependent variable. First, the Enter selection method was used and colinearity analysis was done. The results showed that (1) tolerance for all the indicators was higher than .467 and VIF (variance inflation factor) was about 2; (2) the condition index for the latter three dimensions was about 20. Obviously, it showed that there was problem with multi-colinearity within the model because the condition index was much higher than 10. Then a backward selection method was used to

choose appropriate variables for the regression model. The results were as following:

In the model the adjusted R square was .26 and the condition index for two dimensions were about 10. It indicated that English achievement is predicted by motivation for knowledge (β=.47**) and external utility regulation (β=-.17*).

TABLE 4 Regression Statistics

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	7132.39	2	3566.19	59.95	.0001
Residual	19393.96	326	54.49		
Total	26526.35	328			

TABLE 5 Coefficients of Multiple Regression

Model	Beta	t	Correlations	Tolerance	VIF
Motivation for knowledge	.47	9.78**	.49	.98	1.02
External utility regulation	-.17	-3.51**	-.23	.98	1.02

N =329;**p<.01 level (2-tailed); *p<.05 level (2-tailed)

DISCUSSION

One of the purposes of this study is to develop an appropriate instrument to assess the English learning motivation in a Chinese cultural environment. There are some questionnaires of second language learning motivation but many of them have been done based on western culture. Differences between eastern and western culture render it necessary to develop a new measure tailored to Chinese college students.

Most researchers define academic intrinsic motivation in terms of (a)learning that is driven by curiosity or interest; (b)preference for hard or challenging tasks;(c)striving for competence and mastery. But there were two factors of intrinsic motivation in my scale because students who preferred hard or challenging tasks such as English learning tried hard to accomplish competency.

The focus of the research was on extrinsic motivation (comprising external utility regulation and internal fulfillment regulation). Students with external utility regulation learn English mainly for the praise of the teacher, examination and graduation. Internal fulfillment regulation is an autonomous motivation which means that the individual has internalized the value and regulation of English learning. English learning is beneficial for college students in that it can make them keep in touch

with the latest development in their majors and prepare them for future jobs.

Compared with other research done in English-speaking countries, the English learning motivation of Chinese students showed special characteristics. Mori and Gobel (2006) found that to go abroad or travel overseas is important for Japanese college students. Those items also are treated as indicative of integrative motivation. However, the item "*In order to go abroad in the future I study English diligently*" didn't load on any factors in the present research. It shows that Chinese college students don't have a strong desire to go abroad or to integrate into English-speaking communities. The difference may be due to the cultural context because it is impossible for most students to go abroad or to make foreign friends in China.

The results provide implications for English teachers in China. It is argued that examinations play a very important role in English learning. What attitude should we have towards them? If students are learning English merely to pass an exam then they are motivated externally. If students have internalized the importance of English learning they have internal fulfillment regulation which is more autonomous, and if students treat an English examination as an evaluation of what they have learned they have intrinsic motivation.

In this study both aspects of intrinsic motivation subscales correlated significantly with English achievement and the factor of motivation for knowledge was a moderate predictor of it. These results are consistent with other research (Tae-II, Pae, 2008; Yi-Guang Lin, et. al. 2003). Students with high intrinsic motivation show great interest in English, put much effort into English learning, have a high academic self-concept (Cokley, Barnard, Cunningham, & Motoike, 2001), high self-efficacy (Yi-Guang, Lin, et. al.2003), and tend to persist when facing challenging tasks. Intrinsic motivation also influences academic achievement through the effects of learning strategies and self-confidence (Tae-II, Pae, 2008; Walker & Greene, 2006).

There are different results for each factor of extrinsic motivation. External utility regulation correlated negatively with intrinsic motivation and English achievement, which is partly consistent with other research (Shaikholeslami, 2006). External utility regulation is a controlled motivation which decreases autonomy and causes EPLOC(external perceived locus of causality). Thus, it correlated negatively with intrinsic motivation. On the other hand, students with external utility regulation may learn English mainly because of external factors, such as to graduate, or to pass an English examination. If they can't get prompt rewards they probably will not persist in learning English. Besides, they may feel guilty and anxious if not learning much, and thus possibly

employ self-defense strategies (Tanaka, et. al., 2000). Walker and Deci (2006) found extrinsic motivation was the only variable that predicted a shallow cognitive strategy, which was negatively related to achievements.

Internal fulfillment regulation, an autonomous extrinsic motivation, correlated positively with intrinsic motivation and English achievement. Other research has also found that intrinsic motivation and identified regulation of SDT correlated strongly (Noels 2003; Tanaka, Yamauchi, Hirotsugu 2000). In addition, internal fulfillment regulation is positively related to self-actualization, self-esteem, ego development, and satisfying interpersonal relationships (Gagné & Deci, 2005). Students with internal fulfillment regulation have recognized the importance of English learning and internalized it into their self value system. They tend to put forth more effort, search for more appropriate strategies, and employ autonomous learning, which leads to greater achievement.

The I/EMSEL was developed in the present study, adding to the findings on the second language learning motivation of Chinese subjects. The present study also confirmed that the framework of SDT is empirically testable and indeed stood up well under empirical scrutiny. By invoking the psychological mechanisms of perceived autonomy, competence, and relatedness, it can account for why some learners do better than others (Noels, 2003). For example, the motivation to get rewarded or pass an examination can vary from external utility regulation to internal fulfillment regulation according to the degree of autonomy.

There are some limitations to the present study. More work on the scale is needed before it can be considered to be valid. Other kinds of validity including predictive, divergent and convergent validation are needed besides construct validity. What lies ahead is to compare the new scale with the existing Intrinsic/Extrinsic motivation, put it in other environments besides the present one and test whether those who have a high degree of motivation to learn English later perform well. Secondly, parental expectation is excluded from extrinsic motivation. In Chinese culture learning is believed to depend upon effort rather than ability. Parents believe that all students can learn well if they persist; Thus, parents would hold high expectations for their children. Finally, in SDT, there is amotivation besides intrinsic/extrinsic motivation, which was not taken into consideration.

It is also necessary to identify factors that facilitate intrinsic motivation and the internalization of extrinsic motivation in English language learning. Moreover, future research should be based on other theories of motivation and examine diverse learning strategies, which might enable researchers and teachers to optimize the learning of English as a second language.

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APPENDIX

English translation of the Intrinsic /Extrinsic Motivation Scale of English Learning

Read the following statements and choose the number that best matches your opinion of each statement:

1 Strongly disagree 2 Slightly disagree 3 Neither agree or disagree 4 Slightly agree 5 Strongly agree	Mean
1. I like learning English.	3.53
2. I will persist when facing difficulties in English learning.	2.95
3. I can finish my English homework actively.	3.26
4. I like listening to English speech.	3.30
5. I like reading English articles.	3.21
6. I feel more confident in English studying compared with my classmates.	2.81
7. I work on my English assignments according to a planned schedule.	3.49
8. I study English diligently for potential development in the future.	3.63
9. I like challenging to difficult tasks.	3.28
10. I treat English exams as an evaluation of what I have learned about English.	3.56
11. I like English movies.	3.51
12. I am excited when I have accomplished a difficult task in English learning.	3.88
13. I study English hard for the praise of the teacher.	2.23
14. I seldom read English out of English class.	2.60
15. I study English only to pass CET-4 or CET- 6.	3.05
16. I seldom finished English homework.	2.33
17. It is very challenging to communicate with foreign speakers.	3.49
18. In order to know recent developments in my major, I study English diligently.	2.51
19. The English achievement is a crucial factor in getting the scholarship, so I study English diligently.	2.35
20. I study English diligently merely to graduate from university.	2.93
21. English is a very important tool for communication so I study it diligently	3.56
22. In order to get an ideal job in the future I study English diligently.	3.40
23. English learning takes great advantage on the future work.	3.74
24. In order to go abroad in the future, I study English diligently.	3.25

Note: items with * are eliminated items.