The Effectiveness of Two Treatments to Enhance Academic Self-Concept among Low-Achieving Secondary School Students in China

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Abstract

The present research focused on investigating the effectiveness of two treatments to enhance academic self-concept among low-achieving junior middle school students, who continue their learning in the secondary vocational education (SVE) system of China. The results demonstrated that the intervention delivered in natural classroom settings significantly enhanced English self-concept, the targeted facet of the academic self-concept. Moreover, the intervention did not change Chinese and Mathematics self-concepts (two control facets of academic self-concept) significantly, lending support to the multidimensional conceptualization of self-concept. It should be noted that the improvement in English achievement among the two experimental classes was statistically significant as well, providing more empirical evidence for the effectiveness of feedback intervention. Future use of the two treatments to enhance academic self-concepts in natural classroom settings is discussed.

Keywords: academic self-concept, internally focused performance feedback, attributional feedback, academic achievement

Rationale to Enhance Academic Self-concept

Based on recent advances in self-concept theories, researchers have identified the relationship between academic self-concept and academic achievement appears to be reciprocal (Marsh & O'Mara, 2008; Marsh, Tracey, & Craven, 2006; Marsh & Yeung, 1997). For example, Marsh and Yeung (1997) found prior self-concept affects subsequent achievement after controlling for the effects of prior achievement. Also, prior achievement in specific subject areas affects subsequent academic facets of the self-concept. Consistently, Marsh, Byrne, and Yeung (1999) identified that there is clear support for a reciprocal effects model (REM) based on existing studies that employed strong methodology. According to the REM, the long-term gains of a positive academic self-concept can be maintained when corresponding academic achievement is improved, and vice versa (Craven et al., 2003; Marsh & Craven, 1997; Marsh & O'Mara, 2008). In other words, academic self-concept enhancement will lead to desirable learning outcomes, reciprocally, successful learning experiences will help students generate positive feelings of competence and learning enjoyment and maximize their potential to learn (Craven et al., 2003; Guay, et al., 2003).

The Present Study

The present study focused on enhancing the academic self-concept of low-achieving secondary vocational students in mainland China. To understand the low-achievement of students in secondary vocation education (hereafter called SVE), we had conducted two other studies investigating student personal factors that would have an influential impact on academic achievement, from which the likely major role of academic self-concept emerged. More specifically, on one hand, we found academic self-concept (measured by Marsh's SDQ-I) of secondary vocational students is the best predictor of academic achievement (β= .39, p< .001) compared with their approaches to learning (β = .17, p<.05) and internal locus of control (β = .07, p<.05). On the other hand, we also found students in SVE experience the lowest academic self-concept. In particular, English self-concept scores of SVE students were lowest (M = 20.80, SD = 7.66) compared with scores on Chinese and mathematics self-concepts (M = 25.37, SD = 7.04 and M = 21.65, SD = 8.53, respectively). Additionally, in contrast

to English Self-Concept scores among students in senior secondary education, those of students in SVE are substantially lower, t (509) = 4.64, p<.001. Hence, the English self-concept of secondary vocational students is proposed to be the first targeted facet of the self-enhancement intervention.

Methods

Sampling

Participants in this study were 120 students (boys = 41, girls = 79), aged from 15 to 18 years (M = 16.17, SD = 0.89). The sampled school was a typical SVE school in Guizhou, Southwest China.

Procedure

Intervention Administered in Natural Classroom Settings. To administer the intervention in natural classroom settings, the author was initially permitted to work as a regular teacher to teach participants English. The author was also requested to teach strictly according to the teaching objectives proposed by the sampled school based on SVE students' poor prior knowledge of English.

Intervention Conducted Through Two Treatments. During the 16 weeks' regular teaching, the combined feedback and performance feedback alone were delivered to the two experimental classes respectively through two types of learning activities aiming to assist students in fulfilling their learning intentions. The first type of activities focused on assessing students' spoken English performance, in which pronunciation and reading exercises concerning vowel and consonant sounds of English with the International Phonetic Alphabet (IPA), words and sentences were designed. All spoken exercises were required to be finished in regular classroom time. Immediate performance feedback by using positive words of reinforcement (see Table 1) was given to students to inform how well they had performed in the relevant spoken exercises. In other words, immediate performance feedback was contingent on oral performance of the targeted students.

Table 1

A partial sample of student worksheet concerning pronunciation exercises (e.g., IPA)

Pronunciation Exercises: The 48 sounds of English with IPA				
Vowels	**Try Again**	**Good**	**Very Good**	**Excellent**
[i:]	1	2	3	4
	1	2	3	4
	1	2	3	4
[e]	1	2	3	4
…	…	…	…	…

There are several noteworthy features of the immediate performance feedback to spoken performance. First, worksheets with feedback were given to the targeted students as soon as they finished the assigned spoken exercises. Second, the feedback was task-focused. The content of the targeted tasks can be linked to each item of pronunciation/reading exercises, such as a vowel or a consonant sound of English in the IPA, an English word or a spoken sentence in a situated dialogue. Third, it was internally focused performance feedback focusing on guiding students to recognize their personal best and appreciate their task accomplishment. To fulfill this purpose for the large number of participants, each was provided two more opportunities to try again when they were not able to pronounce the targeted item correctly at the first attempt (see Table 1). This design aims to help students with low-achievement to focus their attention on task improvement and avoid self-defeating behaviors. Some of the students may have already reached a 'good' level at the targeted item (s), however, if they were not satisfied with their prior achievement they could practice consistently and try again to reach an 'excellent' level of performance. Fourth, items of pronunciation/reading exercises vary from the 48 English sounds with the IPA (illustrated in Table 1) to words and sentences based on teaching objectives and student learning intensions. Fifth, the four evaluation levels of immediate performance feedback remain unchanged across pronunciation and reading exercises. It should be noted, to help the large number of low-achieving

students achieve their personal best in the targeted tasks, the two extra opportunities for them to improve prior task accomplishment were provided in a given period of time (i.e. after all students had finished the targeted pronunciation/reading exercises for the first time).

The second type of activities aimed to evaluate students' English performance in written forms. Exercises to help students master the pronunciation rules of the 48 English sounds with the IPA, to build vocabulary, and to be familiar with spoken sentence structures were developed and assigned to the targeted students. In the second type of activities, performance feedback alone was administered to one experimental class. Performance feedback in the present study focuses on not only highlighting students' strengths in fulfilling the targeted tasks, but also providing advice/strategies to assist them in correcting mistakes they had made at the key points of learning intentions. The combined approach, namely, performance and attributional feedback, was delivered to the other experimental class. Consistently, performance feedback using praise words contingent on successful performance was given to students in this class. Also, advice on how students could correct their mistakes or strengthen their weak points was suggested. Besides performance feedback, attributional feedback was also provided on worksheets to help students attribute their academic success and failure to effort and concentration on learning. Unlike immediate performance feedback given for spoken English performance in the regular class time, feedback to the written form of tasks was commented on students' worksheets after class. Subsequently, worksheets with the teacher's feedback were handed out to students in the two experimental classes at the same day within the same week of their tasks accomplishment.

It should be noted all exercises were identical across the three classes involved in the present study. In the control class, the worksheets providing immediate feedback to students' spoken performance were kept by the English teacher (the author) rather than given to students. In addition, neither internally focused performance feedback nor the combined feedback to written exercises was delivered to students in the control class.

Data Analyses

Pre- and post- tests on the academic scale of SDQ-I were administered to all participants right before and after the feedback intervention conducted for 16 weeks. A repeated measures MANOVA was conducted to test changes in English self-concept (the targeted facet of the intervention) and Chinese and Mathematics self-concepts (two control facets) simultaneously among students in experimental and control classes. Due to missing data, analyses were conducted for 108 participants (boys = 31, girls = 77).

Results

Effects on targeted and untargeted facets of academic self-concept

The pre- and post- test scores on English, Chinese, and Mathematics self-concepts (ESC, CSC, MSC) by Treatment are listed in Table 2. Figure 1 illustrates the differences between pre- and post-test scores on English self-concept by Treatment. The slopes of Treatment 1 and 2 are significantly different from the control, suggesting that the treatments had an effect, specifically, enhancing the English self-concept.

Table 2

Pre- and Post- Test Means and Standard Deviations of ESC, CSC, MSC

		Pre-test (Time 1)		Post-test (Time 2)		
Measures	**Treatment**	Mean	SD	Mean	SD	*N*
ESC	0	21.14	9.45	23.03	8.67	37
	1	19.41	9.28	25.86	6.58	35
	2	20.33	8.22	29.22	6.58	36
	Total	20.28	8.94	26.06	7.68	108
CSC	0	26.77	7.56	26.06	6.99	37
	1	26.84	7.84	27.41	6.50	35
	2	27.69	7.96	29.81	5.80	36
	Total	27.10	7.73	27.77	6.57	108
MSC	0	20.66	8.58	20.46	7.64	37
	1	16.30	8.79	17.54	7.08	35
	2	19.78	9.32	19.00	10.3	36
	Total	18.87	9.02	18.97	8.47	108

Note. Scores of each scale ranged from 8 to 40.

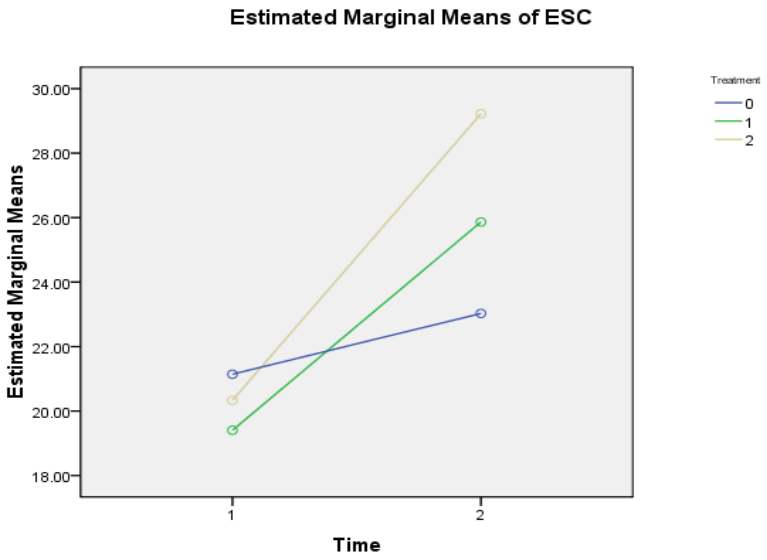

Figure 1: Profile plot of Time and Treatment for changes in English self-concept.

The results of repeated measures multivariate tests showed the treatment effect (indicated by the interaction effect) was statistically significant ($\Lambda = .81$, F (6, 206) = 3.94, $p = .001$, $\eta^2 = .10$). Specifically, univariate tests (see Table 3) revealed significant Time x Treatment effects ($F(2, 105) = 10.93$, $p = .000$, $\eta^2 = .17$) were identified for only English self-concept of the experimental classes. The results supported the main prediction of the present study that significant effects occur on the targeted facet of the academic self-concept (ESC). The two control (non-targeted) facets of academic self-concept, Chinese and Mathematics self-concepts were not changed significantly by the feedback intervention (see Table 3). According to the construct validity approach to address intervention effects (see Marsh & Craven, 1997; Marsh, Craven, Burnett, 2003; Marsh, 2007), this result provides strong evidence of good within-construct validity for the feedback intervention conducted in the present study.

Table 3
Univariate Tests on Changes in ESC, CSC, MSC

Source	Measure	Sum of Squares	df (105)	Mean Square	F	Sig.	η^2
Time	ESC	1781.161	1	1781.161	86.941	.000	.453
	CSC	23.141	1	23.141	.956	.331	.009
	MSC	.423	1	.423	.019	.891	.000
Time * Treatment	ESC	447.907	2	223.954	10.931	.000	.172
	CSC	71.110	2	35.555	1.468	.235	.027
	MSC	39.623	2	19.812	.879	.418	.016

Difference Between the Effectiveness of the Two Treatments to Enhance Esc

Based on a repeated measures MANOVA at a subscale level, we found the combined feedback worked better than performance feedback alone to enhance the affective facet of ESC (F (71,1) = 4.17, p .05), although the two approaches did not differ significantly from each other in changing the competence facet of ESC. The results suggested the combination of performance and attributional feedback played a more important role in improving low-achieving students' interest/enjoyment in learning English than using performance feedback alone. Moreover, performance feedback tended to play a fundamental role in changing low-achieving participants' perceived competence of learning English positively.

Effects to Matching and Non-Matching Domains of Academic Achievement

Analysis of Variance was conducted to examine the changes in English, Chinese and Mathematics Achievement by the feedback intervention. It should be noted that academic achievement was indicated by corresponding school grades obtained by students in the first semester of the academic year. The results showed achievement scores in English improved significantly (F (2, 107) = 15.51, p .001, η^2 = .23), whereas those of Chinese and Mathematics were unchanged (F (2, 107) = 2.35, p .05 ,and F (2, 107) = 2.95, p .05, respectively). More specifically, a follow-up post-hoc test showed that the English achievement mean scores of both experimental classes were substantially higher (p .001) than those of the control class. However, there was no significant difference between the English achievement scores of the two experimental classes receiving Treatment 1 and 2, respectively.

Discussion and Implications

The present study not only provided consistent support for the significant effects of the combined feedback, but also the effectiveness of internally focused performance feedback alone to enhance one's English self-concept, the targeted facet of the academic self-concept. In previous research, only the combined feedback was administered to enhance the targeted facet of the self-concept, which made it impossible to test the effectiveness of performance feedback or attributional feedback individually. The present research separated performance feedback from the combined feedback to examine its effect on enhancing the targeted self-concept. The results clearly showed the utilization of internally focused performance feedback alone can also significantly enhance the English self-concept of the targeted students, in contrast to non-targeted students in the control class. Importantly, this finding complements Craven and her colleagues' research in which performance feedback was intentionally combined with attributional feedback. In particular, this result indicates a self-mediating process whereby students transfer performance feedback from teachers to an internal self-concept; this appears to be naturally occurring even among low-achieving as well as low self-concept Chinese learners. In other words, attributional feedback, which has been suggested to be an important component of self enhancement interventions for Western children with low self-concepts (Craven et al., 1991) may not be similarly important to Chinese students. The value of education and effort in Chinese culture may shed some light on our understanding this phenomenon. In China, education is highly valued. To become a well-educated person, diligence plays a key role in developing ability, knowledge seeking and successful learning (Li, 2001).

Effort, in Chinese culture, has been perceived as "an extremely internal, controllable, stable and global cause (Hau & Salili, 1996, p.132)" of personal achievement. Although participants in the present study were those with low-achievement, it is highly plausible that they also perceive effort as a key factor in their learning, at least to some extent. It should also be noted that because it is self-enhancement that is the focus of the present study rather than self-attribution retraining, more emphases have been put on multi-dimensional self-concept measures with sound psychometric properties. It would be worthwhile for future research to employ related instruments of causal attribution to investigate to what extent the attribution patterns of low-achieving students might be changed by self-enhancement treatments.

The significant effects of the combined feedback on low self-concept primary students in a Western culture have been extended to both low-achieving and low self-concept secondary students in a non-Western culture. For example, the subjects in Craven and her colleagues' studies were primary students ranging from grade 3 to 6. Moreover, only those students who scored lowest on the self-concept (measured by SDQ-I) in each experimental class participated in the self-enhancement intervention (Craven et al., 1996; Craven, 1991). However, participants in the present study included a large number of low-achieving junior secondary students who failed in the entrance examinations for admittance to academic-level senior high schools and recently enrolled in a secondary vocational school for the purpose of obtaining early employment. Measured with SDQ-I, we found low academic self-concept among all participants. Although it is not surprising to find this, their low-achievement as well as low academic self-concept made it extremely important and meaningful to conduct a relevant self-enhancement intervention to foster their positive feelings of academic competence and help them succeed in secondary vocational learning. The results indicated a combination of performance feedback and attributional feedback not only enhanced their self-perceived competence with English, the targeted subject, but also improved interest/enjoyment in learning this subject. The results also suggest that secondary students with low prior achievement scores as well as low academic self-concepts would benefit most from corresponding self-concept enhancement interventions in a non-Western culture.

The effects of self-enhancement interventions on a very small group of students per class in Western literature have been extended to a large group of students in the present research. For example, there were typically 6 to 8 members (maximum) in the experimental groups of previous research. In the present research, over 30 students in each experimental class received corresponding feedback. More importantly, the significant effects of the two treatments to enhance the targeted facet of academic self-concept were identified among the large groups of students. This result has important implications for secondary education, especially, contemporary secondary vocational education in China, given that students enroll in secondary vocational schools are usually those with extremely low achievement levels. It suggests that it would be more suitable and productive to deliver self-enhancement programs to a large number of students, to change the overall situation of low-achievement challenging secondary vocational schools, than to an extremely small number of students only.

The two treatments were delivered by the author through regular teaching in natural classroom settings rather than separated rooms on the school ground. To deliver proposed treatments in a natural classroom setting is a desirable goal of self-enhancement researchers, because findings from natural classrooms likely have more direct and practical implications for teachers than those generated from laboratories (see Craven, 1991; Craven, et al. 2003). Moreover, to expand the effectiveness of teacher-mediated treatments to a majority of low-achieving students in SVE, or other educational settings, it is useful to deliver workshops or other forms of training to introduce the multidimensional and hierarchical nature of the self-concept, to reinforce the value of self-enhancement, and to teach effective feedback interventions.

Although, in contrast to the control class, both the combined feedback and the internally-focused performance feedback classes were able to significantly enhance the targeted facet of academic self-concept , the combined approach was shown to more effectively enhance the affective dimension of one's academic self-concept than performance feedback. Hence, teachers should take students' characteristics of affective and competence components into account when they make a decision to deliver either of the two treatments in a natural classroom setting. For example, the combined approach would be more appropriate to secondary vocational school students, given that (1) they comprise a large proportion of low-achieving secondary students in Chi-

na and (2) they are more likely to suffer chronically negative feelings of academic incompetence and may be particularly vulnerable to losing interest in learning a variety of school subjects. However, internally-focused performance feedback, the direct approach to enhancing academic self-concept, could play a more important role in non-vocational senior secondary schools. Given that senior secondary students need to pass the national entrance examination with high achievement scores in order to enter their desired universities, they would have already placed a higher value on diligence, persistence and concentration on successful learning, albeit implicitly. Explicitly, they may need timely performance feedback from teachers to reflect what they need to refine (where they should allocate more effort to improve). Also, teachers' performance feedback is likely important for reinforcing students' strengths and making school learning more meaningful (e.g., It is worth trying no matter how difficult the targeted tasks are considered to be.). Taken together, the adoption of the combined feedback or performance feedback alone not only depend on the personal characteristics of students, but also contextual factors to ensure a more practical and significant intervention.

In summary, the targeted facet of academic self-concept benefited more from the feedback intervention than non-targeted facets. Recent advances in self-concept theories, measurements, and practices have played an integrated and determinant role in the significant effects of the two treatments. It would be worthwhile for future investigations to assess the generalizability of the two treatments to the mathematical domain of the academic self-concept among low-achieving secondary vocational students, as this would help this group of students generate positive feelings of competence in more subjects and maximize their potential to succeed in their learning endeavours across subjects.

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