

Vol. 12, No. 5
pp. 53-79
November &
December
2021

Received: 5 July 2021
Received in revised form: 23 September 2021
Accepted: 24 October 2021

Self-identity Changes among Chinese EFL Undergraduate Students

Matthew P. Wallace^{1*} , Wanlu Chen², Siyang Zhou³, & Shiyi Fu⁴

Abstract

Empirical studies examining the effects of language learning have largely focused on linguistic changes in learners. Regrettably, this has left the non-linguistic changes under-researched. To address this, the current study examined what self-identity changes Chinese university EFL learners experienced and how individual characteristics (i.e., gender, starting age of study, and university major) may have affected these changes. To do so, a self-identity change questionnaire was administered online to 416 Chinese university students using a convenience sampling strategy. Seven identity change variables were measured by the survey: changes in (1) positive self-confidence, (2) negative self-confidence, (3) productive identity change, (4) additive identity change, (5) zero change, (6) subtractive change, and (7) split change. Confirmatory factor analysis confirmed that the items on the questionnaire measured their intended identity change variable. Descriptive statistics showed that participants experienced changes in self-confidence, additive identity, and productive identity, but did not experience subtractive or split change. The results also showed that the participants were unaware that they had experienced any changes. Multiple analysis of variance results showed that the individual characteristics contributed to some variation in the identity changes. The findings support theories suggesting that language learning contributes to non-linguistic changes within learners.

Keywords: self-identity change, EFL, language learning

1. Assistant Professor, Department of English, University of Macau, China; Email: mpwallace@um.edu.mo; ORCID ID: <https://orcid.org/0000000235092983>
2. Research Assistant, Department of English, University of Macau, China
3. Research Assistant, Department of English, University of Macau, China
4. Research Assistant, Department of English, University of Macau, China

1. Introduction

The very act of learning a language can have a profound impact on not only our ability to communicate with others, but more fundamentally, our perceptions of ourselves and how we interact within the culture in which we live. In his classical framework, Gardner (1985) proposed that language learning can result in both linguistic and non-linguistic changes within learners. Though much research has focused on linguistic changes (e.g., changes in linguistic proficiency), non-linguistic changes (e.g., changes in self-confidence) have garnered more attention in the research literature of late (e.g., Gao et al., 2015; Mokhtarnia & Gafar-Samar, 2016; Tong et al., 2017). These non-linguistic changes include shifts in self-identity, or the perception that learners have of themselves, including the “linguistic and cultural groups that he or she belongs to, as well as the learner’s values, communication styles, abilities, and worthiness” (Gao et al., 2007, p. 134). Because these non-linguistic changes have been relatively overlooked, the policy decisions to emphasize English language learning in many foreign language contexts may have led to changes within the learners that are now becoming better understood. The rationale for introducing English into the curriculum was sound, when the emphasis was improving English language competence to provide greater access to higher societal domains, such as higher education abroad and access to knowledge. Supported by the growing body of evidence from empirical studies, these decisions appear to have had positive effects on the learners, with them forming an identity from the additional language (AL) community to complement or enhance their first language (L1) identity (Gao, et al.2005; Gao et al., 2007; Mokhtarnia & Gafar-Samar, 2016; Tong et al., 2017). These identity changes have reportedly been influenced by individual learner characteristics, like gender, starting age of study, and university major, but the research findings have been inconsistent about their influence. For example, gender differences reportedly play an important role in identity change in some studies (e.g., Gao et al., 2005; Gao et al., 2007; Tong et al., 2017), but not at all in others (e.g., Boonchum, 2009). To gain a better understanding of this, the current study examined how Chinese English as a foreign language (EFL) learners experience self-identity change as a result of learning English. It has been argued that identity changes in the EFL context may not be appropriate to examine due to the limited access that learners have to the target language and its cultural practices (Qu, 2005). However, empirical studies showing that EFL learners in China experience self-identity changes (reviewed below) have

provided rebuttal evidence for this claim. Therefore, we believe that the results of the current study can provide additional evidence for how Chinese EFL learners' self-identity may change.

2. Review of Literature

2.1 Self-identity changes in additional language learning

In explaining the types of identity change, empirical studies (e.g., Gao et al., 2005; Gao et al., 2007; Gao et al., 2015; Xu & Gao, 2014) have grounded their work on Lambert's (1973) concepts of additive and subtractive bilingualism. When learning a language has a subtractive change, the language use and cultural identity of the L1 are substituted by the AL language use and cultural identity. Learners begin to use more of the AL in place of the L1 and act in ways that are acceptable to the AL community despite being in the L1 context. This can be viewed as a replacement of the L1 and its cultural norms by the AL (i.e., $1 - 1 = 1$). When an additive change occurs, the L1 use and cultural identity remain stable, allowing for the AL use and cultural identity to complement the L1 instead of replacing it. This can be viewed as an integration of the two languages and their cultural norms to be applied differentially given the context (i.e., $1 + 1 = 1$). Another theoretical concept supporting the self-identity change literature is Fromm's (1948) productive orientation, whereby two concepts can combine to mutually enhance one another. Applied to self-identity changes, Gao (2002) and Gao et al. (2005) proposed that a productive change in self-identity allows for the L1 and AL uses and cultural norms to augment one another. In contrast to subtractive bilingualism and additive bilingualism, productive bilingualism can be viewed as an enhancement of both L1 and AL use and cultural practices (i.e., $1 + 1 > 2$).

The process through which these self-identity changes occur can be explained by Dörnyei's (2005) L2 Motivational Self-System model. At its core is the concept of multiple selves—the actual self (perceptions of who the learners currently are), the ideal self (perceptions of who they want to be in the future), and the ought-to self (perceptions of who they should be). Self-identity change happens when the gap between the actual self and the ideal self narrows. However, during this process, the learner may experience internal conflict between the L1 and AL. This phenomenon, labelled as split identity change, is considered an intermediate-level, process-oriented change that AL learners experience before additive, subtractive, or

productive identity change occurs (Gao et al., 2005). A final, but very important, aspect related to identity change in language learning is self-confidence. Though it has been largely considered a predictor of learning and independent from the cultural change variables (Gao et al., 2007), it is also an outcome of the learning process (Gao et al., 2005). As learners achieve more success in the AL, they feel more confident in themselves, but if they are less successful at doing so, then their self-confidence may remain unchanged or decrease.

2.2 Measuring self-identity change

The empirical studies examining self-identity change have shown that students who have been educated in the EFL context experience some form of change. Many of these studies have made use of the self-identity change questionnaire developed by Gao et al. (2002) to measure changes in confidence and five cultural-identity variables, including additive change, productive change, subtractive change, split change, and zero change. Table 1 gives a brief description of each variable. Two of the cultural change variables (additive and productive) are considered positive. Higher scores on the survey (equivalent to 3.0 or higher out of 5.0) would indicate that learning the AL complements or enhances the use of the L1. Two variables (subtractive and split) are negative, meaning that higher survey scores indicate that AL learning replaces the L1 or generates some internal conflict within the learner. One variable (zero change) elicits perceptions of the effect of AL learning on identity change. Higher survey scores indicate that learners do not consider AL learning to change their cultural identity. This variable is typically used as a comparison variable against the positive and negative variables. The survey has undergone several revisions and a recent version from Gao et al. (2015) divides self-confidence into positive and negative self-confidence. Higher scores on the positive self-confidence scale would mean that learners have more positive perceptions of their language competence. Higher scores on the negative self-confidence scale would mean they feel less confident. A summary of the variables are provided in Table 1.

Table 1

Identity Change Variables and Definitions

Variable	Definition
Positive self-confidence	positive change in the perception of one's own competence
Negative self-confidence	negative change in the perception of one's own confidence
Productive change	the native and non-native languages and cultural identities co-exist to reinforce and enhance one another
Additive change	the native and non-native languages and cultural identities co-exist to complement one another
Zero change	perceived absence of self-identity changes
Split change	the struggle between the languages and cultures gives rise to identity conflict
Subtractive change	the native language and native cultural identity are replaced by the target language and target cultural identity

Despite its popularity in identity change research, few studies have examined the psychometric properties of the questionnaire. The expectation is that the items measuring one identity change variable will demonstrate unidimensionality, or measure a single latent variable. Tong et al.'s (2017) exploratory factor analysis results of the survey showed a six-factor solution for the five variables measured and that none of the scales on the questionnaire accounted for 20% of the total variance in measurement. The authors reasoned that there were likely several multidimensional items on the questionnaire and called for future studies to further examine its psychometric properties.

2.3 Empirical studies

Cross-sectional empirical studies have shown that overall, EFL learners experience changes in confidence levels and in positive cultural identity, but no change in negative identity. For example, Chinese university students experienced a change in productive identity, additive identity, and confidence levels but did not experience subtractive or split changes (Gao et al., 2005; Gao et al., 2007; Tong et al., 2017). Similar findings were reported for Thai (Boonchum, 2009) and Iranian (Mokhtarnia & Ghafar-Samar, 2015) EFL learners, who indicated changes in self-confidence, additive identity, and productive identity, but no change in the negative identity variables, split and subtractive change. This pattern of findings appear to persist over time, as well. Gao et al.'s (2015) longitudinal study examining confidence and identity changes in Chinese EFL learners over five years showed that confidence changes and positive self-identity changes were more strongly experienced than

split and subtractive changes. Interestingly, the learners across the studies reported feeling zero self-identity change from learning English. This perception misaligns with their own reported identity changes and suggests that AL learners may not be aware of the changes that occurred within them.

To explain why AL learners may be more susceptible to identity change, empirical studies examined how changes differ across individual learner characteristics, like gender, university major, and starting age of learning. For example, Gao et al. (2005) and Gao et al. (2007) reported that females experienced more confidence and positive self-identity changes, while males experienced more negative identity change. Males also perceived themselves to be more resistant to cultural change than females (zero change significantly higher for males), despite the results indicating they experienced negative change. Gao et al. (2007) argued that the static male ego may explain these results, while suggesting that females are more flexible in their acceptance of cultural and linguistic norms. However, more recent findings show that differences among the genders may be limited to changes only in confidence and that even these changes may be dependent upon major of study. Tong et al. (2017) reported no differences in cultural identity changes between genders, and that females experienced greater change than their male counterparts did only in confidence. However, there was an interaction effect between gender and major of study, suggesting that the female learners' confidence changed significantly more than males when their major of study was English. This assertion is supported by Boonchum (2009), who reported no differences in confidence or the cultural change variables between genders for English language and English literature majors at Thai universities.

When EFL learners major in English in university, they reportedly experience more identity change than non-English majors. In the Chinese university context, English majors reportedly experience more change in confidence and additive (Tong et al., 2017), productive, and subtractive identity than arts and science majors (Gao et al., 2005; Gao et al., 2007). These findings suggest that gaining greater experience with the target language through majoring in that language may push learners to change their cultural identity, either positively or negatively. There were no differences among the majors for split change in these studies, suggesting that all learners experienced roughly the same degree of internal conflict brought about by learning English. The English majors also indicated lower zero change, which implies that they were more aware of their identity changes than the non-English

majors were. This result may be attributed to the learning context, however, because no differences among English and non-English majors were reported for Iranian university learners (Mokhtarnia & Ghafar-Samar, 2015), or when Taiwan university learners made up a significant proportion of the sample (Tong et al., 2017).

A final individual characteristic contributing to identity change is the age at which learners begin studying the language. The limited empirical research has shown that the earlier learning begins, the more additive change is experienced. For example, Gao et al., (2005) and Tong et al. (2017) reported that when Chinese EFL learners began studying English before 8 years old, they experience significantly more additive change than learners who began studying after 12 years old. These results were interpreted to mean that starting learning earlier helped in developing a complementary cultural identity to the native identity (Gao et al., 2007). In this sense, starting early takes advantage of the malleable nature of the learners' developing cultural identity and allows an additional identity to be formed alongside the native one. This is supported by Gao et al. (2005), who showed that split change and confidence is higher when learners began studying later, after 13 years old. They speculated that starting to study a language later, after a full native cultural identity has been formed, may generate internal conflict when the new language is introduced and results in more fluctuations in confidence.

2.4 Research gaps

Despite the empirical findings providing insight into how identity change may be experienced by EFL learners, there are limitations in the research that the current study aims to address. One limitation is the infrequently reported reliability and validity evidence for the self-identity questionnaire. Few studies have reported evidence of internal consistency of items or unidimensionality of the constructs measured on the survey. This is an important limitation because the conclusions drawn about identity change need to be based on demonstrably valid and reliable measures. To address this, the current study will follow Tong et al.'s (2017) advice in conducting confirmatory factor analysis to confirm the factor structure of the instrument before examining the relationships among the variables. Another limitation is the relatively low number of empirical studies examining self-identity change. This is a known challenge in the applied linguistics literature and in order to make more generalizable claims about the relationships among the variables

examined, more empirical studies are needed. As such, we examined self-identity changes among Chinese university EFL learners, the largest group of EFL learners in the world. This target group also holds the distinction of the largest EFL group (Li, Jiang, & Dewaele, 2018) studying and living abroad for education and work. To that end, the study aimed to answer the following research questions.

1. What is the underlying factor structure of the identity change questionnaire used in this study?

2. How do Chinese undergraduate students experience self-identity change (as reflected by positive self-confidence, negative self-confidence, productive change, additive change, zero change, split change, and subtractive change) after learning English?

3. Do learners' self-identity changes differ with regard to gender, college major, and starting age of English learning?

3. Methodology

3.1 Participants

After receiving ethical clearance from the researchers' university, a convenience sampling method was used to recruit participants through social media. In total 416 undergraduate students (Males: 59; Female: 357) from 185 universities throughout China participated in the study. Their L1 was Chinese and their L2 was English. 251 participants started learning English before 8 years of age and the remaining 165 started learning after 8 years old. There were three categories of majors indicated by the participants: 212 English majors, 153 Arts majors (majoring in history, philosophy, business, communication, political science), and 51 Science majors (hard sciences, like biology).

3.2 Instrument

A questionnaire based on Gao et al.'s (2015) survey (see Appendix) was presented in both Chinese and English to ensure the participants clearly understood the items. It was distributed online to undergraduate students. The questionnaire included 35 statements on self-identity changes measured by a 5-point Likert scale (1 = Strongly disagree; 5 = Strongly agree). There were altogether seven variables with five items intending to measure each variable. These included (1) positive self-confidence change, (2) negative

self-confidence change, (3) productive change, (4) additive change, (5) zero change, (6) subtractive change, and (7) split change. Altogether 664 surveys were accessed, and 416 were completed, amounting to a valid return rate of 62.6%.

3.4 Analysis

The data was screened at the item level for unidimensionality and reliability. First, straight-line responses were identified and removed from the dataset. Then, the items for the questionnaire overall and the items representing each variable was inputted into SPSS version 24.0 (IBM Corp., 2016) and underwent reliability analysis. Cronbach's alphas were calculated and values above 0.70 would indicate an acceptable level of internal consistency. Items for scales with reliability estimates below 0.70 were examined using Winsteps (Linacre, 2021), a Rasch modeling program, to identify unexpected responses. Winsteps uses actual responses on the questionnaire to derive an ideal model of participant ability level (how well participants responded to items on the questionnaire) and item difficulty level (how well each item was responded to by the sample). It then compares the pattern of responses from the ideal model with the actual responses and when there is a divergence in responses to a particular item (i.e., ideal response and actual response differs), Winsteps flags the response as unexpected. Unexpected responses were removed from the dataset until the reliability estimate was above 0.70 for each scale. However, if more than 10% of the data would be deleted to achieve an alpha value above 0.70, then that variable would not be used in subsequent analysis due to being internally inconsistent.

To answer the first research question, the items on the survey were subjected to confirmatory factor analysis using AMOS version 24.0 (Arbuckle, 2014). In total, seven first-order analyses were performed. One analysis was performed for each latent variable measured by the survey (Positive self-confidence, Negative self-confidence, Subtractive change, Productive change, Split change, Zero change, and Additive change). Each latent variable was regressed onto their respective five questionnaire items. To determine if the items measured their respective latent variable, the factor loadings were examined. If the factor loadings were below the standardized value of .50, then it would indicate that the instrument item may not have measured as much of the latent variable as the other items in the model. The fit indices were also inspected to determine how well the data fit the proposed model.

Good model fit is indicated if the chi-square was non-significant (above .05), the root mean square error of approximation is below .05, and the comparative fit index is near 1.0 (Kline, 2016).

Composite variables were then created for each identity change variable by taking an average of the items for each variable. In total, eight variables were created: Self-identity change overall, Positive self-confidence, Negative self-confidence, Productive change, Additive change, Zero change, Split change, and Subtractive change. Descriptive statistics were then calculated for the composite variables. To verify univariate normality, the skewness and kurtosis values were inspected and if they were within the absolute value of 2.0, then the variable would be considered to be approximately normally distributed (Field, 2009). To answer the second research question, the descriptive statistics were inspected. A critical value of 3.0 of the mean was set to define whether there were self-identity changes or not. In the 5-point Likert scale on the questionnaire, the value 3 means “neutral,” so values above 3.0 would indicate there were general self-identity changes. If the mean was lower than 3.0, it would indicate that there was no general self-identity change.

To answer research question three, multiple analyses of variance (MANOVA) were conducted to determine if the individual characteristic variables (i.e., gender, majors, and starting age of learning English) had significant effects on the seven identity change variables. The seven identity change variables were the dependent variables and the three individual characteristic variables were the independent variables in the analysis. Before the analysis, the assumptions underlying MANOVA were confirmed. This included verifying the absence of significant outliers, univariate normality of the variables, and that the variances were homogenous. The main effects and interaction effects were inspected. If an interaction effect was detected, an independent-samples *t*-test or one-way ANOVA was conducted to detect means differences between the two interaction variables.

4. Results

Results from the reliability analysis presented in Table 2 show that the variables on the questionnaire were mostly internally consistent. Initially, the Productive change, Additive change, Zero change, and Split change variables were well below the 0.70 threshold for acceptable reliability. We subsequently used Winsteps to identify and remove unexpected responses. The Cronbach’s alphas were then found to be above

or near 0.70, indicating they were internally consistent. A few of the alphas were very near 0.70 (i.e., Self-identity change overall, Additive change, and Zero change) we deemed them acceptable. The descriptive statistics also showed that the skewness and kurtosis values were within the absolute value of 2.0, indicating the data was approximately normally distributed.

Table 2
Mean, Standard Deviation, Skewness, Kurtosis, and Reliability Estimates of the Identity Variables for the Overall Sample (N = 416)

Variable	Mean (S)	SD	Skewness	Kurtosis	Reliability
Self-identity change overall	3.10	0.30	-0.26	1.36	0.65
Positive self-confidence	3.93	0.56	-0.61	1.53	0.78
Negative self-confidence	3.36	0.69	-0.21	-0.15	0.72
Productive change	3.36	0.65	0.00	-0.04	0.71
Additive change	3.34	0.83	-0.15	-0.42	0.66
Zero change	3.03	0.72	-0.04	0.54	0.68
Subtractive change	2.30	0.68	0.38	0.19	0.74
Split change	2.32	0.63	0.34	0.54	0.74

For research question one, the results presented in Table 3 from confirmatory factor analyses showed that each of the observed variables loaded onto a common latent variable. Factor loadings for only two items were below .50 (items 16 and 27), suggesting that those two items may have measured less of the Zero change and Subtractive change variables, respectively, than the other items measuring each construct.

Table 3
Unstandardized (Standard Errors) and Standardized Factor Loadings for CFAs (N = 416)

Observed variable	Latent variable	Unstandardized (standard error)	Standardized
Item 11		0.48 (.04)	.64
Item 15		0.43 (.04)	.60
Item 18	Positive self-confidence	0.49 (.04)	.64
Item 20		0.60 (.03)	.81
Item 22		0.49 (.04)	.57
Item 1	Negative self-confidence	0.61 (.06)	.55

Observed variable	Latent variable	Unstandardized (standard error)	Standardized
Item 6		0.55 (.05)	.59
Item 8		0.46 (.05)	.51
Item 12		0.83 (.05)	.78
Item 26		0.51 (.05)	.51
Item 5		0.59 (.06)	.57
Item 7		0.57 (.04)	.67
Item 9	Productive change	0.54 (.05)	.58
Item 25		0.60 (.04)	.73
Item 28		0.45 (.04)	.54
Item 2		0.77 (.06)	.80
Item 17		0.63 (.05)	.72
Item 21	Additive change	0.59 (.04)	.69
Item 30		0.61 (.05)	.65
Item 31		0.70 (.05)	.71
Item 3		0.69 (.05)	.64
Item 16		0.23 (.04)	.33
Item 29	Zero change	0.86 (.05)	.80
Item 32		0.71 (.05)	.75
Item 35		0.54 (.04)	.63
Item 13		0.52 (.05)	.54
Item 14		0.76 (.05)	.77
Item 24	Subtractive change	0.56 (.05)	.57
Item 27		0.35 (.05)	.38
Item 33		0.74 (.05)	.77
Item 4		0.54 (.04)	.66
Item 10		0.60 (.04)	.70
Item 19	Split change	0.47 (.05)	.55
Item 23		0.51 (.04)	.68
Item 34		0.58 (.04)	.66

The fit indices for the confirmatory factor analyses presented in Table 4 show that the data fit the confirmatory models relatively well. This, along with the factor loading results presented in Table 4 suggest that the items measured the latent variable they were intending to measure.

Table 4
Fit Indices for the First-Order CFAs for the Identity Variables

Variable	Chi-square	df	p-value	CFI	RMSEA
Positive self-confidence	9.048	5	.107	.992	.044
Negative self-confidence	25.244	5	.000	.947	.099
Productive change	19.377	5	.002	.964	.083
Additive change	27.037	5	.000	.949	.103
Zero change	10.518	5	.062	.988	.052
Subtractive change	43.512	5	.000	.919	.136

Variable	Chi-square	df	p-value	CFI	RMSEA
Split change	6.196	5	.288	.997	.024

For the second research question, the results from Table 2 showed that six of the variables were above the 3.0 threshold for a change. These included the Self-identity change overall variable ($M = 3.10$, $SD = 0.30$), Positive self-confidence variable ($M = 3.93$; $SD = 0.56$), the Negative self-confidence variable ($M = 3.36$, $SD = 0.69$), the Productive change variable ($M = 3.36$, $SD = 0.65$), the Zero change variable ($M = 3.03$, $SD = 0.72$). Two of the variables fell below the threshold for change: the Subtractive change variable ($M = 2.30$, $SD = 0.68$) and the Split change variable ($M = 2.32$, $SD = 0.62$).

For the third research question, results from MANOVA showed that none of the individual variables had a significant effect on identity change overall. However, they had differing effects on the seven identity change variables. For the Positive self-confidence variable, gender ($F[1, 405] = 6.969$, $p = .009$, partial eta squared = .017) and major ($F[1, 405] = 4.141$, $p = .017$, partial eta squared = .020), had significant main effects, though the effects were weak. A significant interaction effect was also found between gender and major ($F[2, 405] = 3.159$, $p = .009$, partial eta squared = .015). Results from a one-way ANOVA revealed that female arts majors ($M = 3.91$, $SD = 0.56$) experienced significantly more changes in Positive self-confidence than male art majors ($M = 3.54$, $SD = 0.77$; $F[1, 151] = 10.808$, $p = .001$, partial eta squared = .067). Females science students ($M = 4.12$, $SD = 0.40$) also had greater Positive self-confidence changes than males ($M = 3.50$, $SD = 0.90$; $F[1, 49] = 6.971$, $p = .011$, partial eta squared = .125). No differences were reported between genders for English majors.

Regarding Negative self-confidence, major ($F[2, 405] = 4.575$, $p = .011$, partial eta squared = .022) and starting age ($F[1, 405] = 6.980$, $p = .009$, partial eta squared = .017) had significant main effects. Participants who started learning English after 8 years old experienced more negative self-confidence change ($M = 3.49$, $SD = 0.62$) than those who began learning before 8 years old ($M = 3.27$, $SD = 0.72$). English majors ($M = 3.45$, $SD = 0.68$) and science majors ($M = 3.48$, $SD = 0.61$) reported significantly more Negative self-confidence change than arts majors ($M = 3.18$, $SD = 0.69$). There were no interaction effects among the variables reported.

For the positive identity change variables, the individual characteristic variables

only had an effect on Productive change. Starting age had a significant main effect ($F[1, 405] = 3.309, p = .005$, partial eta squared = .019) on the Productive change variable. A significant interaction effect was detected for starting age and gender, $F[1, 405] = 2.072, p = .027$, partial eta squared = .015. Females ($M = 3.35, SD = 0.58$) who started learning English after 8 years old had significantly more productive change than males did ($M = 3.07, SD = 0.69$). No main effect or interaction effect was detected for the Additional change variable.

For the negative change variables, only university major had a significant main effect ($F[2, 405] = 4.510, p = .012$, partial eta squared = .022) on the Subtractive change variable. The science majors ($M = 2.51, SD = 0.67$) experienced significantly greater subtractive change than the arts majors ($M = 2.24, SD = 0.69$), but there were no differences between English and the other two majors. However, no interaction effect was detected among the individual variables. No main or interaction effects were detected for the Split change variable.

Finally, for the Zero change variable, an interaction effect was detected for major and starting age ($F[2, 405] = 3.847, p = .022$, partial eta squared = .019). English majors who began studying English after 8 years old ($M = 3.11, SD = 0.71$) had significantly more Zero change than English majors who started studying before 8 years old ($M = 2.92, SD = 0.68$). No other effects were detected in the sample. The descriptive statistics for each subgroup of individual characteristic (i.e., gender, starting age, and university major) are presented in Table 5.

Table 5
Means and Standard Deviations for the Identity Variables by Gender, Starting Age, and University Major for the Sample Overall (N = 416)

Variable	Gender		Starting age		Major		
	Male ^a	Female ^b	Before 8 ^c	After 8 ^d	Science ^e	Arts ^f	English ^g
Positive confidence	self- 3.67 (0.77)	3.97 (0.51)	3.94 (0.59)	3.91 (0.53)	4.07 (0.48)	3.81 (0.64)	3.98 (0.50)
Negative confidence	self- 3.13 (0.81)	3.39 (0.66)	3.27 (0.72)	3.49 (0.62)	3.48 (0.61)	3.18 (0.69)	3.45 (0.68)
Productive change	3.25 (0.78)	3.38 (0.63)	3.39 (0.69)	3.32 (0.60)	3.44 (0.56)	3.37 (0.67)	3.34 (0.66)

Variable	Gender		Starting age		Major		
	Male ^a	Female ^b	Before 8 ^c	After 8 ^d	Science ^e	Arts ^f	English ^g
Additive change	3.43 (0.91)	3.32 (0.81)	3.83 (0.85)	3.27 (0.78)	3.37 (0.88)	3.23 (0.82)	3.36 (0.82)
Zero change	3.12 (0.83)	3.01 (0.70)	3.00 (0.76)	3.08 (0.66)	2.85 (0.67)	3.14 (0.75)	2.99 (0.70)
Subtractive change	2.32 (0.81)	2.30 (0.66)	2.29 (0.68)	2.32 (0.67)	2.51 (0.67)	2.24 (0.69)	2.30 (0.66)
Split change	2.29 (0.80)	2.33 (0.59)	2.26 (0.63)	2.42 (0.62)	2.44 (0.61)	2.31 (0.65)	2.30 (0.61)

Notes. ^an = 59; ^bn = 357; ^cn = 251; ^dn = 165; ^en = 51; ^fn = 153 ^gn = 212; *p < .05; **p < .01; ***p < .001

5. Discussion

5.1 Factor structure of the self-identity questionnaire

The CFA results showed that the items on the self-identity questionnaire loaded onto their respective latent variable and the fit statistics showed decent fit to the confirmatory models. These results suggest that the items for each variable measured a similar underlying construct, thereby providing evidence of construct validity of the instrument scales. These findings somewhat contradict Tong et al.'s (2017) exploratory factor analytic results showing that the items on the self-identity questionnaire were multidimensional. Cleaning the data using Rasch Analysis in the current study likely aided in improving the unidimensionality of the items because inconsistent responses identified in the analysis were removed from the dataset. The current study also included two variables not in Tong et al.'s study—negative self-confidence and productive change—that have been included in other studies that have used the questionnaire (e.g., Gao et al., 2015; Xu & Gao, 2014). Evidence for construct validity of the seven self-identity change variables in this study's analysis means that the conclusions made from our results and by extension, the earlier studies, may be considered trustworthy.

5.2 Self-confidence change

The largest reported change was in positive self-confidence. This means that the participants were more confident in using English after learning it for years. This was an expected result because as EFL learners improve their language ability, their confidence in their ability to use the language also increases. The results further indicate that these confidence increases differed according to major and gender. For English majors, there were no differences in positive self-confidence change. However, female arts majors and science majors reported significantly more positive confidence change than their male counterparts in respective majors. This means that females studying any major other than English in university experienced more of an increase in self-confidence in using English than the male students. These findings generally align with studies that have shown that without reference to major, females tend to experience more of an increase in confidence than male learners (Gao et al., 2005; Gao et al., 2007). These studies attributed their results to the more resilient egos of female participants being able to maintain a positive attitude toward learning an AL than males. Our findings suggest that this may be true only when the university major is not the target language. When major was accounted for, Tong et al. (2017) reported that female English majors in Taiwan experienced more confidence change than male and female science majors in mainland China. The authors attributed their results to the differing learning contexts and educational systems (mainland China and Taiwan). The participants in the current study came from the same learning system in China, so our findings were less affected by learning context.

Surprisingly, there was an increase in negative self-confidence as well. This means that the participants also felt less confident in their English ability after learning it for years, though this depended upon the age they started learning English and their major. Participants who started learning English after 8 years old experienced more negative confidence change than those who began learning it before 8 years old. It is possible that starting late gave these learners less experience with English and when they were required to use it in their university courses, they felt less confident in doing so. Science and English majors reported more negative confidence changes than arts majors. For science majors, this is somewhat expected, because much of the published literature in the sciences is in English. Students would then be faced with a dual challenge—understanding the science concepts covered in their classes and understanding them in another language.

Interestingly, English majors experienced negative self-confidence change, too. Gao et al.'s (2015) explanation for similar findings may also explain our results. Their Chinese university students indicated that they felt unconfident and overwhelmed by the new challenges in using English for academic purposes in university. This included learning new ways of argumentation and thinking quite different from that in their L1. It is possible that our university students felt similarly, highlighting an interesting duality for English majors. They feel more confident because they have greater experience with the target language, but they also feel less confident when trying to meet the demands of academic English expected of English majors.

5.3 Positive self-identity change

The change in additive and productive identity for the sample overall suggests that learning English complemented and enhanced their L1 language use and cultural interactions. This result is consistent with previous studies showing a similar pattern of findings in Chinese (Gao et al., 2005; Gao et al., 2007; Tong et al., 2017) and non-Chinese EFL learning contexts (Boonchum, 2009; Mokhtarnia & Gafar-Samar, 2016). For additive change, none of the individual characteristics affected how much change was experienced. This means that regardless of gender, starting age, or university major, the participants' use English to complement their Chinese language and cultural practice. These findings are inconsistent with earlier studies showing that additive change was higher for females than males, for learners who started studying English before 8 years old, and for English majors over non-English majors (Gao et al., 2005; Gao et al., 2007; Tong, 2017). Unlike these prior studies, the additive effect of EFL learning appears to have been uniform for our participants.

For productive identity, females who started learning English after 8 years old experienced more change than males. This was the only difference experienced in productive change, suggesting that females may have been more willing to accept and utilize the AL to enhance their language use and cultural interactions than male students despite getting a late start on learning. It has been argued that starting to learn English after 8 years old may limit learners in developing an AL identity because they had already developed a full L1 cultural identity and were therefore less able to integrate the new identity into their fully formed one (Gao et al., 2005). By contrast, learners starting before 8 years old were considered more malleable in their

identity construction, incorporating the AL and L1 together to develop both. Our findings suggest that this may only be true for male EFL learners and that females are more capable of adopting the new identity from the AL despite starting late.

5.4 Negative self-identity change

No change in the negative identity variables means that the learners did not experience internal conflict as a result of learning English, nor did they replace their L1 cultural identity with the AL identity. For split change, these findings are consistent with Gao's and Tong et al.'s studies on Chinese EFL learners, but they differ from Mokhtarnia and Gafar-Samar's (2016) and Boonchum's (2009) results showing greater split change for Iranian and Thai EFL learners, respectively. The different findings may be attributed to the cultural value placed on English. Mokhtarnia and Gafar-Samar explained that Iranian learners tended to develop a bias in favor of their local culture and language and that they may feel threatened by the spread of English and its culture, thus giving rise to feelings of conflict. Though not explicitly addressed by Boonchum, it can be assumed from the split change experienced by Thai learners that they may feel similarly about English despite the participants being either English language or English literature majors. By contrast, Xu and Gao (2014) contend that English is valued in the Chinese context and embraced by learners who feel it can give them future economic advantages. Here, English identity change becomes a necessary byproduct of globalization and adding the new identity is important to achieve future success. Our participants may have held similar perspectives on English.

The participants did not experience subtractive change, which means that the English identity developed by the learners did not replace the L1 identity. This should come as a welcomed result by language policy stakeholders who may have been concerned about the L1 identity being replaced the English one. Only one other study, Gao et al. (2015), showed that learners experienced this kind of identity change. Their results showed that Chinese EFL learners experienced a gradual and steady increase in subtractive change over four years of study in university. They explained that students initially felt uncomfortable with their English identity threatening their L1 identity, but the amount of exposure to English pop cultural products (i.e., television shows) began to manifest itself within the learners. Students began to adopt the English-language cultural conventions in place of their

L1 Chinese conventions. It is possible that our participants may experience a similar change over time, but this was not observed at the time of data collection.

5.5 Perceived change

The participants overall indicated that they felt they did not experience identity change. This is an interesting result considering they acknowledged experiencing productive and additive changes and changes in their self-confidence as a result of learning English. This misalignment is consistent with every other identity change study that utilized the identity-change questionnaire (Boonchum, 2009; Gao et al, 2005; Gao et al., 2007; Gao et al., 2015; Mokhtarnia & Gafar-Samar, 2016; Tong, 2017), suggesting that this perspective is consistent across studies. In the current study, English majors who began learning English before 8 years old acknowledged an identity change, but those who started after 8 did not. Science majors also acknowledged a change, but the difference was not significantly different from the English or arts majors. This implies that English majors who started learning English earlier not only experienced positive change in their identities, but also that they were aware that such a change was occurring. They understood that their cultural identity was capable of changing to incorporate linguistic and cultural conventions of the language they were studying, English. In contrast, English majors starting later perceived themselves to have stable and resilient L1 identities, unchanged by studying English.

6. Conclusion

Overall, our findings support Gardner's (1985) contention that non-linguistic changes occur as a result of language learning. The Chinese EFL participants experienced changes in self-confidence and positive cultural identity, but were largely unable to perceive these changes. Individual characteristics (i.e., gender, university major, and starting age of study) had limited effects on the identity changes, suggesting that the changes were relatively uniform for the learners. These findings are consistent with the studies examining self-identity change for EFL learners in China (e.g., Gao et al., 2005; Gao et al., 2007; Gao et al., 2015), Taiwan (Tong et al., 2017), Thailand (Boonchum, 2009), and Iran (Mokhtarnia & Gafar-Samar, 2016). Much of the change is positive across these studies, so educational

policy decision makers who have included English as a required subject have increased their learners' confidence levels in using English and enhanced both their L1 and English cultural identities.

The findings have important implications. Firstly, the results showing that learners experience positive identity change and no negative change validates the decision to introduce English at an early age of formal education. Similar policies introduced in other EFL contexts may have also helped learners benefit from learning an additional language, especially if the age of instruction is set to begin before 8 years old. Secondly, the results showing that English major students experienced a decline in confidence is somewhat counterintuitive because it would be expected for learners with more experience with the target language to feel more confident in using it. University expectations of these students may need to be tempered so as not to set any unrealistic expectations upon these learners and their abilities. A final implication concerns the instrument used to measure self-identity change. The results showed acceptable reliability estimates and unidimensionality of the variables measured by the questionnaire. This validation evidence addresses an important limitation in the research literature that has used this questionnaire and our results suggest that it may be considered an appropriate measurement tool for evaluating self-identity change.

We also recognize a few limitations of the study. The cross-sectional design of the study prevented observations of changes over time to be made. Future studies may consider adopting such a design to see the longer-term effects of EFL learning. Another design limitation is the purely quantitative nature of the study. Future studies may also consider adding a qualitative interview to inquire about individual students' perspectives on the changes they report. A final limitation is the narrow scope of the study. A majority of the identity change studies have been conducted in the Chinese EFL context. This is the largest group of EFL learners in the world, so it is advantageous to examine them as a sample. But to determine if the results are generalizable to other EFL contexts, future studies may consider examining identity changes in other English language learning contexts (as a foreign or second language). Despite these limitations, the current study makes an important contribution to the empirical literature by providing additional evidence for the positive impact of English language learning on EFL learners' non-linguistic outcomes.

References

- Arbuckle, J. L. (2014). Amos (Version 23.0) [Computer Program]. IBM SPSS.
- Boonchum, P. (2009). A study of self-identity changes and correlation of influential factors of Thai students studying English. *The Buckingham Journal of Language and Linguistics*, 3, 35–55. <https://doi.org/10.5750/bjll.v3i0.23>
- Dörnyei, Z. (2005). *The social psychology of the language learner: Individual differences in second language acquisition*. Lawrence Erlbaum.
- Field, A. (2009). *Discovering statistics using SPSS*. 3rd Edition, Sage Publications.
- Fromm, E. (1948). *Man for himself*. Routledge.
- Gao, Y. (2002). Productive bilingualism: $1 + 1 > 2$. In D.W. C. So & G. M. Jones (Eds.) *Education and Society in Plurilingual Contexts* (pp. 143–62). VUB Brussels University Press.
- Gao, Y., Cheng, Y., Zhao, Y., & Zhou, Y. (2005). Self-identity changes and English learning among Chinese undergraduates. *World Englishes*, 24(1), 39–51. <https://doi.org/10.1111/j.0883-2919.2005.00386.x>
- Gao, Y., Zhao, Y., & Cheng, Y. (2007). Relationship between English learning motivation types and self-identity changes among Chinese students. *TESOL Quarterly*, 41, 133–155. <https://doi.org/10.1002/j.1545-7249.2007.tb00043.x>
- Gao, Y., Jia, Z., & Zhou, Y. (2015). EFL learning and identity development: A longitudinal study in 5 universities in China. *Journal of Language, Identity & Education*, 14(3), 137–158. <https://doi.org/10.1080/15348458.2015.1041338>
- Gardner, R.C. (1985). *Social psychology and second language learning: The role of attitudes and motivation*. Edward Arnold.
- IBM Corp. Released 2016. IBM SPSS Statistics for Windows, Version 24.0. IBM Corp.
- Kline, R. (2016). *Principles and practice of structural equation modeling*. The Guilford Press.
- Lambert, W. E. (1973). Culture and language as factors in learning and education. In F. E. Aboud & R. D. Meade (Eds.), *Cultural factors in learning and education* (pp. 91–122). Fifth Western Washington Symposium on Learning.

- Li, C., Jiang, G., & Dewaele, J-M. (2018). Understanding Chinese high school students' foreign language enjoyment: Validation of the Chinese version of the Foreign Language Enjoyment scale. *System*, 76, 183–196. <https://doi.org/10.1016/j.system.2018.06.004>
- Linacre, J. M. (2021). Winsteps® Rasch measurement computer program. Beaverton, Oregon: Winsteps.com
- Mokhtarnia, S., & Ghafar-Samar, R. (2015). An analysis of the relationship between the attitudes of Iranian EFL learners to native English speakers and their reported identity change. *Journal of Multilingual and Multicultural Development*, 37, 589–600. <https://doi.org/10.1080/01434632.2015.1106548>
- Qu, W. G. (2005). On issues concerning English and identity research in China. *The Journal of Chinese Sociolinguistics*, 5, 93–116.
- Tong, F., Min, Y., Liu, Y., & Guo, H. (2017). Measuring self-identity change related to English learning and bilingual education among Chinese-speaking college students: An exploratory study. *Asian Journal of Education and Training*, 3(2), 135–146. doi:10.20448/journal.522.2017.32.135.146
- Xu, H., & Gao, Y. (2014). The development of English learning motivation and learners' identities: A structural equation modeling analysis of longitudinal data from Chinese universities. *System*, 47, 102–115. <https://doi.org/10.1016/j.system.2014.09.020>

About the Authors

Matthew P. Wallace is an Assistant Professor in the Department of English at the University of Macau. His current research interests include second language listening, language assessment fairness, and non-linguistic outcomes of language learning.

Wanlu Chen is a research assistant with University of Macau. Her research interests include second language acquisition and language identity.

Siyang Zhou is a research assistant with the University of Macau. Her research interests include second language learning, language identity, and translation.

Shiyi Fu is a research assistant at the University of Macau. Her research interests include phonetics, pragmatics, and bilingualism.

Appendix

Appendix A: Questionnaire

Part 1: Personal Information

1. Which university are you belong to? (Please provide the full name in Chinese)
2. Your gender:
Male / Female
3. Your age group:
18 / 19 / 20 / 21 / 22 / 23-29 / >30
4. Your college year:
1st / 2nd / 3rd / 4th
5. Your major:
Sciences / Arts (except from English related majors) / English related
6. Starting age of English learning
<8 / 9-12 / 13-15 / >16
7. Family background
Country / Town / City

Part 2: Self-evaluation

Please read the following statements, choose the most appropriate option according to your own condition. 1="Strongly Disagree", 2= "Disagree", 3= "Neutral", 4= "Agree", 5= "Strongly Agree".

1. I feel no confidence in myself when I invest much in English learning but make little progress.
2. I enjoy the authentic Chinese when I watch the Chinese movies, and I enjoy the authentic English when I watch the English movies.
3. It's impossible for me to become a different person simply because I have learned to have a good command of English.
4. I often find myself torn between conflicting values since I started learning English.

5. English learning has allowed me to reflect upon the Chinese language and tradition that I have always been taken for granted.
6. I am very frustrated when I can hardly improve my competence in writing despite all the efforts I have made.
7. The more I learned to appreciate English literature and arts, the more I am interested in the Chinese literature and arts.
8. Poor listening comprehension would make me feel inferior to others when I try to communicate with others in English.
9. My interest in learning other languages has grown since I started learning English.
10. Sometimes I am confused whether I should be more of an individual or of a member of the collective as a result of my English learning.
11. Whenever I overcome a new difficulty in English learning, I find myself becoming a better self.
12. I would have doubt about my competence whenever I have setbacks in English learning.
13. I have found myself somewhat Westernized in thinking and behavior after I started learning English.
14. I began to reject some of the Chinese traditions after I started learning English.
15. I feel proud of myself when I finish writing an essay in English to my satisfaction.
16. Even if I can express myself in English, I am still the person I used to be.
17. Whenever there is a controversial issue, I tend to go along with the Chinese teachers, but argue with the foreign teachers.
18. My self-confidence keeps growing along with the improvement of my English language competence.
19. When eating out with foreign friends, I tend to wonder if I should pay the bill or go Dutch with them.

20. The more fluently I can speak in English, the better I feel about myself.
21. In writing personal statements for education abroad or socializing with foreign friends, I tend to value independence, while interacting with my parents or relatives, I prefer depending on each other.
22. If I get higher scores in English exams, it would make me feel more confident in interacting with my classmates.
23. When switching between English and Chinese ways of behavior, I feel I am being torn in half.
24. Since I began learning English, I have become more and more uncomfortable with such Chinese hospitality as insisting on putting more food on others' plates at the dinner table.
25. The improvement in my language skills in English has enhanced my appreciation for the Chinese.
26. I would find myself inferior to other classmates because of my poor command of English.
27. I often forget how to write Chinese characters as I am immersed in English learning.
28. Learning English has enabled me to be more considerate and better able to communicate with others.
29. Nothing has changed in myself since I started learning English.
30. I can switch between English and Chinese according to the needs of the context as if I have an automatic switch there.
31. Upon hearing someone praise me in English, I tend to accept it, but if someone praise me in Chinese, I tend to be humble and reject the compliment.
32. English learning has hardly any impact on me except for the improvement of language skills.
33. I have become uncomfortable with some of the Chinese traditions after I started learning English.

34. I tend to use some English words when I speak Chinese, which makes me feel rather weird.

35. It is so boring and meaningless to talk about changes brought about by English learning.