

KOREAN EFL STUDENTS' LEARNING STYLE PREFERENCES AND THEIR WRITING STRATEGY USE: REVISITING HONEY AND MUMFORD'S CLASSIFICATION

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ABSTRACT

The present study investigated whether the subgroups formed by students' information processing styles (e.g., learning style preferences) create differences in their second writing strategies. Two hundred ninety-five Korean college students learning English as a foreign language (EFL) (234 females, 61 males; mean age 22.24 years) completed the Learning Styles Questionnaire and the Writing Strategy Questionnaire. Results showed significant correlations between learning style preferences and writing strategy use. A two-step cluster analysis yielded three distinctive learning style groups (Balanced, Reflector/Theorist, and Activist). A multivariate analysis of covariance showed that the three groups significantly differed in their employment of writing strategies (i.e., planning, composing, and revising). Overall the results suggested that learning style preferences are a significant variable in explaining differential use of writing strategies. Pedagogical implications and suggestions for future research were discussed.

Keywords: Classification of learning style groups; Korean EFL students; Learning style preferences; Writing strategy use

INTRODUCTION

Despite the fact that learning style is one of the most studied variables used to explain individual differences in learning (Coffield et al., 2004; Curry, 1987; McCarthy, 2010), the impact of learning styles on individual differences in second language (L2) writing has been neglected. Although a few studies examined the relationship between personality types and writing behaviours and abilities for first languages (L1) (e.g., Carrell & Monroe, 1993; Gladis, 1993; Jensen & Ditiberio, 1984) and for L2 (e.g., Boroujeni, Roohani, & Hasanimanesh, 2015; Layeghi, 2011; Marefat, 2006), they have failed to clearly establish a relationship between personality types and individual differences in writing.

An understanding of the role of individual differences in writing is pedagogically important because the approaches, strategies, and techniques habitually chosen by students during their writing processes inevitably influence their writing qualities and productivity as well as their attainment in writing competences (Biggs, 1988; Hartley & Branthwaite, 1989; Kellogg, 1986; Torrance, Thomas, & Robinson, 1994, 2000). As scholars (e.g., Biggs, 1988; Jensen & Ditiberio, 1984; Hartley & Branthwaite, 1989) cogently suggest, a better assessment of students' writing behaviours could help students achieve a better sense of control in writing. A good way to understand students' writing behaviours is by analyzing the use of strategies during the writing processes (Petric & Czarl, 2003; Torrance et al., 1994, 2000). Further if we can classify students into particular learning styles, and find the link between them and writing strategy use, we will provide educators with a useful roadmap to design

instructional programs more tailored to individual students' strengths and weaknesses in their writing behaviours.

To our knowledge, the present study is the first empirical investigation of whether there is a significant relationship between students' learning styles and their L2 writing strategy use. We use a two-step cluster analytic method to identify students' natural groupings and then examine how the groups differ.

LITERATURE REVIEW

Learning styles

One of the most studied variables to explain individual differences in learning processes and outcomes is "learning styles" (Coffield et al., 2004; Curry, 1987; McCarthy, 2010). Different scholars offer different theories to explain this construct and different measures to test their theories. Curry (1987) provides a widely-used framework which classifies learning styles into four distinct levels of learning behaviours: (a) *cognitive personality styles* (a fundamental and relatively permanent trait), (b) *information processing styles* (individuals' intellectual approaches to perceiving and transforming information), (c) *social interactions* (a person's preference for the type and extent of social interactions in learning), and (d) *instructional preferences* (a person's preference for various subjects, instructional methods and activities, and learning environments). It is believed that the most stable is the cognitive personality styles and the least, instructional preferences (Cassidy, 2004; Coffield et al., 2004).

Need for a better predictive variable of learning styles for writing behaviours

As mentioned earlier, a few studies have examined the impacts of personality types on writing behaviours and abilities (e.g., Boroujeni et al., 2015; Carrell & Monroe, 1993; Gladis, 1993; Jensen & Ditiberio, 1984, 1989; Layeghi, 2011; Marefat, 2006). Underlying these studies is the assumption that writers' personality types predispose them to choose particular approaches to writing. However, that relationship is still not clearly substantiated. Specifically, although Jensen and Ditiberio (1984) and Gladis (1993) described the strengths and weaknesses of different personality types, the studies relied upon anecdotal records, observations, and conferences with students, instead of empirical testing. Carrell and Monroe (1993), which empirically tested Jensen and Ditiberio's (1984) observations by examining three groups of writers (native English-speaking [NES] freshmen writers, NES basic writers, and freshmen writers of English as a second language [ESL]), classified by their personality types, report complicated and mixed results. Further, the results from the studies with EFL learners, which compared the writing abilities of extrovert and introvert learners, were inconsistent. While Marefat (2006) found no significant impact of extrovert/introvert personality types on writing ability, Boroujeni et al. (2015) and Layeghi (2011) suggest that introverted learners outperformed their more extroverted counterparts.

We suspect that since *cognitive personality styles* concerns deep-seated features of cognitive structures or a subset of personality traits, the effects of cognitive personality styles on learning are observed only indirectly; and thus the impact of personality types on writing behaviours might be hard to detect. In fact, despite its wide use as a tool to enhance students' learning in general, the evidence supporting the predictive power of Myers' (1962) Myers-Briggs Type Indicator personality inventory for learning is sparse (Coffield et al., 2004).

We believe that the relationship between students' learning styles and their writing behaviours can be detected by employing a measure of *information processing styles*. Many researchers argue that an individual's information processing style is flexibly stable and that

measurements could serve as diagnostic and predictive tools for students' attainment (Allinson & Hayes, 1988; Honey & Mumford, 1992; Kirby, 1979; Kolb, 1984; Schmeck, Ribich, & Ramanaiah, 1977). Given this, we postulated that information processing styles may also significantly affect writing behaviours, in particular.

The Learning Styles Questionnaire and its problems in classifying learning styles

The most well-known measurement associated with information processing styles is Honey and Mumford's (1992, 2000) Learning Styles Questionnaire (LSQ), based upon Kolb's (1976, 1984) experiential learning model. The LSQ has been very popular and one of the most used measures to assess learning style preferences (Allinson & Hayes, 1988; Coffield et al., 2004). Although its validity and reliability continue to be a subject of debate, quite a few studies support the psychometric robustness of the LSQ (Allinson & Hayes, 1988; Berings & Poell, 2002; Saddler-Smith, 2001).

The LSQ is composed of four dimensions designed to assess individuals' learning styles: activist, reflector, theorist, and pragmatist. For example, if a person scores dominantly high on one dimension (e.g., the activist dimension), he or she is considered to be strongly oriented toward that particular learning style (Activist). Generally speaking, Activists tend to enjoy new situations and activities. Theorists have low tolerance for ambiguity and disorder. Reflectors like to consider all possible angles before coming to a conclusion. Finally, Pragmatists are eager to test new ideas in practice.

Although the LSQ's four scores provide useful indices for a person's profile across the four dimensions of learning styles, it is not straightforward to place someone into a specific learning style. For example, what if a person scores all highs or all lows on the four dimensions? What if a person displays equally strong preferences for two or more dimensions simultaneously? In fact, in their study with 300 managers, Honey and Mumford (2000) report that 35% of subjects exhibit strong preferences for only one dimension, 46% two or more, and the rest (19%) no strong preference.

The problem resides in that the titles of the four "dimensions" (i.e., activist, reflector, theorist, and pragmatist) misleadingly equate each dimension with a particular learning style. The distinction between a "dimension" and a "style" should be clearly made because one person has multiple dimensional scores but should have only one style. As Sadler-Smith (2001) rightly argues, what the LSQ actually measures is a person's profile of learning style preferences, not the learning style itself. In essence, a more systematic classification method is needed for the LSQ to be used to identify natural groupings of people with different learning styles. In this regard, a cluster analytic method can be useful, as it allows for classification of natural groupings of people or subtypes based on the similarity matrix of students' responses to the multiple dimensions.

Learning style preferences and culture

Several studies have suggested that different cultures promote different learning style preferences. For example, studies such as Lashley (1999) and Barron and Arcodia (2002) found that a majority of Western students (UK and Australia) in hospitality and tourism programs showed strong preferences for the Activist style. The researchers ascribed the students' strong preferences for the Activists to the people-centred nature of the programs which may fit well with the Activists' preference for new challenges. However, Wong, Pine and Tsang (2000) found that a high portion of the Asian students (Hong Kong, Singapore, and Taiwan) majoring in hospitality management and tourism displayed strong preferences for the

Reflector style. Lashley and Barron (2006) provided results consistent with these two studies. They compared the learning style preferences of hospitality and tourism students with Australian and Confucian heritage origins. They found that a majority (74.4%) of the students with Australian origin exhibited strong preferences for Activist. In contrast, a majority (61%) of the students with Confucian heritage showed strong preferences for Reflector while most students from this group (53.2%) revealed low or very low preferences for Activist.

More research is called for in this arena. An interesting extension of this line of research particularly to a language learning context is to explore how the learning style preferences of Asian students (e.g., Korean EFL students) is related to their L2 writing behaviours. Thus, we intend to add new information to the existing cross-cultural literature on learning style preferences.

Purpose of the Study

We investigated whether information processing styles (i.e., learning style preferences hereafter as the term used by Honey and Mumford) produce systematic differences in L2 writing strategy use. Specifically, by utilizing Honey and Mumford's (1992, 2000) LSQ and Petric and Czarl's (2003) Writing Strategy Questionnaire (WSQ), we examined whether Korean EFL students' learning style preferences are a significant variable that influences their differential use of writing strategies. We set forth three research questions: (1) Are Korean EFL students' learning style preferences related to their writing strategies?; (2) Are Korean EFL students classifiable into different groups by their learning style preferences?; and (3) Do Korean EFL students from different learning style groups exhibit significant differences in their writing strategy use?

The present study attempts to overcome the limitations of the previous literature mainly in two aspects. First, to substantiate the relationship between learning styles and individual differences in writing behaviours, we choose "information processing styles" measured by Honey and Mumford's (1992, 2000) LSQ, rather than "cognitive personality styles." Second, in order to overcome the incompatibility between the LSQ's dimensions and subtypes of learning styles, we utilize a two-step cluster analytic method (Hair & Black, 2000) to classify our participants into subtypes of learning styles based on the similarity matrix of their responses to the multiple dimensions. In addition, given that different cultures may promote different learning style preferences (Anderson, 1988; Lashley & Barron, 2006), the present study may embody culture-specific patterns of learning style preferences. It may also facilitate further cross-cultural research on the role of learning style preferences in L2 writing behaviours. We thus contribute to the extension of cross-cultural research on both learning styles and L2 writing.

METHOD

Participants

A total of 308 Korean college students were randomly recruited from six universities located in Seoul, South Korea. They responded to the Honey and Mumford's (1992, 2000) LSQ as well as Petric and Czarl's (2003) WSQ. After a data screening procedure to exclude incomplete responses, a total of 295 valid responses were used for the analysis. The majority of the participants were women ($n = 234$, 79.3%). The average age was 22.24 ($SD = 2.03$; range = 19-31). The participants' academic majors varied. Among the participants, 127 (43.1%) were sophomores – 46 (15.6%) freshmen, 40 (13.6%) juniors, 69 (23.4%) seniors, and 13 (4.4%) unidentified. Their English proficiency scores, based on their self-reported

TOEIC scores, averaged 694.01 ($SD = 182.56$; range: 220-980), indicating that the participants on average could understand and produce a simple text about personal information and everyday topics (cf. Educational Testing Service, 2008).

Measures and procedures

*Learning Styles Questionnaire*¹

To determine the participants' learning style preferences, we used Honey and Mumford's (1992, 2000) LSQ. Honey and Mumford (2000) provided a test-retest reliability value (Pearson correlation coefficient) of .89. We administered a Korean-translated version of the LSQ to the participants in an effort to increase the quality of data (Dörnyei & Taguchi, 2010). The authors of this paper translated the original LSQ into Korean; then a Korean-English bilingual, a Ph.D. in English education, back-translated the Korean version into English. Lastly, a third independent reviewer checked the validity of the original LSQ and the back-translated one. The LSQ is composed of 80 items with 20 items for each of the four learning styles: activist, reflector, theorist, and pragmatist. Participants were asked to place a tick or a cross to indicate that they agreed or disagreed with each item. The participants' responses were scored by awarding one point to a ticked item and no point to a crossed item. The survey was administered offline. The participants' responses to the LSQ took approximately 20 minutes.

Writing Strategy Questionnaire

To examine the participants' use of writing strategies, Petric and Czarl's (2003) WSQ was used. Petric and Czarl (2003) provided an internal consistency value (Cronbach alpha coefficient) of .63. The WSQ is composed of 38 items describing planning strategies (items 1-8), composing strategies (items 9-22), and revising strategies (items 23-38). Participants responded to each item using a five-point Likert scale ranging from 1 (*never true*) to 5 (*always true*). We also administered a Korean-translated version of the WSQ. The equivalence between the original WSQ and its Korean version was confirmed through the translation, back-translation, and cross-check procedure. The WSQ was also administered offline, which took approximately 10 minutes.

RESULTS

Correlations between learning style preferences and writing strategy use

As seen in Table 1, our correlation analysis indicates that students' planning strategy use in writing was associated negatively with the score on the Activist scale ($r = -.28, p < .01$) but positively with the scores on the Reflector ($r = .25, p < .01$) and Theorist scales ($r = .20, p < .01$). Both the use of composing and revising strategies showed positive correlations with scores on the Reflector, Theorist, and Pragmatist scales, ranging from .15 (revising strategy and pragmatist) to .33 (composing strategy and reflector) (all p 's $< .01$ except for the one between the revising strategy and pragmatist at $p < .05$). These results suggest that among the Korean EFL students, those with stronger preferences for the Reflector, Theorist, and Pragmatist styles and lower preference for the Activist style are likely to exhibit greater use of any writing strategy than those with a stronger preference for the Activist style.

¹ *Learning Styles Questionnaire 80 item Korean Research Edition* Copyright © (1996, 2016) by Pearson Education Ltd. Adapted with permission by Pearson Education Ltd. This test may not be reproduced, in whole or in part, without written permission from the publishers. All rights reserved.

Since students' English proficiency may covariate with their writing strategy use as well as their learning styles, we conducted an additional partial correlation analysis to control for the students' self-report of their TOEIC scores as a covariate. The correlation pattern remained similar (see the numbers in parentheses).

Table 1: (Partial) Correlations between learning styles and writing strategy use ($N = 222$)

	Activist	Reflector	Theorist	Pragmatist
Planning	-.28 (-.27)**	.25 (.24)**	.20 (.18)**	.06 (.07)
Composing	-.08 (-.11)	.33 (.36)**	.27 (.32)**	.25 (.23)**
Revising	-.01 (-.03)	.31 (.32)**	.26 (.28)**	.15 (.14)*

* $p < .05$, ** $p < .01$.

Note. The numbers in parentheses denote partial correlations controlling for the students' TOEIC scores as a covariate; and the valid number of cases for this analysis are 222 rather than 295 due to the Listwise deletion of any cases with missing values on any of the variables above.

Grouping by learning style preference profiles

In order to classify the Korean students into different learning style groups based on their scores across the four dimensions of the LSQ (Activist, Reflector, Theorist, and Pragmatist), we performed a two-step cluster analysis suggested by Hair and Black (2000). This cluster analytic method involves the sequential application of a hierarchical cluster analysis and a K-means cluster analysis in order to minimize the influence of outliers. The technique used to generate the cluster solution was Squared-Euclidian distance and Ward's minimum variance clustering method (Ward, 1963). Based on the dendrogram and agglomeration coefficients, a range of three to five cluster solutions were examined. Upon a careful inspection of each solution along with its conceptual soundness and interpretability, the three-cluster solution was chosen as it had the greatest disparity in the final cluster centroids for each of the four learning style scales. The sizes and final cluster centroids of the three clusters are presented in Table 2.

Table 2: Final cluster centroids for the three clusters ($N = 295$)

Scales	Cluster 1 (Balanced) ($n = 111$)	Cluster 2 (Reflector/Theorist) ($n = 90$)	Cluster 3 (Activist) ($n = 94$)
Activist	13	7	14
Reflector	14	17	10
Theorist	12	13	8
Pragmatist	13	12	11

According to Honey and Mumford's (1992) guideline, the students' actual scores were divided into five bands to interpret the students' relative degrees of preference for the four learning styles. The scoring bands and the distributions are presented in Table 3.

Based on the scoring bands in Table 3, Cluster 1 consisted of participants with moderate preferences for all the four learning styles, and thus it was named "Balanced Group" ($n = 111$, women 77.3%). Cluster 2 included participants with low preferences for the Activist style, strong preferences for the Reflector and Theorist styles, and moderate preferences for the Pragmatist style, and thus it was labelled as the "Reflector/Theorist Group" ($n = 90$, women 76.7%). Lastly, Cluster 3 included participants with strong preferences for the Activist style, low preferences for the Reflector and Theorist styles, and moderate preferences for the Pragmatist style, and thus it was named "Activist Group" ($n = 94$, women 84.0%). The three clusters did not significantly differ by the distribution of sex, Pearson Chi-square, $\chi^2(2) = 1.94$, $p = .38$.

Table 3: Scoring bands and distributions

	Very strong preference	Strong preference	Moderate preference	Low preference	Very low preference
Activist	16-20 (46; 15.6%)	14-15 (47; 15.9%)	10-13 ($M = 11.44$) (131; 38.3%)	7-9 (42; 20.4%)	0-6 (29; 9.8%)
Reflector	18-20 (40; 13.6%)	16-17 (65; 22.0%)	12-15 ($M = 13.69$) (115; 39.0%)	9-11 (51; 17.3%)	0-8 (24; 8.1%)
Theorist	15-20 (48; 16.3%)	13-14 (55; 18.6%)	9-12 ($M = 10.79$) (112; 38.0%)	6-8 (67; 22.7%)	0-5 (13; 4.4%)
Pragmatist	16-20 (31; 10.5%)	14-15 (57; 19.3%)	11-13 ($M = 12.11$) (127; 43.1%)	9-10 (55; 18.6%)	0-8 (25; 8.5%)

Note. The score ranges in the five bands refer to the highest scoring 10% for very strong preference; next highest 20% for strong preference; middle scoring 40% for moderate preference; lower scoring 20% for low preference; and the lowest scoring 10% for very low preference. The number and percentage of the students belonging to each band are presented in the parentheses.

Also, the clusters did not differ by the distribution of their TOEIC scores with five proficiency levels (Proficient User, Independent User-Vantage, Independent User-Threshold, Basic User-Waystage, and Basic User-Breakthrough; Council of Europe, 2001) suggested by the Educational Testing Service (2008), $\chi^2(2) = 11.67$, $p = .17$. Figure 1 illustrates the three clusters' learning style preference profiles.

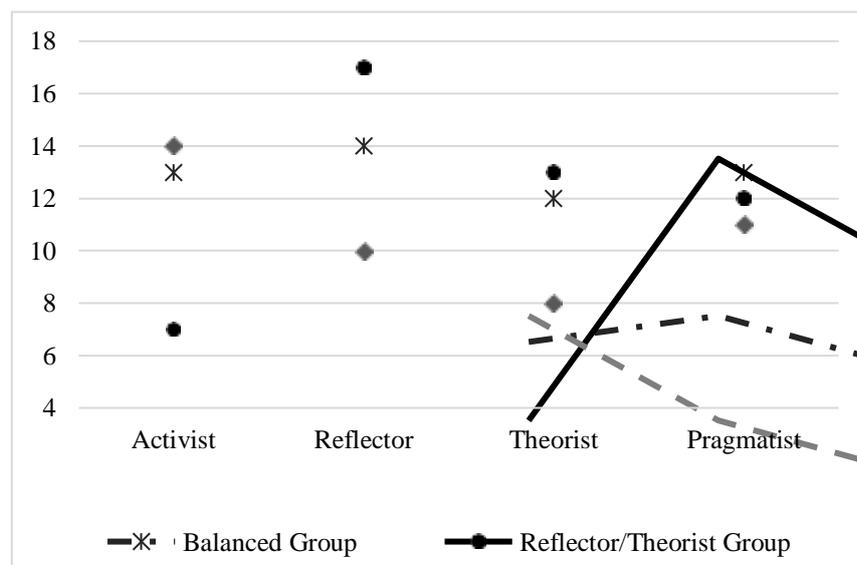


Figure 1: Cluster profiles by learning style dimensions

Group differences in writing strategy use

To examine whether the three clusters of learning styles (Balanced, Reflector/Theorist, and Activist) exhibited significant differences in their writing strategy use (planning, composing, and revising), a multivariate analysis of covariance (MANCOVA) was performed using participants' TOEIC scores as a covariate. We controlled for the students' English proficiencies, because they might be related to their use of writing strategies (Bai, Hu, & Gu, 2014). Bonferroni contrasts with confidence interval were used – adjusted to guard against a possible inflation of Type I error due to multiple comparisons. The descriptive statistics as well as the MANCOVA results are provided in Tables 4 and 5.

First, Box's test of equality of variance matrix was assumed, $F = .82$, $p > .05$ to ensure equal variance across the three clusters. The MANCOVA results revealed an overall,

statistically significant multivariate effect for the clusters, Wilks' $\Lambda = .86$, $F(6, 432) = 5.78$, $p < .001$, partial $\eta^2 = .07$, as well as for the covariate (TOEIC scores), Wilks' $\Lambda = .90$, $F(3, 216) = 8.20$, $p < .001$, partial $\eta^2 = .10$. The significant overall effect for the clusters indicates that writing strategy use significantly differed among the three groups (Balanced, Reflector/Theorist, and Activist).

Table 4: Means and standard deviations for three groups' writing strategy use ($N = 222$)

	Group 1 (Balanced) ($n = 87$)	Group 2 (Reflector/Theorist) ($n = 73$)	Group 3 (Activist) ($n = 62$)	Bonferroni Contrasts
	$M(SD)$	$M(SD)$	$M(SD)$	
Planning	25.20 (5.03)	27.44 (4.89)	23.31 (4.76)	Group 2 > 1 > 3
Composing	47.83 (6.40)	49.51 (6.20)	44.44 (7.52)	Group 1, 2 > 3
Revising	49.46 (6.50)	50.11 (7.06)	48.73 (7.06)	Group 1, 2 > 3

Note. The inequality sign such as in 'Group 2 > 1' means that the mean for Group 2 is greater than the one for Group 1; 'Group 1, 2' means that the means for both groups do not significantly differ; and the valid number of cases for this analysis are 222 rather than 295 due to the Listwise deletion of any cases with missing values on any of the variables above; and all p 's < .05.

Table 5: Group differences in writing strategy use

	SS	df (between)	MS	F
Planning	516.98	2	258.49	10.77***
Composing	1,072.80	2	536.40	12.83***
Revising	675.40	2	337.70	7.19**

Note. The df for within (error) = 218; and ** $p < .01$, *** $p < .001$.

As seen in Tables 4 and 5, the follow-up univariate tests showed that the three groups differed significantly in their uses of planning strategies, $F(2, 218) = 10.77$, $p < .001$, partial $\eta^2 = .09$, composing strategies, $F(2, 218) = 12.83$, $p < .001$, partial $\eta^2 = .11$, and revising strategies, $F(2, 218) = 7.19$, $p < .01$, partial $\eta^2 = .06$. The mean differences by Bonferroni contrasts revealed that both Group 1 (Balanced) and Group 2 (Reflector/Theorist) exhibited a significantly greater use of planning, composing, and revising strategies than Group 3 (Activist). In addition, Group 2 (Reflector/Theorist) showed a significantly greater use of planning strategies than Group 1 (Balanced), but these two groups did not differ in their uses of composing and revising strategies. Along with the results from the (partial) correlation, the MANCOVA results suggest a positive link between stronger preferences for the Reflector and Theorist styles and greater uses of planning, composing, and revising strategies. By the same coin, the results indicate a link between the Activist style and reduced use of planning strategies.

DISCUSSION

A sample of Korean EFL students served as participants to examine whether learning style preferences are a significant influence on students' differential use of writing strategies. The results found significant correlations between learning style preferences and writing strategy use in the Korea EFL students. More importantly, the results also indicate that Korean EFL students are classified into three distinctive groups (Balanced, Reflector/Theorist, and Activist) in terms of their learning style preferences, and that these three groups exhibited significant differences in their use of writing strategies.

The present study is a unique addition to the literature concerning the interplay of learning styles and L2 writing. First of all, the findings of this study provided support for the utility of information processing styles, a second deep-level variable of learning style, in

explaining the variance of L2 students' writing strategy use. This can facilitate future research that examines the link between information processing styles, specifically measured with Honey and Mumford's LSQ, and measures of writing behaviours. This study also hints at the aforementioned ambiguity found in the relationship between cognitive personality styles and individual differences in writing behaviours (e.g., Carrell & Monroe, 1993; Gladis, 1993; Jensen & Dittberio, 1984, 1989). As we argue – unlike information processing styles – the cognitive personality styles are too distant from the task to capture individual differences in writing behaviours. It is recommended that future research examining the link between learning styles and writing employ information processing styles as a primary variable

This study was also the first attempt to empirically identify natural groupings of Korean students who employ different learning styles (Balanced, Reflector/Theorist, and Activist). It should be clear that this classification is more advanced than that of Honey and Mumford (1992), because the subtypes were extracted from a more objective and robust method (a two-step approach in cluster analysis) than an arbitrary enumeration of subtypes. The three cluster solution found in this study, though it is needed to be replicated with another sample, can be a foundation for future research which intends to classify different populations into distinctive learning style groups.

Furthermore, the findings of this study suggest that Korean college students are not homogenous in their learning style preferences. The Reflector/Theorist Group in this study seems comparable with the Reflector group found in Wong et al. (2000); however, a group comparable with the Activist Group in our study could also be found among the students studied in Lashley and Barron (2006). In essence, the within-culture differences in learning style preferences also need due scholarly attention in addition to the research on the between-culture differences.

The present study provides useful pedagogical implications for the teaching of L2 writing. In the case of Korean college students, students who rate low on the Theorist and Reflector scales might benefit from explicit instructions about how to use writing strategies as well as from group activities and supplementary materials to facilitate students' use of various strategies. Contrariwise, student writers having a low preference for the Activist style may possibly spend excessive time on planning and thus they may need to be taught that they would be fine to move more quickly into composing as once they produce their first drafts, they would have opportunities to revise them.

Our investigation in this study, however, did not include the impact of learning style preferences on the qualities of written products. Although writing strategy use can be a significant variable in explaining differences between proficient writers and basic ones, its role is mediated not only by the quantity but also the quality of strategies used (Chien, 2012; Ridhuan & Abdullah, 2009). Interpretation of the results should not be extended to predicting the qualities of written products. The interrelationships among the learning style preferences, writing strategy use, and linguistic and structural measures of written products need further investigation. For example, the information as to how the writing, in terms of linguistic and structural aspects, might differ among various learning style groups would be helpful for students in being aware of their own strengths and weaknesses as a writer. It should also be acknowledged that the number and profiles of the distinctive learning style groups and these groups' different use of writing strategies found in this study measure only Korean college students. Many studies have suggested that different cultural groups might have different learning style preferences (Barron & Arcodia, 2002; Lashley & Barron, 2006; Wong et al., 2000). Investigations of L1 writers and ESL/EFL learners with different cultural backgrounds might yield different results about the natural groupings of the population based on their learning style preferences as well as how those learning style groups differ in their writing strategy use.

CONCLUSION

The present study was motivated from a pedagogical standpoint to help L2 learners achieve a more productive balance in their writing strategy use. The results of the current study suggested that students' learning style preferences could inform different ways that they manage their L2 writing processes. In addition, this study demonstrated an appropriate way to assess individuals' learning style preference profiles. Instead of labelling students as having one or two learning styles based on their LSQ scores, this study classified the students into groups through a more robust way of classification (a 2-step cluster analysis). Creating homogenous learning style groups is important as it serves as a basis for the development of more individualized writing instructions.

Given the lack of attention to the impact of individual factors on L2 writing (Kormos, 2012), the present investigation extends the existing L2 writing research. As Jensen and Dittberio (1984) suggested, if we diagnose and predict the strengths and weaknesses in our students' writing behaviours, we can find better ways to help our students achieve a sense of control in their writing. The pedagogical benefit can be amplified if writing teachers are informed about the characteristics of different learning style groups and design instructions tailored to the needs of each group.

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