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Thinking Styles in First-Year Writing Course as Predictors of Writing Apprehension and Media Literacy

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I. Introduction

Writing is a complicated cognitive activity; indeed, instructors in writing class typically experience as much difficulty as learners. Most college freshmen in Korea complain of lack of writing interest, difficulty in writing itself, and vague anxiety about writing (Daly, 1978; Daly & Miller, 1975). Writing apprehension, referring to a vague fear of writing and a tendency to avoid writing situations, is highly pervasive among students (Barwick, 1995; Cheng et al., 1999; Daly & Miller, 1975; Rechtien & Dizinno, 1998; Riffe & Stacks, 1992), and especially so among undergraduates (Baez, 2005; Hwang, 2019). Meanwhile, most learners in the 21st century are very familiar with smart educational environments and the use of smart devices therein. 'Media literacy,' which is the ability to acquire and judge information using smart devices and produce new information meeting student needs (Gardiner, 1997; Livingstone, 2004), has become one of the individual-difference variables.

This context suggests a need to understand learners' individual-difference variables in writing. Writing being an individual's internal cognitive process, it can be premised that various individual differences are reflected in the writing process and its outcomes. A 'style,'

one of the most important individual-difference variables in human performance, is a preferred way of using one's abilities (i.e., thinking styles) (Sternberg, 1988, 1994, 1997). Everyone has a style profile that varies to suit different tasks and situations. The present study examined the association of thinking styes with not only writing apprehension but also media literacy in a freshman writing course.

II. Literature Review

1. Thinking styles

R.J. Sternberg (1988, 1997)'s theory of mental self-government defines 13 'thinking styles' under five categories: functions, forms, levels, scope, and political leaning. Zhang & Sternberg (2005, 2006) reconceptualized the 13 styles into three types: Type I styles (more creativity-generating styles - legislative, judicial, hierarchical, global, and liberal styles); Type II styles (norm-conforming styles - executive, local, monarchic, and conservative styles); Type III styles (manifesting the characteristics of either Type I or Type II styles - anarchic, oligarchic, internal, and external styles). Numerous previous studies have explored the predictive power of thinking styles on diverse variables (Betroret, 2007; Fjell & Walhovd, 2004; Grigorenko & Sternberg, 1997; Zhang 2007, 2009; Zhang & He, 2003; Zhang & Sternberg, 1998, 2000). Thinking styles were found to play an important role in students' cognitive development (Zhang & Sternberg, 2000), academic achievement (Bernardo et al., 2002; Cano-Garcia & Hughes, 2000; Grigorenko & Sternberg, 1997; Richmond & Conrad, 2012), and anxiety (Zhang, 2009). A relationship was found to exist between thinking styles and the use of CIT (computing and information technology) in education (Zhang & He, 2003). Thinking styles also were found to be affected by gender (Zhang, 2007; Zhang & He, 2003). In Korea, not a few studies examined the relationship between thinking styles and

diverse variables such as creativity, teamwork skills, and leadership (Hwang, 2017; Hwang & Yun, 2016; Jung & Chang, 2014; Yun & Kim, 2008). However, neither thinking styles' contributions to writing apprehension and media literacy nor their effects on writing ability and outcomes in writing class have been examined.

2. Writing apprehension

Writing apprehension was introduced and defined by J. A. Daly, as a writer's tendency to avoid writing situations, and to fear having one's writing evaluated (Daly, 1978, 1984). Writing apprehension is reportedly to affect not only the entire writing process, but also writing ability as well as writing outcomes (Charney et al., 1995; Daly & Miller, 1975). People with low writing apprehension are found to show better writing abilities than those with high writing apprehension (Daly, 1978; Faigley et al., 1981; Fowler & Kroll, 1980). Students with higher apprehension are reported to receive lower grades on standardized writing tests (Daly, 1984; Daly & Wilson, 1983; Lee & Krashen, 1997; Singh & Rajalingam, 2012). Also, writing apprehension contributes to grade point average (GPA) as well as academic and job performance that entails writing (Boening et al., 1997; Daly & McCroskey, 1975; Hwang, 2019; Martinez et al., 2011; Onwuegbuzie, 1999), and is related to self-esteem, self-efficacy, personality, speaking, and reading (Daly & Miller, 1975; Daly & Wilson, 1983; Martinez et al., 2011; Minot & Gamble, 1991; Sanders-Reio et al., 2014). Meanwhile, reports on gender differences in writing apprehension have been equivocal: female students showed higher levels of writing apprehension than did males in some studies (Benton et al., 2003; Herrington et al., 2005; Martinez et al., 2011), whereas in others, no such differences were found (Hwang, 2019; Pajares & Valiante, 1999).

3. Media literacy

With the advent of digital technologies and the associated rapid changes of environment, the definition of literacy has been expanded to include the ability to understand, produce, and utilize various types of information (Gardiner, 1997). A related new form of literacy, media literacy, is generally defined as the ability to access media, to understand and critically evaluate different aspects of media and media content, and to create communications in a variety of contexts (European Commission, 2007). Thus, media literacy is a comprehensive concept encompassing information literacy, computer literacy, film and video literacy, cultural literacy (Burn & Durran, 2007; Lacina, 2005; Livingstone, 2004). In education, media literacy's outcomes are reported to enhance learning by practicing literacy and ways of knowing (Ellsworth, 1997), accommodating the diverse learning styles of multicultural learners (Cortés, 2000; Semali, 2017; Tobin, 2000), and developing creativity, self-expression, and teamwork (Brunner & Tally, 1999; Considine & Haley, 1999). Media literacy can lead to deeper critical thinking and communication skills in technology (Allington, 2013; Kellner & Share, 2005; Lacina, 2005; Scheibe, 2004). In a problem-solving learning, learners' information literacy has a positive impact on learning achievement (Todd, 1995), and media-literacy education improved traditional print literacy skills (Hobbs & Frost, 2003). Besides, the outcomes of the ability to use CIT can vary depending on individual-difference variables such as gender and age (Yelland & Lloyd, 2001).

4. Relationships among apprehension, media literacy, and thinking styles

To date, little research exists on the link of writing apprehension to media literacy and thinking styles. However, when individual differences could be expanded to 'personality,' not a few studies in-

vestigated the relationship between writing and individual personality types (Hwang, 2018; Jensen & DiTiberio, 1984; Kaufman, 2002; Kramer, 1977; Marefat, 2006; O'Hara & Sternberg, 2001). On the other hand, some studies have examined indirectly the impact of thinking styles on media literacy (Zhang, 2007; Zhang & He, 2003; Zhang & Huang, 2001).

Based on prior findings, we would expect to find not only relationships among writing apprehension, media literacy, and thinking styles, but also impacts of thinking styles on two predicted variables, namely, 'being influenced by writing ability' and 'outcomes in writing education.' However, to date, little research exists on how thinking styles are related to writing apprehension and media literacy or how such relations can be predicted. Thus, based on this rationale, the present study conducted an empirical study to understand the relationships among thinking styles, writing apprehension, and media literacy for writing-class students.

5. Research questions and hypotheses

For the purposes of this study, the following questions were addressed, based on which we proposed the following hypotheses:

1. What are the correlations among writing apprehension, media literacy, and thinking styles of freshmen enrolled in writing course?

H1: There will be significant correlations among writing apprehension, media literacy, and thinking styles.

2. Will thinking styles predict writing apprehension and, if so, which types?

H2: Thinking styles will predict writing apprehension: Type I thinking styles will negatively contribute to writing apprehension; Type II styles will be prone to higher levels of writing apprehension.

3. Will thinking styles predict media literacy, and, if so, which types?

H3: Thinking styles will predict media literacy Type I thinking styles will positively contribute to media literacy; Type II styles will negatively predict higher levels of media literacy.

III. Methods

1. Study subjects and procedure

To investigate the relationships among thinking styles, writing apprehension, and media literacy, the present study surveyed 358 male and female freshmen majoring in two academic disciplines — engineering and fine arts — at one of the largest universities in South Korea. They were all enrolled in a mandatory writing course, titled "Logical thinking and writing." Of the collected survey questionnaires prepared online, all 358 of them were utilized for the research analysis. After obtaining the participants' informed consent, they were briefed on the survey procedures. Of the 358 participants, 164 were male (45.81%) and 194 were female (54.19%). The participants' ages ranged from 18 to 21, and all of them were single. All of them provided the demographic information indicated in the "Participants" section and responded to three questionnaires. Each participant was given a small souvenir for participating in the study. The data were collected between September 10 and October 10, 2020, and study approval was granted by the Institutional Review Board (IRB) of the author's affiliated university. The data was screened for significant outliers, violations of assumed normality and homoscedasticity. Using the Box's M Test and the Kolmogorov-Smirnov Test, one independent variable (thinking styles) and two dependent variables (writing apprehension and media literacy) were tested for normality. No violations of statistical assumptions were found.

2. Instruments

Participants responded to a three-part questionnaire: Thinking Styles Inventory (TSI), Writing Apprehension Test (WAT), and media literacy. First, the instrument used to assess thinking styles was the TSI (Sternberg & Wagner, 1992). It contains 65 statements, each 5 assessing one of the 13 thinking styles. The original version is measured on a 7-point Likert scale (score 1: indicating that the statement does not at all describe the way they normally deal with tasks ~ score 7: representing that the statement does so extremely well); however in this study, a 5-point scale translated into Korean and of verified validity in Korea (Hwang, 2018; Yoon, 2003) was used. Representative examples include, "One prefers to work on tasks that require creative strategies," and "One prefers to work on tasks that involve novelty and ambiguity." Generally, the alpha coefficients for the 13 scales in previous studies ranged from the mid .50s to the mid .80s (Zhang, 2007). In this study, the alpha coefficients were .52 (legislative), .52 (executive), .51 (judicial), .54 (global), .54 (local), .53 (liberal), .64 (conservative), .54 (hierarchical), .59 (monarchic), .58 (oligarchic), .54 (anarchic), .60 (internal), and .57 (external).

Second, the instrument used to assess writing apprehension in the current study was the WAT (Daly & Miller, 1975), which specifically measures the author's perception of the writer's feelings and evaluations experienced when writing. This instrument consists of a total of 26 questions, 13 positive and 13 negative. The WAT is a widely utilized measure for which there is substantial evidence of reliability and validity. A 26-item scale translated into Korean from the original version and of verified validity in Korean (Hwang, 2019) was used in this study. Representative questions concern positive or negative feelings about writing such as, "I like to write my ideas down," and "I'm nervous about writing." Each question was to be answered on a 5-point Likert scale (score 1: strongly agree ~ score 5: strongly disagree). The reliability of this test was Cronbach's α = .94 (Daly &

Miller, 1975), and this scale showed good reliability in the current study (Cronbach's α = .94).

Third, the instrument used to assess media literacy in the current study was that of Yoo (2014). This scale is of verified validity and had already been adapted for multiple South Korean studies assessing media literacy. It consists of 21 questions in five sub-factors, including internet utilization, smart-device utilization, self-expression, participation, and critical understanding. Representative items include "I can use the Internet to search for information or resources," and "I think the content of the media can be accepted differently depending on the person." Each question was to be answered on a 5-point Likert scale (score 1: not at all~score 5: very much). This scale showed good reliability in the current sample (Cronbach's α = .71). Further, each sub-scale showed good reliability: for internet utilization, the factor reliability (Cronbach's α) was .63; for smart-device utilization, it was .65; for self-expression, it was .60; for participation, it was .72, and for critical understanding, it was .70.

3. Data analysis

As previously discussed, writing apprehension, media literacy and thinking styles can all be affected by gender. Therefore, zero-order correlations and t-tests were used to identify differences in three variables based on gender, respectively. First, significantly positive relationships were found between gender and three thinking styles – monarchic, hierarchical, and internal – while no significant relationship was identified between gender and writing apprehension (see Table 1). Secondly, significantly positive relationships were found between gender and three of the five sub-factors of media literacy: smart-device utilization, self-expression, and participation. Male participants scored higher on the monarchic style than did females, whereas females scored higher on the hierarchical and internal styles than did males. Concerning media literacy, male participants

scored higher on participation than did females, whereas females scored higher on smart-device utilization, self-expression, and media literacy (total) than did males. To eliminate the possible confounding effects of gender on the predictive relationship of thinking styles to writing apprehension and media literacy, hierarchical multiple regressions were conducted, with thinking styles being the independent variable, the writing apprehension and media-literacy scales being the dependent variables, and with gender serving as the control variable.

Table 1. Results from t-test: thinking styles and media literacy by gender (*N* = 358)

Thinking styles	Gender	Mean	N	t	Sig. (2tailed)
Monarchic	Male	3.13	102	2.53	.01
	Female	2.95	180		
Hierarchical	Male	3.67	102	-3.25	.00
	Female	3.92	180		
Internal	Male	3.23	102	-2.02	.04
	Female	3.39	180		
Media literacy					
Smart-device utilization	Male	4.55	102	-2.20	.028
	Female	4.69	180		
Self-expression	Male	3.49	102	-2.68	.008
	Female	3.76	180		
Participation	Male	2.89	102	5.25	.00
	Female	2.36	180		
Media literacy(Total)	Male	3.78	102	-3.40	.001
	Female	3.98	180		

IV. Results

1. Relationships among thinking styles, writing apprehension and media literacy controlling for gender

To identify the relationships among the variables, a partial correlation analysis controlling for gender was conducted. Table 2 indicates the significant correlations between thinking styles and the sub-factors of the two variables.

First, specifically, at the significance level $p<.01$, a negative correlation (-.49~-.16) and a positive correlation (.22) were observed between thinking styles and writing apprehension; second, at the significance level $p<.01$, a positive correlation (.17~.39) and a negative correlation (-.19) were observed between thinking styles and media-literacy sub-factors. As such, the correlation values among all of the factors were smaller than .08, proving that there was no problem in terms of multicollinearity. These results support Hypothesis 1, which stated that there will be significant correlations among the three variables. Several points are worth mentioning.

First, it is noteworthy that, of the 13 thinking styles, 12 (except oligarchic style) were statistically correlated with writing apprehension. Specifically, all five Type I styles and three of the Type II styles (executive, monarchic, and local) contributed negatively to writing apprehension, whereas one Type II style (conservative) contributing positively. Also, all three Type III styles (anarchic, internal, and external) were negatively correlated with writing apprehension.

Second, as shown in Table 2, after controlling for gender, the majority of the thinking styles (11 out of 13) were statistically correlated with media literacy's sub-scales. Regarding the relationship between thinking styles and media-literacy scales, three points are worth mentioning. First, it is notable that all of media literacy's sub-scales except smart-device utilization and participation were correlated with

Table 2. Partial correlation coefficients: thinking styles with writing apprehension and media literacy controlling for gender

Types of Thinking styles	Scales	Writing apprehension	Internet utilization	Smart-device utilization	Self-expression	Participation	Critical understanding	Media literacy (Total)
Type I styles	Legislative	-.43**	.30**	.15*	.32**	.23**	.39**	.39**
	Judicial	-.49**	.14*	.11	.24**	.23**	.28**	.29**
	Hierarchical	-.29**	.18**	.25**	.23**	.10	.25**	.27**
	Global	-.16**	.21**	.04	.15*	.05	.23**	.18**
	Liberal	-.27**	.21**	.09	.26**	.18**	.32**	.30**
Type II styles	Executive	-.12*	.07	-.01	.02	.01	.13*	.06
	Monarchic	-.17**	-.01	-.05	.01	-.01	.11	.01
	Local	-.29**	.11	.07	.15*	.11	.21**	.18**
	Conservative	.22**	-.12*	-.09	-.19**	-.08	-.12*	-.18**
Type III styles	Oligarchic	-.08	-.02	-.11	-.12	.07	-.05	-.06
	Anarchic	-.16**	.05	-.05	.08	.14*	.14*	.11
	Internal	-.13*	.12*	-.01	.1	.17**	.19**	.17**
	External	-.22**	.11	.14*	.17**	-.01	.08	.13*

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

all Type I thinking styles. This relationship between Type I thinking styles and media-literacy scales supported our earlier prediction. Second, of the Type II styles, only the conservative style was negatively correlated with internet utilization, self-expression, and critical understanding. Which could mean that students with the conservative style tend to seek lower levels of internet utilization, self-expression, and critical understanding.

Finally, two of the neutral Type III styles, internal and anarchic, were significantly and positively correlated with two of the media-literacy scales, and the external style was significantly and positively correlated with smart-device utilization as well as self-expression. Early in this study, we did not make any specific prediction about the relationships between the Type III styles and the media-literacy scale. These results show that students who employed the internal and anarchic thinking styles tend to show higher levels of participation and critical understanding in media literacy, and that those who employ the external thinking style show higher levels of self-expression and smart-device utilization. These findings indicate that students with all thinking styles other than the monarchic and oligarchic ones hold a specific perspective toward media literacy in writing class.

2. Predicting writing apprehension and media literacy from thinking styles: controlling for gender

The results from the hierarchical multiple-regression analyses showed that, after gender was controlled for, six thinking styles (judicial, legislative, liberal, internal, monarchic, and external) statistically predicted writing apprehension. Meanwhile, three of the Type I styles (legislative, global, and hierarchical) and one Type III style (external) predicted media literacy. As shown in Table 3, the unique contribution of the thinking styles to writing apprehension was 38.2%. Also, the unique contributions of the thinking styles to media literacy ranged from 8.2 to 22.3%.

Table 3. Predictions of writing apprehension and media literacy from thinking styles, controlling for gender: R^2's, *β*'s, and *F*'s (*N* = 358)

Scales	Writing apprehension	Internet utilization	Smart-device utilization	Self-expression	Participation	Critical understanding
R^2_{Gender}	.005	.001	.017	.025	.090	.001
R^2_{Total}	.387	.138	.099	.186	.192	.224
$R^2_{Thinking\ Styles}$	.382	.137	.082	.161	.183	.223
$\beta_{Style\ predictor}$	***-.299$_{judicial}$	**.212$_{legislative}$	**.209$_{hierarchical}$	*.164$_{external}$	**.221$_{legislative}$	*.192$_{legislative}$
	***-.264$_{legislative}$	*.169$_{global}$				*.137$_{global}$
	**.246$_{liberal}$					
	**-.193$_{internal}$					
	**.160$_{monarchic}$					
	**-.139$_{external}$					
F	12.043***	3.045***	2.097**	4.351***	4.528***	5.512***
df	1, 14	1, 14	1, 14	1, 14	1, 14	1, 14

*p<.05, **p<.01, ***p<.001

The extents to which thinking styles predicted media literacy were manifested in the R^2 values. These values, generated from both gender and thinking styles, were .138, .099, .186, .192, and .224, respectively for the following scales: internet utilization, smart-device utilization, self-expression, participation, and critical understanding. The unique contributions of the thinking styles to media literacy were as follows: 13.7% from the legislative and global styles to the internet utilization scale; 8.2% from the hierarchical style to the smart-device utilization scale; 16.1% from the external style to the self-expression scale; 18.3% from the legislative style to the participation scale, and 22.3% from the legislative and global styles to the critical-understanding scale.

Concerning the contributions of the thinking styles to writing apprehension, the significant β weights were negative for those involving the judicial, legislative, internal, and external styles, but were positive for those involving the monarchic and liberal styles. By contrast, regarding the contributions of the thinking styles to media literacy, all the significant β weights were positive for those involving the legislative, global, hierarchical, and external styles. The detailed statistics are presented in Table 3. Taken together across multiple-regression analyses, the thinking styles that significantly contributed to writing apprehension and media literacy were five of the Type I thinking styles, one of the Type II styles (monarchic) and two of the Type III styles (external and internal). Contrary to the partial correlation analysis, both the liberal and monarchic thinking styles were shown to be significantly predictive of writing apprehension.

V. Discussion

The present study aimed to examine the role of thinking styles as predictor of writing apprehension and media literacy. From the results of the partial correlation analysis and multiple-regression analyses,

we found that thinking styles were statistically predictive of writing apprehension as well as media-literacy scales. The main study findings are as discussed below.

First, statistically significant correlations were found between writing apprehension and thinking styles. Most students were vulnerable to writing apprehension. Twelve (12) out of 13 styles were statistically correlated with writing apprehension, and 11 styles contributed negatively to writing apprehension, while only the conservative style contributing positively. Specifically, the positive relationship between the conservative style and writing apprehension may mean that students higher in conservative thinking tend to be more anxious about writing, since they prefer to work according to existing rules and procedures in performing tasks and show a relative lack of self-confidence.

Second, statistically significant correlations were identified between media literacy and thinking styles. This finding suggests that not all students but rather, those with a particular thinking style are keen on media literacy's sub-factors. The majority of the thinking styles (11 out of 13) were statistically correlated with media literacy's sub-scales. Notably, all except smart-device utilization were positively correlated with the five Type I styles and the three Type III styles, whereas only the conservative style was negatively correlated with internet utilization, self-expression, and critical understanding, the three sub-factors of media literacy. As such, the negative relationship between the conservative style and media literacy could mean that students with a conservative thinking style might not hold a favorable attitude toward the use of media literacy, or that they have relatively low media-literacy-related skills, which question needs to be explored further. Based on prior studies, we could predict that students employing Type I thinking styles tend to have lower levels of writing apprehension, and that they also tend to be more interested in the use of media literacy. This is due to the fact that individuals higher in Type I thinking styles tend to be more risk-taking, to have

a welcoming attitude towards complex and challenging tasks, and to be more self-assured (Betoret, 2007; Fjell & Walhoved, 2004; Zhang, 2009; Zhang & He, 2003; Zhang & Sternberg, 2000) and open-minded (Zhang & Huang, 2001).

Third, three of the Type I thinking styles, one of the Type II thinking styles, and two of the Type III thinking styles statistically predicted writing apprehension. The unique contribution of the thinking styles to writing apprehension was 38.2% after controlling for gender. Specifically, the judicial style had the largest explanatory power followed by the legislative, liberal, and internal styles. As expected, the Type I thinking styles best predicted writing apprehension; however, no specific predictions were made concerning the impacts of two of the Type III styles on writing apprehension. As such, although not all of the individual styles significantly contributed to writing apprehension, the general patterns of their contributions to writing apprehension supported the predictions. That is, the Type I styles tended to be negatively associated with writing apprehension. Despite the paucity of studies about the predictive power of thinking styles respecting writing apprehension, these findings are partly in line with studies examining other types of anxiety (Linden, 1973; Zhang, 2009).

Two findings from the current study deserve special mention. First, the liberal style was found to be negatively correlated with writing apprehension, but also to be positively predictive of it. Second, the conservative style was found to be positively correlated with writing apprehension, which means that students higher in the conservative thinking style tend to be more anxious about writing due to a relative lack of self-confidence, whereas the conservative style was found *not* to be predictive of writing apprehension. Considering these findings, we could say, first, that although students higher in the liberal style tend to be lower in writing apprehension and not to feel anxious about writing, they may yet perceive or actually have considerable anxiety for writing. Second, the conservative style was found to be positively correlated with writing apprehension, which does not

necessarily mean that all students with the conservative style perceive or actually have writing apprehension.

Fourth, three of the Type I thinking styles and one of the Type III thinking styles statistically and positively predicted media literacy. The unique contribution of the thinking styles to media literacy ranged from 8.2 to 22.3%. As for the nature of the contribution to media literacy's sub-scales, the legislative style had the largest explanatory power on internet utilization and critical understanding respectively, followed by the global style; the hierarchical style had the greatest impact on smart-device utilization, the external style on self-expression, and the legislative style on participation. As expected, the Type I thinking styles best predicted media literacy; however, no specific predictions were made concerning the impact of Type III's external style on media literacy. These findings lend support to the results of related previous studies (Zhang, 2007; Zhang & He, 2003) indicating a relationship of the Type I thinking styles with CIT use and the knowledge scales. Taking all of the results together, whereas not all of the individual styles significantly contributed to media literacy, the Type I styles and Type III's external style tended to be positively associated with it. This is owed to the fact that media literacy, a new form of literacy related to challenging tasks and openness to new and rapid changes, would be expected to be related to the Type I thinking styles, and also that the external style was found to predict self-expression, a sub-factor of media literacy. Self-expression – the ability of expressing what an individual wants to convey using diverse channels such as video, photography or presentation – might naturally be a 'social' style of thinking, and the external style – a preference to work on collaborative tasks and with others generally – might reasonably be assumed to be predictive of self-expression.

VI. Conclusion

This study has a limitation in the generalizability of its findings to all college students. First, its sample was drawn from only freshmen of one university in Korea. Thus, if the study cohort is expanded in a future study, more convincing results can be drawn. Second, our findings were obtained from only self-reported data, and it is well known that such data are not always consistent with results obtained through behavioral measures (Newton & Contrada, 1992; Zhang, 2009). Ways of mitigating this limitation by using actual testing of writing apprehension and media literacy in order to support the findings of the current study with more integrated evidence should be considered. Third, this study examined just two dependent variables (writing apprehension and media literacy) as factors affecting the overall writing process and writing ability. However, as there exist diverse affecting variables of individual differences in writing classes, future studies will need to explore more and different variables (Betoret, 2007; Fjell & Walhovd, 2004; Hwang, 2017) related to writing and thinking styles.

With regard to the effects of thinking styles on writing apprehension and media literacy, the following suggestions for writing education can be made. First, Sternberg (1994, 1997) revealed that there are more suitable teaching methods that accord with thinking styles. That is, different teaching or assessment methods favor students with different thinking styles. In general, writing classes for enhanced writing ability should be designed using diverse teaching methods such as unilateral lecture, discussion, and diverse team-based activities. Certainly, teachers need to vary their teaching and assessment styles in order to suit the different tasks and education settings necessary to ensure that all students can become more comfortable in their writing ability.

Second, in writing education, learners' differing writing abilities,

writing apprehension, and thinking styles should be carefully considered. Writing in college (academic writing) differs greatly from the modes of communication used in 'everyday writing'; this suggests that difficulties experienced by learners are indeed quite natural, and that timely guidance and support from instructors in the forms of "scaffolding" (Wood et al., 1976) should be continuously designed and provided. And in fact, the findings of the present study with respect to the significances of the various thinking styles to writing apprehension and media literacy could be considered in designing such scaffolding for learners in writing class.

Third, this study's findings suggest that instructors can encourage the Type I thinking styles and Type III's external style through their instruction (Zhang & Sternberg, 1998, 2000) and/or differentiated scaffolding strategies, thereby providing students with more opportunities to acquire media literacy and reduce their writing apprehension. Also, students with the conservative style, who appear to be particularly vulnerable to both writing apprehension and media literacy, should be afforded special help and encouragement.

Based on the findings presented above, it is evident that thinking styles have an important effect on both writing apprehension and media literacy. Specifically, three of the Type I thinking styles – judicial, legislative, and liberal – were found to affect writing apprehension, and the judicial style to be the most impactful. Meanwhile, three of the Type I thinking styles – legislative, global, and hierarchical – were found to affect media literacy, and the legislative style to be the most impactful with respect to internet utilization, a sub-factor of media literacy. Therefore, to bring about enhancement of students' writing ability and engagement in class, ways of varying teaching and assessment methods in consideration of learners' thinking styles or of deriving more appropriate scaffolding strategies relevant to thinking styles need to be considered further and applied in writing classes. As such, our findings not only will contribute to knowledge about the relationships among writing apprehension, media literacy, and thinking styles

but will also hold practical implications for educational practice in actual writing classes.

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ABSTRACT

Thinking Styles in First-Year Writing Course as Predictors of Writing Apprehension and Media Literacy

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Writing apprehension is highly pervasive among students, and especially so among undergraduates. Meanwhile, most learners in the 21st century are very familiar with smart educational environments and the use of smart devices therein. Media literacy, referring to the ability to acquire and judge information using smart devices and produce new information, has become one of the individual-difference variables. A 'style,' one of the important individual-difference variables in human performance, is a preferred way of using one's abilities (i.e., thinking styles). This research examined the role of thinking styles in a freshman writing course in Korea as predictors of writing apprehension and media literacy. To investigate the relationships among thinking styles, writing apprehension, and media literacy, first, the relationships among thinking styles, writing apprehension and media literacy were investigated. Second, the effects of thinking styles on writing apprehension and media literacy were explored. 358 freshmen from one university in Korea responded to a survey based on a three-variable scale. Significant correlations between thinking styles and the sub-factors of two variables were identified after controlling for gender. Three of the Type I thinking styles along with one of the Type II styles and two of the Type III styles predicted writing apprehension. Meanwhile, three of the Type I thinking styles and one of the Type III styles predicted media literacy. It is evident that thinking styles have an important effect on both writing apprehension and media literacy. To bring about enhancement of students' writing ability and en-

gagement in class, ways of varying teaching and assessment methods in consideration of learners' thinking styles or of deriving more appropriate scaffolding strategies relevant to thinking styles need to be considered further and applied in writing classes.

KEYWORDS Thinking Styles, Writing Apprehension, Media Literacy, College Freshmen, Writing Course