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Sherry Mee Bell
University of Tennessee

R. Steve McCallum
University of Tennessee

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DO FOREIGN LANGUAGE LEARNING, COGNITIVE, AND AFFECTIVE VARIABLES DIFFER AS A FUNCTION OF EXCEPTIONALITY STATUS AND GENDER?

Sherry Mee Bell and R. Steve McCallum
University of Tennessee

ABSTRACT

Relationships between foreign language learning and four characteristics— anxiety, aptitude, attitudes and attributions for success—were investigated for 95 students enrolled in introductory level Spanish classes at a large, southeastern university in the United States. Examination grades resulted in significantly positive correlation with an aptitude measure and significantly negative correlation with luck attributions for foreign language success ($p < .05$). Students identified as gifted tended to score higher than those with learning disabilities on exams, though not significantly higher, perhaps as a result of the small sample size and highly variable performance of the gifted students ($p < .05$). In addition, the gifted students reported less anxiety ($p < .04$). Females reported higher anxiety ($p < .001$) than males though they earned (non-significantly) higher scores (than males) on exams ($p > .05$). Modern Language Aptitude Test Part IV and luck attributions significantly predicted exam grades within a multiple regression analysis. In a second multiple regression analysis, only effort and ability attributions significantly predicted anxiety. Results underscore the importance of understanding and addressing both cognitive and affective variables in learning a new language.

DO FOREIGN LANGUAGE LEARNING, COGNITIVE, AND AFFECTIVE VARIABLES DIFFER AS A FUNCTION OF EXCEPTIONALITY STATUS AND GENDER?

The purpose of this paper is to examine the relationships among cognitive, affective, and achievement variables for college students enrolled in foreign

language classes in the United States. Specifically, this study was designed to investigate the relationships between foreign language learning aptitude, foreign language learning affective variables (attributions, anxiety, attitudes), and achievement in a foreign language class for U.S. college students. Furthermore, this study was designed to determine whether foreign language cognitive, affective, and achievement differences exist between those characterized as having learning disabilities and those characterized as intellectually gifted, and whether such differences exist as a function of gender.

The advantages of students' learning other languages permeate the world-language learning literature and the popular press (e.g., Wooldridge, 2011), and the call for foreign language education comes from a variety of sources for both the general school population (e.g., Rhodes & Pufahl, 2009) and students with learning disabilities (e.g., Artiles & Ortiz, 2002). According to Peckham (2010) the (United States) College Board recommended expanding basic skills to include foreign language education for all students in 1983, and in 1996 the American Association of School Administrators identified knowledge of foreign languages as one of the most important skills students need to develop to prosper in the 21st century. But what are the specific arguments in favor of requiring foreign language learning? Peckham summarized a report from the College Entrance Examination Board entitled "College Seniors: The 1993 Profile of SAT and Achievement Test Takers," by noting that students who averaged four or more years of foreign language study scored higher on the verbal section of the SAT than those who had studied four or more years in any other subject area; in addition, he noted that the 1979 President's Commission on Foreign Language and International Studies recommended foreign language requirements for all U.S. colleges and universities. In summary, a number of experts tout that the knowledge of other languages enhances travel enjoyment, encourages learning the roots of one's own language, increases interest in multiple cultures, challenges the individual, increases neural efficiency, and, as mentioned above, increases cognitive and academic skills (see Armstrong & Rogers, 1997; Cooper, 1987; Peckham, 2010; Stewart, 2005). Although there is a growing consensus in the U.S. that language study is worthwhile, formal instruction in a foreign language may not occur until secondary (i.e., high) school in many school systems. And perhaps more alarming, results from a national survey (Rhodes & Pufahl, 2009) indicate that foreign language learning instruction remained relatively stable at the high school level over the past decade, but decreased substantially in elementary and secondary school. This means that many students in the U. S. are not formally exposed to foreign language learning until they are at least 14 years of age. Almost all U.S. high schools now require only two semesters of language study, which means that most U.S. students enter college with limited exposure to a foreign language. This limited exposure may make U.S. college students apprehensive about language learning; in addition, students vary in their aptitude and appreciation of foreign language learning.

Language Aptitude

The literature describing variables affecting acquisition of a non-native language can be confusing because terms are not universally used by experts in the field. That is, although some theorists describe within-the-individual aptitude for learning a language other than one's native language (regardless of context) as second language (L2) acquisition, not all do. For example, while Oxford (2003) distinguishes between the terms *foreign language learning* and *second language learning*, others do not. Oxford defines *foreign language learning* as a process that occurs when the target language is not the dominant language in use, using it is not necessary for everyday life, and, hence, motivation to learn it may be low. In contrast, *second language learning* occurs when the to-be-learned language is the dominant language, using it may be necessary in everyday life, and, hence, motivation to learn may be higher. Oxford's distinction is reasonable; certainly the context in which a non-native language is learned can have a significant impact on motivation. For clarity, we refer to the language learning investigated in this study as *foreign language learning* but defer to the terminology used by researchers in the review of the literature.

Much has been written about the relationship between native language learning (L1) and second language learning (L2) with an apparent consensus that there is a relationship (Cummins, 1979; Krashen, 1982; Van der Silk, 2010). Sparks and Ganschow (2001) posited a Linguistic Coding Differences Hypothesis (LCDH), arguing that "(a) native language skills serve as the foundation for learning a FL [foreign language]; (b) difficulties with one component of language (e.g., phonology/orthography) are likely to have a negative effect on both native and FL learning; and (c) there are innate individual differences in students' ability to use language" (p. 97). Interestingly, they also noted that successful second language learners tend to exhibit stronger performance on measures of phonology, orthography and syntax but not semantics. In their 2001 review of the research to date on aptitude for foreign language learning, Sparks and Ganschow recommended more widespread use of the Modern Language Aptitude Test (MLAT; Carroll & Sapon, 1959, 2002) as a valuable predictor of foreign language aptitude. The MLAT was developed to predict native English-speaking students' ability to acquire a foreign language; it is comprised of five sets of tasks that rely on a simulated format (i.e., an artificial language) and English grammar tasks to yield an indicator of a student's probable success in learning a foreign (i.e., not English) language. Positive relationships between MLAT performance and foreign language learning have been demonstrated in several research studies in the United States (Ayers, Bustamante, & Campana, 1973; Carroll, 1981, 1985; Gajar, 1987; Wesche, Edwards, & Wells, 1982).

The relationship between foreign language learning aptitude and learning disabilities has been the focus of numerous studies, most prolifically by Sparks, Ganschow, Javorsky and other colleagues (see Sparks, 2008; Sparks, Javorsky, & Philips, 2005; Sparks, Patton, Ganschow, Humbach & Javorsky, 2006). Their

research led them to conclude that native language aptitude (e.g., as measured by the MLAT) rather than a learning disability per se is predictive of foreign language performance. However, to the extent that students with learning disabilities exhibit difficulty with native language learning (i.e., as in the case of dyslexia, the most common type of learning disability [Shaywitz, 2003]), they tend to exhibit difficulty with learning a new language, and these difficulties can be detected by one or more sections of the MLAT. Though foreign language performance of students identified with learning disabilities has been the focus of considerable research, few studies have examined the foreign language aptitude of students who are intellectually gifted. We do know that students identified as intellectually gifted have higher achievement levels in foreign language acquisition than peers who are not identified as gifted. Bain, Bell, McCallum, Cochran and Chocate (2010) investigated the performance of 94 U.S. college students in Spanish classes; they found that students identified as gifted performed better on measures of foreign language aptitude and had higher exam grades than students not identified as gifted. Little other research has focused on gifted students' acquisition of foreign languages.

In contrast to the foreign language acquisition of students who are gifted, the gender-foreign language learning relationship has been explored, albeit with mixed results. For example, Jakobsdottir and Hooper (1995) reported better foreign language performance for fifth-grade female versus male students in the U.S. On the other hand, Tong, Irby, Lara-Alecio, Yoon and Mathes (2010) found that Hispanic boys acquired receptive vocabulary in English faster than girls. In a study of Taiwanese children who were learning English, Lan and Oxford (2003) found that girls used language learning strategies more often than boys, though the overall proficiency levels did not differ. In a study of 1200 U.S. university students, Oxford and Nyiokos (1989) also found that females who were learning a foreign language used more of certain types of strategies (e.g., practice based on formal rules, engaging in conversation), but the study did not address proficiency level based on gender. In a study exploring differential item functioning (DIF), Ryan and Bachman (1992) reported very few differences between males and females on the Test of English as a Foreign Language (TOEFL, 2011), and mean scores for 575 non-native speaking males from eight countries were very similar to the mean scores of 851 female peers.

Considerable evidence indicates that first language abilities affect second language acquisition; further, MacIntyre (1995) noted that affective variables also affect second language acquisition. Below we discuss three types of affective variables (attributions, anxiety, and attitudes) that have demonstrated relationships with foreign language achievement.

Affective Variables

Sideridis, Mouzaki, Simos, and Protopapas (2006) noted that motivational factors can have a significant influence on academic engagement, which has im-

plications ultimately for academic performance: “Therefore, the role of affective processing is of particular importance because it may contribute substantially to defining types of engagement and motivational states during engagement” (p. 160). Major research on foreign language learning motivation began with the work of Gardner and Lambert (1972) and has continued as researchers have focused on the relationship between foreign language learning success and a variety of motivational and affective variables within disparate learning models and orientations. The following sections address research findings related to foreign/second language learning and three affective variables: attributions for language learning success, foreign language anxiety, and attitudes toward learning a foreign language.

Attributions

Learning success is related to learners’ attributional or explanatory style (Marsh, 1984). Research has demonstrated that, in general, high-achieving students tend to make stronger internal attributions (i.e., they more strongly attribute their success to ability and effort rather than to external causes such as context or luck) for their academic success relative to low-achieving peers (Marsh, 1984). However, less is known about links between attributional style and foreign language learning. Cochran, McCallum, and Bell (2010) found that general attributions for academic success did not contribute significantly to a prediction of foreign language exam grades; they recommended investigation using language-learning specific attributions. Bown (2006) found that second language learners with an internal locus of control were more successful than peers with external locus of control in a self-structured language-learning approach. Cheng (2001), in a study of 162 Taiwanese enrolled in university freshman-level English language classes, found that those with higher foreign language self-efficacy (the extent to which a student believes he/she can be successful at a given task) had significantly lower scores on a measure of foreign language anxiety and on a scale assessing the belief that some students are “gifted” in learning a foreign language (i.e., ability attributions).

Evidence indicates that students with learning disabilities who experience academic success acknowledge the effort required. According to Sideridis and Scanlon (2006), “evidence points to the fact that motivation exerts significant effects on the academic functioning of students with LD [learning disability]” (p. 131). That is, their effort attributions tend to be stronger than their unsuccessful peers with learning disabilities. As a 14-year old male identified with learning disabilities noted, “Most of the time somebody with learning disabilities can do the same as somebody without, but you have to put so many hours into studying to do a good job” (Klassen & Lynch, 2007, p. 7). Foreign language attributions may also vary as a function of gender. In a study of Korean middle schoolers studying English, Kang (2000) found that Korean girls tended to have more positive attitudes and to attribute more of their success to internal factors. However, there

is little published research examining the foreign language attributions of males versus females.

Anxiety

Gardner and MacIntyre (1993) built upon the work of Alpert and Haber (1960) who described two types of anxiety, *facilitative* and *debilitative*, wherein facilitative anxiety serves a positive, motivating role. Facilitative anxiety, according to Gardner and MacIntyre, enhances language performance because it energizes students to succeed. Horwitz, Horwitz and Cope (1986) theorized that foreign language anxiety is situation-specific. And, according to Krashen's (1982/2009) affective filter theory, second language learners who are anxious are less effective in acquiring spoken or written second language content. In a study of more than 200 high school and university students, Young (1990) found that positive teacher factors are associated with lower anxiety in their students. Horwitz and Young (1991) argued for the importance of—and provided practical suggestions for—making the foreign language classroom more accessible. Horwitz (2010) provided a comprehensive review of research and theoretical debate around foreign language anxiety. Though the literature has been characterized by spirited debate (Sparks, Ganschow, Artzer, et al., 1997) about the relative role of anxiety versus native ability in foreign language learning, Sparks and Ganschow (2001) have asserted that both native language proficiency/foreign language aptitude and foreign language anxiety are important in foreign language acquisition.

Attitudes

As might be expected, students who perform well in foreign language classes tend to have more positive attitudes about foreign language learning. Sparks, Ganschow, and Javorsky (1993) demonstrated differences in foreign language attitudes and perceptions among high school students who were identified as at-risk/learning disabled compared to non at-risk students using the Foreign Language Attitudes and Perceptions Survey (FLAPS). Similarly, Scott, Bell and McCallum (2009) found differences in foreign language attitudes among 278 U.S. college students enrolled in introductory level French, German or Spanish classes on a modified version of the FLAPS-C (College). Students who performed poorly on native language learning tasks had more negative attitudes on the FLAPS-C than did students who performed well on the native language learning tasks despite similar ratings on an item assessing desire to learn a foreign language.

According to several researchers (e.g., Kissau, 2007; MacIntyre & Gardner, 1994; and Muchnick & Wolfe, 1982), females tend to have more favorable attitudes toward learning a second language. Specifically, Kissau (2006) reported that 9th grade Canadian males were less motivated to enroll in French classes and considered themselves less capable than females; similarly, Kissau, Kolano, and Wang (2010) reported that U.S. high school males were less motivated to study Spanish than their female peers. Clark and Trafford (1996) concluded that

public school boys in the United Kingdom attach less importance to learning a foreign language than girls and are less conscientious about their schoolwork—a finding consistent with other literature showing greater motivation for learning a second language by female students in India (Narayanan, Rajasekaran, & Iyyappan, 2007). Oxford and Nyiokos (1989) and Lan and Oxford (2003) found that both gender (being female) and motivation for learning a language (i.e., “liking a language”) were positively related to using language-learning strategies, but they did not report gender differences in motivation per se.

Statement of the Problem and Research Questions

Relatively little research has systemically addressed relationships among cognitive, affective, and achievement variables for U.S. college students enrolled in foreign language classes. Specifically, few or no other studies have examined the relationships between foreign language learning and foreign language-learning attributions. Consequently, this study was designed to address relationships among foreign language-learning attributions, anxiety, attitudes, and aptitude for U.S. college students. Research on foreign language performance of students identified with learning disabilities is mixed, and little research examines foreign language performance of students identified as gifted. Thus, this study has been designed to determine whether there are foreign language cognitive, affective, and achievement differences between those characterized as having learning disabilities and those who are characterized as intellectually gifted, and whether such differences exist as a function of gender.

METHOD

Participants

Participants were 95 college students in five introductory (100- level) Spanish classes at a large university in the southeastern U.S.; English was the native language for all of them. Data were collected at the beginning of summer semester, 2010. Forty-five (47%) participants were female and 50 (53%) were male. Seventy-nine (83%) were between the ages of 18 and 25; three participants (3 %) were above the age of 40. One student was a freshman; 16 were sophomores; 36 were juniors, 39 were seniors, and 3 were graduate students. Sixteen students indicated they had been previously identified as having a learning disability, and 20 reported they had been previously identified as intellectually gifted based on U.S. federal guidelines for determining eligibility for special education services. Thirty-seven were humanities majors; 22 were math/science majors; 5 were education majors; 2 were fine arts majors; and 29 were “other.”

Instruments and Measures

Anxiety. Foreign language anxiety was operationalized by a 4-item scale derived from an 11-item scale assessing variables that previous research has shown

to be related to foreign language anxiety (Young, 1990). To determine the most valid measure of anxiety, an exploratory, principal components factor analysis with varimax rotation was performed on the 11-item scale. Three factors emerged with eigenvalues greater than 1. Of these factors, the second appears to be the most valid measure of anxiety. Only four items with loadings greater than 0.4 loaded on the second factor; these four items did not load significantly on the other two factors. The four items and their factor loadings are presented in Table 1. Additional evidence for the psychometric adequacy of the 4-item anxiety scale was established by determining internal consistency; Cronbach's alpha, $r = .63$, which is above the critical value recommended by Salvia, Ysseldyke, & Bolt, 2007 for group purposes.

Foreign Language Aptitude. The short form of the Modern Language Aptitude Test (MLAT; Carroll & Sapon, 1959, 2002) was used as a measure of foreign language aptitude. The short form is comprised of the last three MLAT subtests: Part III – Spelling Clues (English vocabulary, sound-symbol association ability); Part IV – Words in Sentences (grammatical structure); and Part V – Paired Associates (rote memory). The MLAT's norms are dated and not representative of a typical college population. Consequently, raw scores were used in the data analyses in this study.

Attributions. The Foreign Language Attributions Scale was developed for this study. It was modeled after the College Academic Attribution Scale (CAAS), developed by Williams (2002) which in turn was modeled after the Student Academic Attribution Scale (Bell & McCallum, 1995) and the Sydney Attribution Scale (Marsh, 1984). The FLAS contains ten positive academic outcomes (e.g., "I make a high grade on a foreign language vocabulary test") relating to a variety of student products (e.g., tests, homework, group projects). Each item then identifies an outcome and poses four possible explanations for each outcome (effort – "I studied hard for the test"; ability – "I am good at taking vocabulary tests"; context – "the teacher prepared me well for the test"; and chance or luck – "I was fortunate"). Participants are asked to rate how frequently each explanation would apply to a particular outcome for them (on a scale from 1 = seldom to 3 = often). Because forced-choice rankings have been demonstrated to produce artificial dichotomies (Bell & McCallum, 1995) and because it is likely that success is attributable to more than one cause, each response category is rated independently. Consequently, all causes can be rated high or low. Cronbach's alphas for the four attributional dimensions were strong ($r = .84$ for effort, $r = .80$ ability, $r = .84$ for context, and $r = .89$ for luck) and provide support for the reliability of the scales.

Attitudes. Nine items from the attitudes section of the Foreign Language Attitudes and Perceptions Survey (FLAPS; Sparks, et al., 1993) were used as the measure of foreign language attitudes for this study. These Likert-type items are designed to assess students' attitudes about learning a foreign language (e.g., "I feel that I am not in control of my grades in my foreign language course.") (See Bell, McCallum, Kirk, Brown, Fuller and Scott (2009) for a complete descrip-

tion of the FLAPS adapted for college students.) In a study of 278 college students, Bell and colleagues (2009) reported support for psychometric integrity of the FLAPS. Bell et al. reported evidence of reliability (i.e., Cronbach's alpha, $r = .74$) and construct validity (factor analytic data). For the current sample, internal consistency was strong (Cronbach's alpha, $r = .84$).

Grades. Because final course grades can include a variety of factors (e.g., attendance, homework completion, class participation), the criteria selected as the measure of foreign language performance in this study was a combined mid-term and final grade. The mid-term and final contain 50 objective items and were constant across the five sections of participants.

Procedure

The last three subtests of the MLAT and a 92-item questionnaire (containing 32 demographic items, 9 attitude items, 40 attribution items, and 11 anxiety items) were administered by trained graduate students in school psychology to students in five sections of Spanish 100-level classes summer semester. In each case, the MLAT was administered first, according to standardized directions. Then students responded to the 92-item questionnaire via scan forms. In addition, grades were collected from instructors at the end of the session. Student identity remained confidential, and procedures conformed to guidelines for the rights of human subjects at the university. Data analyses were conducted using Statistical Package for the Social Sciences –Version 16 (SPSS, Inc, Chicago, IL).

RESULTS

The relationships between foreign language performance and cognitive and affective variables were investigated using correlational and mean difference analyses. First, descriptive statistics (means and standard deviations, sample sizes) for the total sample, for those identified as having learning disabilities, those identified as gifted, females, and males for combined exam grades, anxiety, attributions to ability, effort, context, and luck, FLAPS Total score, and MLAT Parts III, IV, and V, are shown in Table 2. Because grades and anxiety are the focus (i.e., dependent variables) of several analyses below, their distributions were checked for normality. Data for grades (mean of 156.77, $SD = 25.16$) reveal that the distribution is slightly negatively skewed ($-.70$) and that the distribution of scores is somewhat restricted (kurtosis, 1.23). These characteristics probably limit the magnitude of the correlation coefficients defining the relationship between grades and other relevant variables. Data for the anxiety variable (mean of 15.30, $SD = 2.67$) is also slightly negatively skewed ($-.50$) and is relatively normally distributed (kurtosis only .25).

Correlation coefficients defining relationships between grades and cognitive and affective variables for the total sample are depicted in Table 3. As is apparent from the Table, all the coefficients reflecting correlations between exam grades

and anxiety with the other variables are modest; four are statistically significant. With exam grades, luck attributions are significantly negatively correlated ($r = -.27, p < .05$) and MLAT Part V is positively correlated ($r = .32, p < .01$). Anxiety is significantly negatively correlated with ability attributions ($r = -.28, p < .01$) and positively correlated with effort attributions ($r = .30, p < .01$). The relationship between exam grades and anxiety is not significant ($r = .21, p > .05$). In addition, (negative) foreign language attitudes are positively correlated with anxiety ($r = .30, p < .01$) and negatively correlated with ability attributions ($r = -.64, p < .01$). And, interestingly, effort attributions are significantly positively correlated with context attributions ($r = .57, p < .01$).

To further define the relationships between cognitive and affective variables and foreign language performance, two stepwise multiple regression equations were calculated. In the first, the criterion variable was combined exam grades in the Spanish classes. Two significant predictor variables entered into the equation, MLAT Part V and luck attributions. MLAT Part V accounted for 10% of the variance and luck attributions for success accounted for an additional 5% for a total of 15%. Neither the anxiety scale, the attitude scale (FLAPS-C), nor any of the other attribution scales, contributed significant unique variance beyond that accounted for by MLAT Part V and luck attributions. For the second multiple regression, anxiety was the criterion variable. Interestingly, only effort attributions and ability attributions significantly predicted anxiety, accounting for approximately 13% and 9% respectively for a total of almost 22% of the variance accounted for in the anxiety scale.

Relationships as a Function of Exceptionality Status

In general, the relationships among foreign language learning (exam grades), attributions (ability effort, context, and luck), anxiety, foreign language attitudes and perceptions (FLAPS-C), and foreign language aptitude (MLAT III, IV, and V) are modest for these U.S. college students (see Table 3), and, when these relationships are considered separately based on exceptionality status, the pattern remains the same generally (see Table 4). Of the 90 relationships expressed via these scores, eight are statistically significant, and students who are gifted differ from students with LD for four of these. For those who are gifted and for those with learning disabilities, the relation between effort and context attributions for successful foreign language learning is strong ($p < .05$ for both); similarly, for both groups, ability attributions for successful foreign language learning are strongly related to attitudes and perceptions for foreign language learning ($p < .01$ for both).

However, the correlation between ability attributions for successful foreign language learning and anxiety ($r = -.71, p < .01$) is statistically significant for those with learning disabilities, but the same relationship is not statistically significant for those who are gifted ($r = .01, p > .05$). Similarly, the correlation between foreign language learning aptitude, as operationalized by the MLAT III,

and anxiety is statistically significant for those with learning disabilities ($r = -.52$, $p < .05$), but not for those who are gifted ($r = -.11$, $p > .05$). Alternatively, two correlations are statistically significant for those who are gifted but not for those with learning disabilities: the relationship between effort attributions for successful foreign language learning and aptitude for learning a foreign language for gifted students (MLAT III) is significant at the .01 level ($r = -.60$) but is not for those with learning disabilities ($r = .01$). Finally, the relationship between luck attributions for successful foreign language learning and aptitude for learning a foreign language (MLAT V) is significant for gifted students at the .05 level ($r = .56$) but not for those with learning disabilities ($r = .14$).

The relationships between foreign language performance and cognitive and affective variables for those who have a learning disability versus those who are gifted were further explored using mean difference analyses. First, exam grade means for the two groups were compared. The mean for the gifted sample (159.78, $SD = 35.02$) was not statistically significantly higher than the mean for those with learning disabilities (152.57, $SD = 24.09$). Based on results of Levene's test of equality of variances, an independent samples t test was computed and yielded $t(33) = .70$, $p > .05$. On the other hand, means on the anxiety scale were significantly different between the two groups ($t(33) = 2.22$, $p < .04$). The mean for the students with learning disabilities (16.73, $SD = 2.09$) was statistically significantly higher than for the gifted sample (14.60, $SD = 3.25$). Of particular interest is the result that those with learning disabilities demonstrated more negative attitudes toward learning a foreign language than those characterized as gifted, based on the difference between the mean FLAPS-C score for the two groups ($t(34) = -3.00$, $p < .01$): 26.40 ($SD = 4.91$) and 32.06 ($SD = 6.41$), respectively.

Relationships as a Function of Gender

Similar to relationships for students identified as LD versus gifted, relationships based on gender are generally modest in strength and similarity (see Table 5). However, there are notable exceptions. Of the 90 relationships expressed via these scores, 12 are statistically significant, and females differ from males for six of these. For both females and males, the relationship between effort and context attributions for successful foreign language learning is strong ($p < .01$ for both); similarly, for both females and males, ability attributions for successful foreign language learning are strongly related to attitudes and perceptions for foreign language learning ($p < .01$ for both); and finally, for both females and males foreign language learning aptitude is significantly related to exam grades ($p < .01$, for both). However, the relationship between exam grades and anxiety ($r = -.36$, $p < .05$) is statistically significant for males, but the same relationship is not statistically significant for females ($r = -.07$, $p > .05$). Similarly, the relationship between effort attributions for successful foreign language learning and anxiety was statistically significant for males ($r = .43$, $p < .01$) but not for females ($r = .08$, $p > .05$). On the other hand, three relationships were statistically significant for females but

not males: the relationship between ability attributions for successful foreign language learning and anxiety for females was significant at the .05 level ($r = -.35$) but was not for males ($r = -.07$). The relationship between ability attributions and context attributions was significant for females at the .05 level ($r = .37$) but not for males ($r = .10$). Finally, the relationship between exam grades and aptitude for learning a foreign language as defined by MLAT IV was significant at the .05 level ($r = .40$) for females but not for males ($r = .09$).

Finally, the relationship between foreign language performance and cognitive and affective variables for females and males was explored using mean difference analyses. An a priori *t* test was calculated for exam grades ($t(86) = .58, p > .05$). The mean for the females (157.90, $SD = 21.38$) was not statistically significantly higher than for the males (154.68, $SD = 29.35$). In contrast, females scored significantly higher on the anxiety variable. Their mean for the anxiety variable (16.77, $SD = 2.07$) is statistically significantly higher than the one for males (13.96, $SD = 2.46$; $t(88) = 5.83, p < .001$). There are two additional statistically significant mean differences. The female mean for effort attributions (25.58, $SD = 3.75$) is significantly higher than the one for males (23.82, $SD = 4.08$; $t(93) = 2.18, p < .04$). However, this pattern is reversed for ability attributions; the mean for males (17.89, $SD = 4.28$) is significantly higher than the mean for females (19.75, $SD = 3.68$; $t(91) = -2.26, p < .03$). Apparently, females attribute successful foreign language learning outcomes to effort more than do males; on the other hand, females attribute successful outcomes to ability less than do males. In summary, while females seem to be more anxious and attribute their success to stronger effort for success than do males, they seem to attribute their success less to ability than males, despite the fact that they make (slightly) higher grades.

DISCUSSION

Data from this study allowed us to examine the relationships among cognitive, affective, and achievement variables for college students enrolled in foreign language classes, and specifically, relationships between foreign language learning and foreign language learning attributions, anxiety, attitudes, and aptitude for U.S. college students. In addition, we investigated foreign language cognitive, affective, and achievement differences between those characterized as having learning disabilities versus those characterized as being intellectually gifted, and whether such differences exist as a function of gender. As expected, for these college students, foreign language exam grades are positively related to a memory task on the measure of language aptitude (MLAT Part V, Paired Associates). Furthermore, exam grades are negatively related to luck attributions for success. Apparently, memory skills contributed to good performance on the midterm and final Spanish exams in these courses. In addition, students who cited luck as a cause for success performed less well on the exams than peers who did not rely on luck to perform well. Anxiety is positively correlated with effort attributions, suggest-

ing that more anxious students endorse effort as a means of attaining successful performance. This finding is consistent with the notion that some anxiety can be facilitative, i.e., resulting in positive behaviors designed to reduce the anxiety (Alpert & Haber, 1960; Gardner & MacIntyre, 1993). Our results suggest that the more anxious students tend not to attribute success to ability; that is, they apparently see success as more a function of hard work than of innate ability to learn a new language.

Anxiety was also significantly related to overall attitudes as measured by the FLAPS-C abbreviated version used in this study. As anxiety increased, so did negative attitudes about learning a foreign language. However, the attitudes (FLAPS-C) score did not significantly predict anxiety, perhaps because of the strong relationship between ability attributions and attitudes. That is, students with more negative attitudes did not endorse ability attributions as a means of attaining foreign language success. In fact, the negative relationship between (negative) attitudes and ability was the most robust of all the relationships generated. This finding can be related to Cheng's (2001) determination that Taiwanese students who ascribe to the idea that some individuals are "gifted" in language learning tend to have lower self-efficacy for language learning and more negative attitudes about language learning.

Another interesting relationship emerged—between context and effort, suggesting that students tend to exhibit more effort in learning environments and with instructors they perceive as conducive to learning. This relationship provides additional empirical evidence for Young's earlier findings that positive teacher factors are associated with lower anxiety (Young, 1990) and support the importance of making the foreign language classroom more conducive to learning (Young, 1991).

Relationships and patterns of scores for students identified as gifted or with learning disabilities tended to follow predicted directions. For example, the gifted students scored higher (though not significantly) on examinations and produced lower anxiety scores than those with learning disabilities, consistent with findings by Bain et al. (2010). For students with learning disabilities, the relationships between both ability attributions and one measure of language aptitude (MLAT III) and anxiety is significant. This finding makes sense: students who perceive and who exhibit weaker language aptitudes have more anxiety about learning a language.

Interestingly, females scored higher (though not significantly) on the language exams but were also more anxious than males; in addition, females exhibited higher effort attributions but lower ability attributions than males. These results are in part consistent with Kang (2000) who found that Korean girls were more conscientious about English language learning; with Clark and Trafford (1996) who found that girls in the U.K. attached more importance to foreign language learning; with Narayanan and colleagues (2007) who found that Indian girls showed greater motivation for language learning; and with Kissau (2006, 2007),

MacIntyre and Gardner (1994), and Muchnick and Wolfe (1982) who found that females exhibited more positive attitudes toward learning a language than males.

Surprisingly, a relatively small degree of variance in exam grades was accounted for by the cognitive and affective variables in this study. Although the MLAT has shown robust correlations with foreign language learning performance in some studies (Ayers, et al., 1973; Carroll, 1981, 1985; Gajar, 1987; Wesche, et al., 1982), not all have found strong correlations (Goodman, Freed, & McManus, 1990). Our results are consistent with Goodman et al, indicating very modest correlations between MLAT scores and foreign language learning as operationalized in this study.

This study is significant because it is the first to examine specifically attributions for foreign language learning and to attempt to predict foreign language learning using a host of cognitive and affective variables for students identified with learning disabilities and intellectual giftedness and for males and females in the U.S. It is interesting that at least in part the results are consistent with studies of students of various ages from different countries, learning various languages. Because language learning is typically delayed in the United States, increased negative affect toward language learning might be expected in the U. S. Future research should include cross-cultural studies of cognitive and affective factors related to foreign/other language acquisition.

Limitations include the relatively small sample size drawn from one university in the southeastern U.S. and the use of only one target language at one level. In addition, the results generalize only to the variables as they were operationalized in the study (e.g., aptitude defined as MLAT scores; anxiety, attributions, and attitudes defined by self-report). Nonetheless, results produced some interesting findings that should be examined in future research. Finally, only exam grades were used as the criterion for language learning success; future research should investigate whether similar patterns emerge when success is based on different criteria (e.g., end-of-course grades that include a wider range of learning assessments).

Implications

Results from this study provide evidence for relationships between various affective variables and foreign language learning aptitude and success. Based on these results some practical implications seem warranted. For example, it may be possible for instructors to use a series of instruments (e.g., MLAT, FLAPS-C) to determine at-risk status at the beginning of a foreign language class. Specifically, those who show less aptitude (particularly for the memory section of the MLAT), who may have stronger attributions to luck for their foreign language learning success, and who have a history of learning disabilities may be targeted for specific assistance early on. This assistance might consist of additional practice with the course content. Increased familiarity should motivate at-risk students to be more optimistic regarding their success and less anxious during class time. Also,

at-risk students might benefit from having the relationships between attributions such as effort, ability, luck and difficulty explained, which may lead to the pursuit of more effortful attributions and, consequently, more success. Finally, at-risk students may benefit from learning about the complex relationships between anxiety and foreign language learning outcomes. Although the literature shows a negative relationship between anxiety and success in general, apparently that relationship is not straightforward and linear. Some level of anxiety may actually enhance success, as suggested by the trend in our data showing females to be more anxious but also more successful.

As with all types of instruction, foreign language instructors need to be sensitized to individual differences among their students. Implications include the importance of making second language classrooms more accessible to all learners (see Horwitz & Young, 1991; Sparks & Young, 2009; Young, 1990; 1991). According to Oxford, (1990) learning will be more enjoyable, faster and more effective when instructors employ learning strategies that are suited to needs of different types of learners. Young (1999) provides a comprehensive review of practical and specific suggestions for reducing anxiety during common types of foreign language class activities. Not surprisingly results suggest that students identified as gifted considered second language learning easy and nonthreatening. Although presumably a positive finding, it is possible that they would have benefitted from more challenging learning experiences. As Sparks and Ganschow assert, "Good teachers have always known that students have different ways of taking in new information and that instruction which is best for one student is not necessarily so for another" (1991, p.11).

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Table 1.

Factor Loadings of the Strongest Four Items from a Foreign Language Learning Anxiety Scale

Items	Factor Loadings
Directions: For Items 1-3, indicate the extent to which you believe each item contributes to your success in learning Spanish.	
The number of hours a day you study	.49
How good your teachers are	.62
The level of anxiety you experience in learning a foreign language	.56
Indicate your level of anxiety going into this class (1 = No anxiety; 5 = Extreme anxiety)	.84

Table 2.

Descriptive Statistics for Total Sample, Students Identified with Learning Disabilities and as Gifted, Females, and Males for Numerical Grades, Brief Foreign Language Anxiety Scale (Anxiety), Foreign Language Attributions Scale (Attributions to Ability, Effort, Context, and Luck), Foreign Language Attitudes and Perceptions Survey-College (FLAPS-C) Total Scores, and Modern Language Aptitude Test (MLAT), Parts III, IV, and V

	Total Sample n = 95		Females n = 45		Males n = 50		Gifted n = 20		Learning Disabled n = 16	
	M	SD	M	SD	M	SD	M	SD	M	SD
Exam Grades	n = 95	Females	157.90	21.38	154.68	29.35	159.78	35.02	152.57	24.09
Anxiety	n = 45	Males	16.77	2.08	13.96	2.46	14.60	3.25	16.73	2.09
Ability	n = 50	Gifted	17.89	4.28	19.76	3.68	19.79	4.42	18.00	4.43
Effort	n = 20	Learning	25.58	3.75	23.82	4.08	24.20	3.47	25.81	2.95
Context	Disabled	3.91	24.51	4.04	23.43	3.76	23.75	3.16	25.31	3.50
Luck	n = 16	4.94	17.16	4.25	18.41	5.47	17.50	5.81	18.06	4.88
FLAPS-C	26.71	2.91	30.76	6.38	28.38	5.78	26.40	4.91	32.06	6.41
MLAT III	13.99	5.24	13.85	5.07	14.61	5.43	16.11	5.02	14.06	6.54
MLAT IV	18.03	5.36	17.63	5.68	18.79	4.88	21.89	6.72	18.12	5.05
MLAT V	14.62	5.05	14.12	5.00	14.85	5.00	15.84	4.53	14.56	5.87

Table 3.

Correlation Coefficients Showing Relationships Between Foreign Language Combined Exam Grades and Cognitive and Affective Variables for the Total Sample

	Exam Grades	Anxiety	Ability	Effort	Context	Luck	FLAPS-C	MLAT III	MLAT IV	MLAT V
Exam Grades	–									
Anxiety	-.21	–								
Ability	.06	-.28**	–							
Effort	-.08	.36**	.10	–						
Context	.04	.18	.18	.57**	–					
Luck	-.27*	-.06	-.01	-.11	-.09	–				
FLAPS-C	-.12	.30**	-.64**	.04	-.11	.14	–			
MLAT III	.05	-.03	-.07	-.08	-.09	-.01	.00	–		
MLAT IV	.21	-.07	-.07	-.04	.11	.00	-.07	.16	–	
MLAT V	.32**	-.05	.10	-.13	.02	-.20	-.13	.20	.18	–

Table 4

Correlation Coefficients Showing Relationships Between Foreign Language Combined Exam Grades and Cognitive and Affective Variables for Students Identified as Intellectually Gifted (n = 20) and as Learning Disabled (n = 16)

		Exam Grades	Anxiety	Ability	Effort	Context	Luck	FLAPS-C	MLAT III	MLAT IV	MLAT V
Exam Grades	Gifted	–									
	LD	–									
Anxiety	Gifted	-.15	–								
	LD	-.32	–								
Ability	Gifted	-.18	.01	–							
	LD	.44	-.71**	–							
Effort	Gifted	-.07	.26	.11	–						
	LD	.26	.09	.12	–						
Context	Gifted	-.04	.06	.14	.47*	–					
	LD	.24	-.28	.33	.54*	–					
Luck	Gifted	-.40	.05	-.05	-.12	-.25	–				
	LD	-.24	.24	-.11	.16	.19	–				
FLAPS-C	Gifted	.14	.32	-.63**	-.03	.08	.11	–			
	LD	-.33	.49	-.72**	-.01	-.39	.12	–			
MLAT III	Gifted	.07	-.11	-.26	-.60**	-.37	-.07	.16	–		
	LD	.18	-.52*	.24	.01	.34	.10	-.29	–		
MLAT IV	Gifted	.20	-.25	-.11	-.09	.39	.13	-.03	.32	–	
	LD	-.02	.06	-.22	-.20	-.37	.06	.22	-.25	–	
MLAT V	Gifted	.27	.25	.01	-.16	.06	-.56*	.01	.35	.03	–
	LD	.39	-.27	.25	-.21	-.22	.14	-.08	.42	.29	–

Table 5

*Do Foreign Language Learning, Cognitive, and Affective Variables Differ
as a Function of Exceptionality Status and Gender?*

*Correlation Coefficients Showing Relationships Between Foreign Language
Combined Exam Grades and Cognitive and Affective Variables for Females (n =
45) and Males (n = 50)*

		Exam Grades	Anxiety	Ability	Effort	Context	Luck	FLAPS- C	MLAT III	MLAT IV	MLAT V
Exam Grades	Females	–									
	Males	–									
Anxiety	Females	-.07	–								
	Males	-.36*	–								
Ability	Females	.12	-.35*	–							
	Males	.04	-.07	–							
Effort	Females	.09	.08	.16	–						
	Males	-.20	.43**	.17	–						
Context	Females	.23	-.03	.37*	.44**	–					
	Males	-.10	.23	.10	.68**	–					
Luck	Females	-.26	.26	-.10	-.03	-.14	–				
	Males	-.26	-.18	.00	-.11	-.03	–				
FLAPS-C	Females	-.19	.22	-.65**	.00	-.15	.27	–			
	Males	-.11	.29	-.60**	.00	-.15	.10	–			
MLAT III	Females	-.16	.06	-.07	-.13	-.04	.21	.10	–		
	Males	.22	-.04	-.13	-.01	-.12	-.17	-.05	–		
MLAT IV	Females	.40*	.19	-.12	-.16	.04	-.03	.17	-.07	–	
	Males	.09	-.13	-.08	.12	.23	.01	-.26	.34*	–	
MLAT V	Females	.34*	-.11	.23	-.13	.04	-.14	-.18	.22	.29	–
	Males	.30*	.13	-.06	-.10	.02	-.27	-.06	.15	.04	–