

Sex and Age Effects on Willingness to Communicate, Anxiety, Perceived Competence, and L2 Motivation Among Junior High School French Immersion Students

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The present study involves a cross-sectional investigation of second-language (L2) communication among students in a junior high French late immersion program. The effects of language, sex, and grade on willingness to communicate (WTC), anxiety, and perceived communication competence, on frequency of communication in French, and on the attitude and motivation variables are examined globally and at each grade level. It was found that students' L2 WTC, perceived competence, and frequency of communication in French increased from grades 7 to 8 and was

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maintained between grades 8 and 9, despite a drop in motivation between grades 7 and 8 and a steady level of anxiety across the three grades.

Modern language pedagogy places great emphasis on communication, the functional nature of which has been linked to a variety of individual and contextual characteristics. Individuals display consistent tendencies in their amount of first-language (L1) talk (see early work by Borgatta & Bales, 1953; Chapple & Arensberg, 1940; Goldman-Eisler, 1951), and the presence of these behavioral patterns suggests an underlying continuum representing the predisposition toward or away from communicating, given the choice. This personality-based orientation toward communication (McCroskey & Richmond, 1987) corresponds to willingness to communicate (WTC). As shown in previous research, L1 WTC is dependent on both prior experiences in communication situations (McCroskey & Richmond, 1991) and personality characteristics such as anxiety, perceived competence, and a host of social psychological characteristics sustaining the student's communication behavior (MacIntyre, Babin, & Clément, 1999). Furthermore, these have been shown to affect WTC in the second language (L2; MacIntyre & Charos, 1996; MacIntyre & Clément, 1999), thus extending the original L1 framework.

In spite of the rather stable nature of this personality trait, the variables determining WTC may show differences related to sex and age, although the nature of these differences is difficult to predict. Adolescent girls tend to converse more than boys in the L1 (Smith, 1997), and certain manifestations of anxiety follow different developmental pathways in adolescent boys and girls (Abe & Masui, 1981). Given the importance afforded WTC as a key L2 acquisition concept (MacIntyre, Clément, Dörnyei, & Noels, 1998), the goal of this study was to examine its relation to age and sex and to establish the concomitant links with other language-related variables among young (aged 12–14 years) late immersion students in an L2 acquisition context.

Willingness to Communicate in L1 and L2

The foundations for L1 WTC emerged from Burgoon's (1976) work on "unwillingness to communicate," Mortensen, Arntson, and Lustig's (1977) "predisposition toward verbal behavior," and McCroskey and Richmond's (1982) conceptualization of "shyness." Richmond and Roach (1992) noted that "willingness to communicate is the one, overwhelming communication personality construct which permeates every facet of an individual's life and contributes significantly to the social, educational, and organizational achievements of the individual" (p. 104).

MacIntyre (1994) found that the two variables most closely related to L1 trait-level WTC are communication apprehension and perceived competence. Communication apprehension, defined as an individual's level of fear or anxiety associated with either real or anticipated communication with others and seen as having a trait-like quality (McCroskey & Richmond, 1987), is considered to be one of the best predictors of WTC in the L1 (McCroskey & Richmond, 1987, 1991). Research has consistently found significant, high correlations between communication apprehension and both L1 (McCroskey & McCroskey, 1986; McCroskey & Richmond, 1987) and L2 WTC (Baker & MacIntyre, 2000; MacIntyre & Charos, 1996). It has been shown that people who experience high levels of fear or anxiety about communicating tend to avoid it.

Language anxiety has become the preferred term when discussing communication apprehension in the L2 (Horwitz & Young, 1991). The negative effects of language anxiety can be explained by proposing that the arousal of anxiety causes an increase in self-focused attention and distracting, self-deprecating thoughts (Eysenck, 1979; MacIntyre & Gardner, 1994b). This cognitive disruption and its consequences can occur within an individual without a single act of communication behavior; simply being aware of potential future communication with another person can create distraction and disrupt the language learning process (MacIntyre & Gardner, 1994a, 1994b). The potential to experience language anxiety in anticipated communication situations seems

to affect the quality of L2 communication (Horwitz, 1986) and lower L1 WTC (MacIntyre et al., 1999).

Anxiety is not the only reason why some people avoid communicating. WTC can also be affected by perceived communication competence. Research in the area of reticence (see Phillips, 1968, 1977, 1984) has suggested a lack of communication skills as the primary reason why some people are less willing to communicate than others. Baker and MacIntyre (2000) argue that it is the person's *perceptions* of competence that will affect WTC. "Since the choice of whether to communicate is a cognitive one, it is likely to be more influenced by one's perceptions of competence (of which one is usually aware) than one's actual competence (of which one may be totally unaware)" (McCroskey & Richmond, 1991, p. 27).

Anxiety and self-perceptions of competence with respect to the L2 have been linked through Clément's (1980) superordinate construct of linguistic self-confidence. MacIntyre, Noels, and Clément (1997) further found that the perception of competence in the L2 can be biased by language anxiety and that individuals who are highly anxious about communicating tend to perceive their communication competence to be lower than it is rated by a neutral observer. The effect of one's perceived competence can override one's actual competence in communication situations (for studies in the L1, see McCroskey & Richmond, 1990; Phillips, 1968, 1977, 1984), especially when it comes to the initiation of communication (WTC).

The relation between anxiety and perceived competence, especially as they contribute to WTC, is complex and may vary over time, across situations, and among languages (MacIntyre et al., 1998; MacIntyre et al., 1999). MacIntyre and Charos (1996) found that perceived competence was more strongly related to L2 WTC than was language anxiety among novice adult learners. Baker and MacIntyre (2000) found that perceived competence and L2 WTC were strongly correlated among less advanced high school language learners, but among those of similar age with more L2 experience, WTC was better predicted by language anxiety. McCroskey and Richmond's (1991) view that in the L1, WTC is

best predicted by communication apprehension was advanced based on samples of speaking situations in which communicative competence is fairly high by definition. Therefore, when examining relations among variables influencing L2 communication behavior, it is important to take into consideration the learner's experience and engagement with the target language.

Motivation

In considering the variables facilitating L2 communication, motivational processes clearly have a role to play (Clément & Gardner, 2001), though traditionally they have been more closely tied to L2 learning than to L2 communication per se. According to Gardner's (1985) socioeducational model, motivation is an internal attribute of the individual that can be influenced by external forces. Most studies of the model have focused on *integrative motivation* as its central feature and key individual-difference variable (see Gardner, 1996; Gardner & Masgoret, 1999). The integrative motive embodies three major elements: integrativeness, attitudes toward the learning situation, and motivation. Integrativeness refers to an individual's desire to interact with the target language group. Attitudes toward the learning situation are measured by an evaluation of the L2 teacher and the L2 course. The motivation component is made up of the desire to learn the L2, motivational intensity (effort), and attitudes toward learning the L2. According to Gardner (1985), a truly motivated individual will possess all three of these characteristics; therefore, these components of motivation can be kept separate or combined into a single attitude/motivation index (as in Gardner & MacIntyre, 1993).

Research has shown that motivation influences the reported frequency of L2 use but might operate somewhat independently from the influence of L2 WTC (MacIntyre & Charos, 1996). The conceptual scheme underlying situation-specific L2 WTC proposed by MacIntyre et al. (1998) shows that motivation contributes substantially to setting the conditions in which L2

communication becomes possible. The effects of motivation on authentic L2 communication, however, are likely to be channeled through variables such as perceived competence and language anxiety as they arise in context. Voluntarily initiating an L2 conversation with a native speaker or a more competent fellow student can be an informal language acquisition context if learners are willing to "talk in order to learn" (see Skehan, 1989, p. 48). However, the avoidance of communication because of immediate anxiety arousal seems likely to override the more distal facilitating impact of language learning motivation. Therefore, though one might expect a correlation between motivation and L2 WTC, the relation is likely to be somewhat indirect.

Sex and Age

The foregoing discussion tacitly assumes some degree of uniformity among L2 learners. It is evident, however, that sex and age might have an impact on L2 communication and other individual-difference variables. Gardner (1985) reports several studies that demonstrate more positive attitudes toward language learning among girls and argues that attitudinal differences might be responsible for obtained sex differences in achievement. Modern languages seem to be perceived as a "traditionally 'female' subject" (Clark & Trafford, 1995, p. 315). According to Worrall and Tsarna (1987), teachers' self-reported practices suggest a pattern that would favor girls over boys in the language classroom; Worrall and Tsarna found that, regardless of teacher sex, English and French teachers reported having higher expectations of girls than of boys, giving girls more academic advice than boys, and providing girls with more career encouragement than boys. Wright (1999) found that in a sample of Irish adolescents learning French, girls had more positive attitudes than boys toward learning and speaking French. Further, when sex, school type, perceived in-school influences on attitudes, and perceived out-of-school influences on attitudes were entered into a regression analysis, sex emerged as the strongest predictor of attitudes toward speaking French.

Gardner and Smythe (1975) found that grade 7 students had highly positive attitudes toward learning French and grade 8, 9, and 10 students had far less favorable attitudes, but in grade 11, the students' initial eagerness had returned. According to Gardner and Smythe (1975), this pattern suggests that the grade 7 students experience a heightened keenness when they first begin learning French and that as they work to acquire proficiency in the language through grades 8, 9, and 10, their enthusiasm is somewhat dormant, until grade 11, when they have potentially achieved their desired proficiency, thus restoring their positive attitudes. In addition, similar variations across grade levels were found for attitudes toward French Canadians and motivational intensity (Gardner & Smythe, 1975). Clark and Trafford's (1995) qualitative data suggest that teachers of modern languages perceive girls as maturing earlier than boys and consequently being more serious about their studies than boys with respect to school work. Sex and age differences in L2 attitudes and motivation suggest that sex and age differences in L2 communication variables may show interesting patterns. Sex likely interacts with age to influence L2 communication variables because of differences in boys' and girls' developmental paths during adolescence.

Research Objectives

Given the scant research available on this topic, particularly as concerns the individual-difference variables described above, the present study examines WTC, language anxiety, perceived competence, and motivation among three groups of adolescent L2 learners in a junior high school late immersion program. The objectives of this study were

1. to test for the effects of sex, age, and language (L1 versus L2) on WTC, anxiety, and perceived competence.
2. to examine the effects of sex and grade on integrativeness, attitudes toward the learning situation, and motivation.

3. to examine the correlations among the communication variables, frequency of communication in French, and the attitude and motivation variables at each of the three grade levels.

Method

Participants

The participants were 268 students from a small junior high school late French immersion program. For grades 7, 8, and 9 of the French immersion program, all core subjects, such as science, mathematics, and social studies, are taught in French, with the exception of English Language Arts. All three grades are housed in the same building along with students taking the regular English-language program. The school is located in a unilingual English-speaking community, and 98% of students in the sample were native speakers of English. Whether in the French immersion program or the regular (English) program with French as an L2 subject, students in this school had studied French as a subject since grade 4, prior to entering junior high in grade 7. The sample consisted of 96 males and 188 females, with a median age of 13 years. Students ranged in age from 11 to 16 years at the time of testing, with 97% of the sample between 12 (grade 7) and 14 (grade 9) years old; age is treated as synonymous with grade level for the purposes of data analysis.

Materials

The study consisted of a questionnaire that included the following eight scales.

Willingness to Communicate. McCroskey and Baer's (1985) 20-item willingness to communicate scale was administered with instructions that asked students to indicate the chances, expressed as a percentage (0–100%), of their initiating a conversation in each of 20 situations. The anchors were "I would NEVER

start speaking in French (English)" and "I would ALWAYS start speaking French (English)." The scale was administered with reference to speaking in the L1 (English, $\alpha = .94$) and the L2 (French, $\alpha = .96$).

Perceived Competence. McCroskey, Richmond, and McCroskey's (1987) perceived communicative competence scale was administered. Instructions noted that individuals differ in their communicative competence and asked students to report their ability to communicate successfully, expressed as a percentage (0–100%), in each of 12 situations. The anchors were "Completely incompetent (I can't do it)" and "Completely competent (I am very good at it)." The scale was administered with reference to speaking in the L1 (English, $\alpha = .95$) and the L2 (French, $\alpha = .93$).

Communication Apprehension and Language Anxiety. The 12 items from McCroskey et al.'s (1987) perceived communicative competence scale were administered with reference to anxiety about communication. Instructions asked students to estimate how nervous they would feel, expressed as a percentage of time (0–100%), communicating in a variety of situations. The scale was administered with reference to speaking in the L1 (English, $\alpha = .90$) and the L2 (French, $\alpha = .89$).

Communication Frequency. Twelve items adapted by MacIntyre and Charos (1996) from McCroskey et al.'s (1987) perceived communicative competence measure were administered. Instructions asked students to indicate how often they had engaged in various speaking activities, such as talking with an acquaintance. Responses were given on a 7-point Likert scale with the anchors "Never" and "Many, many times." The scale was administered with reference to speaking French ($\alpha = .90$).

Integrativeness. This 3-item scale from Gardner and MacIntyre (1993) is an abbreviation of the Gardner (1985) scale with the same name. It is a measure of integrativeness, or the degree to which the respondent chooses to learn French in an attempt to interact and communicate with Francophones. Single

items assessed integrative orientation, attitude toward French Canadians, and interest in foreign languages ($\alpha = .64$).

Motivation. This variable, also from Gardner and MacIntyre (1993), was measured by three items that assess the desire to learn French, the effort put forth, and attitude toward learning French ($\alpha = .75$).

Attitude Toward the Learning Situation. This variable (Gardner & MacIntyre, 1993) was measured by two items tapping attitude toward the teacher and attitude toward the course ($\alpha = .65$).

Attitude/Motivation Index. Eleven items measuring integrativeness, motivation, and attitudes toward the learning situation were supplemented by single items measuring instrumental orientation, French use anxiety, and French classroom anxiety were summed to create an attitude/motivation index (AMI; $\alpha = .85$; Gardner & MacIntyre, 1993). Items were measured on a 7-point scale. The two anxiety items were recoded so that high scores represented a lack of anxiety before these items were combined with the other items. A high score on the AMI indicates more favorable attitudes and stronger motivation.

Procedure

In accordance with the wishes of the school administration, the grade 7 students were assembled in the school's cafeteria to complete the questionnaire. Students in grades 8 and 9 were tested in their regular classrooms, and all completed the questionnaire in the class period allotted.

Results

For the analyses to follow, the type I error rate was set at $p < .05$ unless otherwise stated. For the analyses of variance, all post hoc tests were conducted using Tukey's honestly significant difference test (Q), which is more conservative than the t -test but can be interpreted in a similar manner. The correlations among

the variables studied here were computed for the overall sample and for each grade separately. Each correlation is evaluated for significance at the .05 level.

Effects of Language, Sex, and Grade on WTC, Anxiety, and Perceived Competence

A 2 (English, French) \times 2 (male, female) \times 3 (7, 8, 9) multivariate analysis of variance (MANOVA) was conducted to test for effects of language, sex, and grade on WTC, anxiety, and perceived competence. At the multivariate level, significant main effects of language, Hotelling's $= 0.949$, $F(3, 257) = 80.70$; sex, Hotelling's $= 0.034$, $F(3, 257) = 2.88$; and grade, Hotelling's $= 0.073$, $F(6, 257) = 3.08$, were observed. These main effects are qualified by two significant two-way interactions between grade and language, Hotelling's $= 0.091$, $F(6, 257) = 3.84$, and between grade and sex, Hotelling's $= 0.052$, $F(6, 257) = 2.18$.

Univariate Results for WTC. At the univariate level, significant main effects of language, sex, and grade on WTC were observed, as well as two significant two-way interactions, one between grade and language, the other between grade and sex. Analysis of variance (ANOVA) results are summarized in Table 1; all means are presented in Table 2. The main effects indicate that WTC is higher in the L1 ($M = 778$) than in the L2 ($M = 589$), higher among girls ($M = 728$) than among boys ($M = 640$), and higher in grades 8 ($M = 733$) and 9 ($M = 710$) than in grade 7 ($M = 609$), but not significantly different between grades 8 and 9. Post hoc tests on the Grade \times Language interaction (see Figure 1) indicate that L1 WTC does not show significant differences among the three grades. L2 WTC is significantly higher in grades 8 and 9 than in grade 7, and the difference between grade 8 and grade 9 is not significant. L1 WTC is significantly higher than L2 WTC at all three grade levels, and as is evident in Figure 1, the difference between L1 and L2 WTC decreases across the three grades.

For the Grade \times Sex interaction, post hoc tests show that girls in grade 9 ($M = 814$) are significantly higher in WTC (L1 and L2

Table 1

Univariate ANOVA Summary Results for the Effects of Language, Sex, and Grade on Willingness to Communicate, Anxiety, and Perceived Competence

	WTC		Apprehension/ anxiety		Perceived competence	
	<i>F</i>	η^2	<i>F</i>	η^2	<i>F</i>	η^2
Language	92.1*	.264	140.7*	.354	43.3*	.144
Sex	8.40*	.032	2.90	.011	2.42	.009
Grade	6.70*	.050	0.94	.007	1.65	.013
Sex \times Language	2.41	.009	0.00	.000	0.90	.003
Grade \times Language	4.95*	.037	4.01*	.030	5.15*	.039
Grade \times Sex	3.94*	.030	4.20*	.032	1.10	.008
Grade \times Language \times Sex	0.18	.001	1.60	.012	0.33	.003
Degrees of freedom (error)	257		257		257	

* $p < .05$.

combined) than boys in grade 9 ($M = 605$). Grade 8 boys ($M = 735$) and grade 8 girls ($M = 732$) do not differ significantly in overall WTC, nor do grade 7 boys ($M = 579$) and grade 7 girls ($M = 638$) differ. Boys show no significant changes in WTC over the three grades, but grade 9 girls ($M = 651$) are higher in WTC than grade 7 girls ($M = 473$). Estimates of effect size show that, in this analysis, language has the largest effect on WTC at the univariate level.

Univariate Results for Anxiety. The main effect of language on anxiety is significant at the univariate level, as are the Grade \times Language and Grade \times Sex interactions. ANOVA results are shown in Table 1; the corresponding means are shown in Table 2. The main effect of language indicates that anxiety is significantly higher in the L2 ($M = 396$) than in the L1 ($M = 246$). Post hoc tests on the Grade \times Language interaction (see Figure 2) show that L1 anxiety is significantly higher in grade 8 than in grade 9 but not

Table 2

Means for Communication and Motivation Variables

	Girls	Boys	Overall
Grade 7			
WTC French	482	465	473
WTC English	794	694	744
Anxiety (French)	443	400	421
Anxiety (English)	255	226	241
Perceived competence (French)	655	625	640
Perceived competence (English)	867	808	837
Frequency of communication (French)	26.3	28.0	27.1
AMI	46.1	44.4	45.2
Integrativeness	18.0	17.5	17.8
Motivation	18.4	18.1	18.2
Attitudes toward the learning situation	11.7	11.3	11.5
Grade 8			
WTC French	625	664	644
WTC English	840	805	823
Anxiety (French)	394	385	390
Anxiety (English)	267	307	287
Perceived competence (French)	753	759	756
Perceived competence (English)	825	830	828
Frequency of communication (French)	36.1	36.0	36.0
AMI	47.3	43.6	45.5
Integrativeness	18.1	17.2	17.7
Motivation	17.8	16.4	17.1
Attitudes toward the learning situation	12.0	10.5	11.2
Grade 9			
WTC French	749	553	651
WTC English	879	657	768
Anxiety (French)	284	472	378
Anxiety (English)	149	274	211
Perceived competence (French)	816	729	772
Perceived competence (English)	938	779	828
Frequency of communication (French)	32.7	36.2	34.4
AMI	45.9	45.0	45.5
Integrativeness	18.1	17.9	18.0
Motivation	17.6	17.5	17.6
Attitudes toward the learning situation	10.7	10.6	10.6

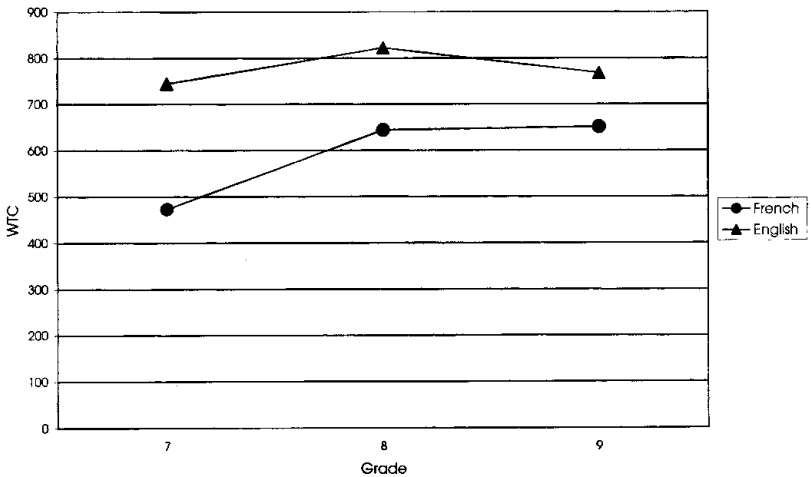


Figure 1. Effect of Grade \times Language interaction on WTC.

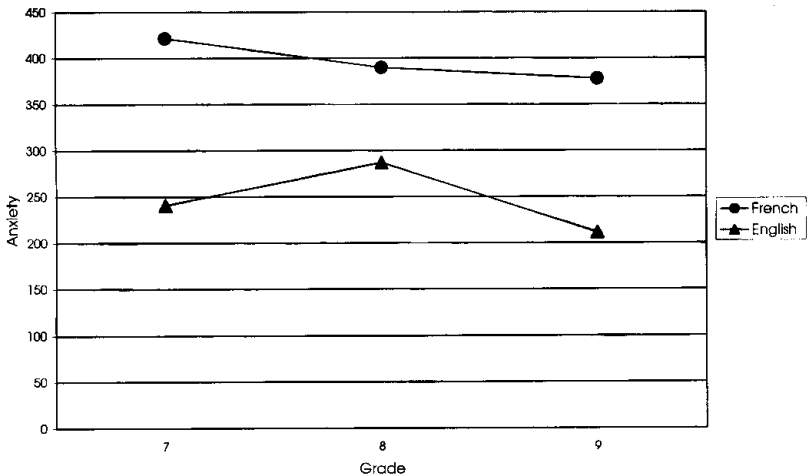


Figure 2. Effect of Grade \times Language interaction on anxiety.

significantly different between grade 7 and grade 8. L2 anxiety shows no significant differences across the three grade levels. L2 anxiety is significantly higher than L1 anxiety at all three grade levels; the difference between L1 and L2 anxiety does not show a consistent pattern across the three grades.

Post hoc tests on the Grade \times Sex interaction show that boys in grade 9 ($M = 373$) are higher in anxiety (L1 and L2 combined) than are girls in grade 9 ($M = 216$). Grade 7 boys and girls do not differ significantly in anxiety (M s = 313 and 349, respectively), nor do grade 8 boys and girls differ (M s = 346 and 331, respectively). Boys' level of anxiety does not change significantly over the three grades. For girls, anxiety in grade 9 ($M = 216$) is significantly lower than in grades 7 ($M = 349$) and 8 ($M = 331$) and does not differ significantly between grades 7 and 8. Estimates of effect size show that language has the greatest influence on anxiety in this analysis.

Univariate Results for Perceived Competence. The main effect of language and the Grade \times Language interaction show significant effects on perceived competence at the univariate level. ANOVA results are summarized in Table 1. The main effect of language indicates higher perceived competence in the L1 ($M = 841$) than in the L2 ($M = 723$). Post hoc tests on the Grade \times Language interaction (see means in Table 2) show that perceived competence in the L1 does not differ significantly across grade levels but that perceived competence in the L2 is significantly higher in grade 8 than in grade 7, is significantly higher in grade 9 than in grade 7, and does not differ significantly between grades 8 and 9. Perceived L1 competence is significantly higher than perceived L2 competence at each grade level, and there is a tendency, although not completely consistent, for the gap between L1 and L2 perceived competence to decrease across the three grades (see Figure 3). Estimates of effect size indicate that language has the largest effect on perceived competence at the univariate level in this analysis.

Effects of Sex and Grade on Frequency of Communication in French

To test for effects of sex and grade on frequency of communication in French, a 2 (male, female) \times 3 (7, 8, 9) completely randomized ANOVA was conducted. Means are given in Table 2. Only the main effect of grade was significant, $F(2, 273) = 10.09$,

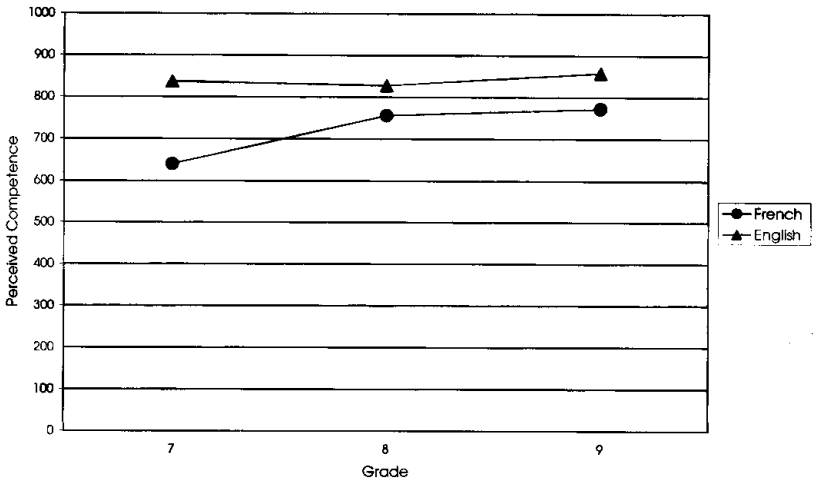


Figure 3. Effect of Grade \times Language interaction on perceived competence.

and estimates of effect size indicate that grade ($\eta^2 = 0.069$) had the largest effect on frequency of communication in French; estimates of effect size were below 0.001 and 0.006 for sex and for the Grade \times Sex interaction, respectively. Post hoc analyses show that self-reported frequency of communication in French is lower in grade 7 than in grades 8 and 9 and does not differ significantly between grades 8 and 9.

Effects of Sex and Grade on Attitude and Motivation Variables

A 2 (male, female) \times 3 (7, 8, 9) MANOVA was performed in order to examine the effects of sex and grade on three attitude and motivation variables extracted from the AMI: integrativeness, attitudes toward the learning situation, and motivation. Results of the multivariate tests reveal a significant effect of grade, but no significant effect of sex, and no sex by grade interaction. At the univariate level, grade had a significant effect on motivation and a marginally significant ($p < .07$) effect on attitudes toward the learning situation. Results are summarized in Table 3. In examining the effect of grade on motivation, post hoc analysis of means reveals a significant decline in motivation between grade 7

Table 3

MANOVA Summary for the Effects of Sex and Grade on Attitudes and Motivation

	<i>F</i>	<i>df</i>	η^2
Main effect of grade			
Multivariate	3.988*	6, 532	.043
Univariate			
Integrative	0.163	2, 267	.001
ALS	2.636*	2, 267	.019
Motivation	4.153*	2, 267	.030
Main effect of sex			
Multivariate	1.533	3, 265	.017
Univariate			
Integrative	1.949	1, 267	.007
ALS	4.499*	1, 267	.017
Motivation	2.578	1, 267	.010
Grade \times Sex			
Multivariate	0.920	6, 532	.010
Univariate			
Integrative	0.227	2, 267	.002
ALS	2.012	2, 267	.015
Motivation	1.274	2, 267	.009

Note. Integrative = Integrativeness. ALS = Attitudes toward the learning situation. Motivation = Motivation for learning French.

* $p < .05$.

($M = 18.2$) and grade 8 ($M = 17.1$); the mean for grade 9 ($M = 17.6$) was not significantly different from the means for grades 7 and 8.

Correlations Among the Communication and Motivation Variables

The correlations among language anxiety, perceived competence, and willingness to communicate in French overall, with grades 7, 8 and 9 combined, were significant and moderately high (see Table 4). The AMI significantly correlated with all seven variables. Generally, the correlations show that those who have positive attitudes and motivation tend to be more willing to

Table 4

Correlations Among Communication and Motivation Variables

Grades combined								
	AMI	CAE	LAF	PCE	PCF	WTCE	WTCF	FREQ
AMI	1.00							
CAE	-.307**	1.00						
LAF	-.226**	.624**	1.00					
PCE	.220**	-.291**	-.309**	1.00				
PCF	.213**	-.221**	-.351**	.547**	1.00			
WTCE	.288**	-.354**	-.424**	.411**	.360**	1.00		
WTCF	.187**	-.268**	-.344**	.200**	.474**	.442**	1.00	
FREQ	.293**	-.205**	-.350**	.070	.232**	.408**	.498**	1.00
Grade 7								
	AMI	CAE	LAF	PCE	PCF	WTCE	WTCF	FREQ
AMI	1.00							
CAE	-.303**	1.00						
LAF	-.188	.637**	1.00					
PCE	.226*	-.291**	-.176	1.00				
PCF	.007	-.077	-.106	.312**	1.00			
WTCE	.105	-.341**	-.233*	.303**	.208**	1.00		
WTCF	.001	-.176	-.220*	.073	.342**	.448**	1.00	
FREQ	.179	-.284**	-.398**	-.032	.058	.353**	.450**	1.00
Grade 8								
	AMI	CAE	LAF	PCE	PCF	WTCE	WTCF	FREQ
AMI	1.00							
CAE	-.462**	1.00						
LAF	-.252*	.605**	1.00					
PCE	.322**	-.385**	-.496**	1.00				
PCF	.323**	-.287**	-.552**	.591**	1.00			
WTCE	.376**	-.477**	-.628**	.535**	.431**	1.00		
WTCF	.354**	-.338**	-.447**	.348**	.562**	.574**	1.00	
FREQ	.258*	-.241**	-.315**	.132	.282**	.381**	.491**	1.00
Grade 9								
	AMI	CAE	LAF	PCE	PCF	WTCE	WTCF	FREQ
AMI	1.00							
CAE	-.091	1.00						
LAF	-.240*	.671**	1.00					
PCE	.119	-.165	-.264*	1.00				
PCF	.286*	-.272*	-.328**	.742**	1.00			
WTCE	.356**	-.254*	-.404**	.414**	.384**	1.00		
WTCF	.187	-.262*	-.252*	.171	.402**	.260*	1.00	
FREQ	.530**	-.099	-.294**	.134	.244*	.463**	.433**	1.00

Note. AMI: Attitude/Motivation Index; CAE: Communication apprehension in English; LAF: Language anxiety in French; PCE: Perceived competence in English; PCF: Perceived competence in French; WTCE: Willingness to communicate in English; WTCF: Willingness to communicate in French; FREQ: Frequency of communication in French.

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

communicate, have higher perceived competence, communicate more frequently in the L2, and have lower communication apprehension. A complete correlation matrix is provided in Table 4. The first correlation matrix reported in Table 4 aggregates data from grades 7, 8, and 9 and obscures some interesting patterns across grade levels, particularly with respect to attitudes/motivation and the correlations among L2 communication variables.

Examining the correlations for each grade level individually yielded some interesting findings. Correlations within each grade level are presented in the lower portion of Table 4. First, we will examine the correlations between communication-related variables and AMI. In grade 7, AMI correlates only with communication apprehension in the L1 and perceived competence in the L1. In grade 8, these variables still correlate significantly, but AMI also correlates with all four L2 communication variables. In grade 9, AMI does not correlate significantly with communication apprehension and perceived competence in the L1 but is significantly correlated with corresponding variables in the L2. There appears to be a developmental pattern in the relation between the attitude/motivation complex and communication-related variables. Examining only the L2 communication variables, it can be seen that the strongest correlate of L2 WTC was L2 perceived competence at all three grade levels. The correlations between L2 WTC and language anxiety, L2 WTC and L2 perceived competence, and language anxiety and L2 perceived competence were lowest in grade 7, increased in grade 8, and then declined again in grade 9. The only nonsignificant correlation with respect to these variables was found among the grade 7 students, between language anxiety and perceived competence in French.

Discussion

Overall, the results demonstrate that investigating individual differences among younger learners is both possible and to be encouraged, given the reliability of the scales and the interesting pattern of results. From a pedagogical perspective, it

is encouraging to note that WTC, perceived competence, and frequency of communication in the L2 increased from grades 7 to 8. Also encouraging is the tendency for the difference between L1 and L2 WTC to decrease across the three grades (see Figure 1). MacIntyre et al. (1998) have argued that the fundamental goal of L2 instruction should be to produce students who are willing to use the language for authentic communication, and in this respect, the immersion program studied appears to have produced those desirable results.

The lack of a significant difference between grade 8 and 9 students in terms of L2 WTC, L2 perceived competence, and frequency of communication in L2 suggests that the gains made in these nonlinguistic outcomes earlier in the program are maintained. It would be preferable if a further significant increase in L2 WTC, perceived competence, and communication frequency were to occur between grades 8 and 9. It might be that anxiety is preventing such an increase in WTC. A reduction in anxiety might be necessary to produce continuing gains in WTC, given the tendency for anxiety to be negatively correlated with WTC in both the L1 (McCroskey & McCroskey, 1986; McCroskey & Richmond, 1987) and the L2 (Baker & MacIntyre, 2000; MacIntyre & Charos, 1996). Anxiety reduction might conceivably lead to further increases in perceived competence as well, given that those high in communication anxiety might be prone to underestimate their communicative competence (MacIntyre et al., 1997). Future research could examine whether attempts at anxiety reduction do lead to increased L2 WTC and possibly increased perceived competence.

The lower L2 WTC among the grade 7 students may be explained by examining the correlations between the two variables that theoretically underlie it, anxiety and perceived competence (MacIntyre et al., 1998). The strongest correlate of L2 WTC in all three grade levels was perceived competence in the L2. The grade 7 students, who have less experience with the L2 than the grade 8 and 9 students, also feel less competent to communicate, as is indicated by the significantly lower L2 perceived competence

among the grade 7 students. As a consequence, the grade 7 students also report being less willing to initiate communication in French.

The only nonsignificant correlation among L2 WTC, language anxiety, and L2 perceived competence at all three grade levels was between language anxiety and perceived competence for grade 7 students. Their relatively lower perceived competence does not appear to be related to individual differences in anxiety. It has been observed among university students that students high in language anxiety tend to underestimate their competence (MacIntyre et al., 1997); among the grade 7 students in the present study, it might be that language anxiety has not *yet* developed this association with lower perceived competence because of lack of experience. The significant negative correlations between language anxiety and perceived competence among grade 8 and 9 students are consistent with the notion that the negative relationship between anxiety and perceived competence is a function of repeated experience (MacIntyre & Gardner, 1989).

The observed pattern of sex differences in WTC and anxiety, although not specific to the L2, is nonetheless interesting. Whereas boys' overall WTC and anxiety levels remain constant across the three grade levels, girls show an increase in WTC and a decrease in anxiety from grade 8 to grade 9. A partial explanation of these results can be found in developmental psychology. Increased self-consciousness is associated with the onset of puberty (see Sigelman, 1999), which is, on average, earlier for girls than for boys. For girls, puberty begins approximately between the ages of 12 and 13 years (grades 7–8), whereas for boys the average onset of puberty corresponds to grade 9, between 13.5 and 14 years (Jensen, 1985; McCandless, 1970). Grade 9 girls might be past the most anxiety-provoking phase of puberty, perhaps making them less anxious and more willing to communicate. Speculations relating maturational patterns to individual differences in communication require confirmation by future research and would be better addressed by a longitudinal research design. If confirmed, these

results present an interesting challenge for teachers who try to encourage communication among students at this age.

Further contributing to the observed sex differences may be the cumulative effects of differential treatment by teachers. Worrall and Tsarna (1987), who surveyed English and French teachers, found a pattern suggesting a general favoring of girls in the language classroom. This tendency for females to find favor in the classroom may be reflected in the present study in grade 9 girls' lower anxiety and higher WTC. These findings should not necessarily be taken to indicate that males are at a disadvantage compared to females when it comes to developing L2 proficiency. Although nonsignificant differences must be interpreted cautiously, the nearly equal mean scores of males and females for the frequency of French use in the present sample suggest that both males and females in the sample are practicing L2 communication. It is possible that boys and girls in this sample show no difference in communication frequency because they are communicating in different settings; Baker and MacIntyre (2000) found that boys prefer L2 communication outside of class, whereas girls prefer in-class communication. It should be noted that the effect sizes for sex and for interactions involving sex as an independent variable are small, observed results that are consistent with Canary and Hause's (1993) finding that sex differences in communication variables tend to be small.

It might be seen as unfortunate that L2 motivation decreased between grades 7 and 8, but such variations among grade levels have been observed in previous research. Gardner and Smythe (1975) found a similar pattern for measures of attitudes toward learning French and toward French Canadians and motivational intensity. The region in which the current participants reside does not offer French immersion before grade 7. As Gardner and Smythe (1975) have suggested, it is perhaps the novelty of the immersion experience in grade 7 that inflates motivation. The decrease in motivation that is experienced after grade 8 may imply an inevitable reduction in motivation during the intense language learning process. Research on long-term immersion programs

supports the notion that attitudes and/or motivation might rebound later in the learning process (see Blake, Lambert, Sidoti, & Wolfe, 1981; Genesee, 1978; Lambert & Tucker, 1972; Swain & Lapkin, 1982), as was reported by Gardner and Smythe (1975).

It is also possible that the decrease in motivation in the present and previous samples reflects a more global decrease in achievement motivation among adolescent learners and not one specific to language learning. According to Sigelman (1999), school achievement motivation generally tends to decline during adolescence because of a number of factors, among which are the increasing amounts of negative feedback children receive as they progress through school, the onset of puberty, and cognitive growth that allows them to assess their abilities more realistically. It may be useful in future studies examining language learning motivation among adolescents to include more general academic-achievement measures so that possible links between changes in language learning motivation and global achievement motivation may be examined.

Experience might play a role in the changing relationship between the AMI and communication in the L1 and L2. For the grade 7 students, stronger motivation was correlated with lower anxiety and higher perceived competence in their L1 but, surprisingly, not in the L2. Given that this is the first year of the immersion program for these students, perhaps L1 self-confidence provides a security blanket for the initial difficult period of adjustment to the program. Clément (1980) refers to L2 confidence as a secondary motivational process among minority-group members learning the language of a majority group. In this case, we have an enclave of majority-group students who are learning the language of a minority group in an immersion setting. Students have voluntarily placed themselves in the position of becoming a minority-group member, regardless of whether their emerging identity is constructed as Bilingual, Francophone, or Immersion Student. In the present locale, all of these identities are in a minority-group position. It would appear that L1 self-confidence with communication initially supports motivation in this extraordinary setting.

The students in grade 9 seem to associate motivation with L2 confidence, rather than L1 confidence, likely because of the experience gained along the way. The results obtained for the most experienced group, the grade 9 students, correspond most closely to Clément's (1980) original model.

A couple of limitations of the present study are noteworthy. First, the conclusions based on self-report data should be verified by behavioral studies of classroom and extracurricular L2 communication. Such research would be a valuable addition to the literature on WTC and related variables. It should be noted, however, that "trait-like" variables may bear inconsistent relations to behavior in specific situations, and one must be cognizant of the difference between studying patterns of reactions at the trait level and studying individual occurrences at the situated level (see MacIntyre et al., 1998). A second limitation, the cross-sectional design, means that it is possible that differences observed based on grade represent cohort effects. Children of different ages may have been exposed to different kinds of broad social influences (e.g., the variety of political tensions between anglophone and francophone groups in Canada) at critical moments in the development of attitudes toward the L2 and native speakers. In order to address this limitation, a longitudinal investigation in which a cohort of junior high immersion students is studied through grades 7–9 is being planned.

Understanding how the psychological variables supporting L2 WTC vary over time and across situations promises to be a productive avenue for future research. If the goal of L2 instruction is to increase the use of the L2, especially outside of the classroom, our understanding of age and sex variations becomes of paramount importance. L2 communication is a context-bound phenomenon, and that context is heavily determined by fundamental characteristics of the learner.

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