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Electronic Mail, a New Written-Language Register: A Study with French-Speaking Adolescents

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Abstract

The aim of this study was to determine the extent to which the linguistic forms used by adolescents in electronic mail (email) differ from those used in standard written language. The study was conducted in French, a language with a deep orthography that has strict, addressee-dependent rules for using second person personal pronouns (unfamiliar and familiar forms). Data were collected from 80 adolescents ages 12 to 15 in a natural situation where they had to introduce themselves by email to two addressees (peer/teacher). Participants were divided into two groups (skilled/unskilled in computer-mediated communication). Their emails contained a large number of orthographic deviations (the most frequent being neographic forms). Participants skilled in computer-mediated communication (CMC) deviated more than unskilled ones did. The number of orthographic deviations was not linked to the participants' standard writing ability. The personal-pronoun data clearly showed that adolescents used the familiar form of "you" (tu) to address the peer and the unfamiliar form (vous) to address the teacher. We conclude that, for adolescents, email constitutes a distinct written-language register. Nevertheless, the email register seems to follow the pragmatic rules of standard spoken and written interaction.

INTRODUCTION

Within recent years, the appearance and extremely rapid development of communication technology has caused drastic changes in the modes of interaction used by modern societies. Among these developments, electronic mail (email) is the most popular and the most widespread, and is frequently utilized in scientific and economic communities worldwide. Adolescents seem to have largely appropriated these new communication tools, including electronic mail. In the "Teens and Technology" survey conducted by the Pew Internet and American Life Project on 1100 young people, electronic mail ranked on top and was used by 89% of online teens (Lenhart, Madden, & Hitlin, 2005). Email, an asynchronous form of computer-mediated communication (CMC), is an interpersonal mode of correspondence which functions like postal mail. These two modes are often compared because both involve two or more interlocutors corresponding with each other. However, emailing takes place not only in a different time frame -- time is "condensed", with emails crossing the globe in only a few seconds or minutes -- but also in a different space -- one can communicate rapidly with people around the world. The spatial and temporal characteristics of email thus

differ from those of traditional written exchange (Anis, 1998; Crystal, 2001; Herring, 1996; Panckhurst, 1998). These two distinctive features make email an original vector of communication (Baron, 1998; Gains, 1999; Maynor, 1994).

The present study was aimed at showing that electronic mail constitutes a specific register of written language. It seemed interesting to try to demonstrate this with adolescents because their social group uses this mode of communication extensively. Moreover, adolescents between the ages of 11 and 16 are still learning the standard written language (Berman, 2005). French in particular is conducive to studying this new written-language register to the extent that it has a "deep" orthography, i.e., there are many irregularities in the grapheme/phoneme correspondence system. Also, the French language (whether spoken or written) has strict rules dictating what personal pronouns must be employed to speak to another person. *Tu* (the familiar or intimate form of "you") is used for a well-known person or someone "of the same social or hierarchical status" as oneself, whereas *vous* (the unfamiliar or non-intimate form) is employed for an unknown person or someone with a "higher social or hierarchical status". The usage rule for the familiar and unfamiliar forms is extremely subtle and more complex than the one stated here, which simply describes the most frequent case and the one that applies to the communication situation examined in the present study. We wanted to find out whether these rules are applied or modified in a communication mode like email, whose spatiotemporal features differ from those of typical communication. We conduct a detailed analysis of the written productions of adolescents in an email situation and we compare them to standard written French, as it is defined in dictionaries and grammar books and described by Jisa (2004).

Our hypotheses were based on the principles of pragmatics, which describe how the linguistic features of utterances are related to the communication situation (Austin, 1962; Bernicot & Laval, 2004; Searle & Vanderveken, 1985; Verschueren, 1999; Verschueren, Östman, & Blommaert, 1995). Grice's (1975) cooperative principle is particularly useful here. According to this author, conversation is governed by a fundamental principle of reciprocal cooperation mutually assumed by the interlocutors. The speaker strives to produce a message that the listener can understand, and the listener assumes, throughout the comprehension process, that the message being generated is meant to be understandable.

Email, Register, and Age

In every communication situation, there is a specific set of linguistic signs that defines the communication register (Andersen, 1990; Ellis & Ure, 1977; Ferguson, 1977; Ravid & Tolchinski, 2002). Each register (baby talk, slang, public speaking, etc.) corresponds to a different way of expressing the same intentions and ideas and has a linguistic system that fits the communication situation. A register is a set of linguistic variations that are context-dependent (Biber & Conrad, 2001; Eckert & Rickford, 2001; Ferrara, Brunner, & Whittemore, 1991; Hudson, 1980). The terms "register", "genre", and "modality" - - although not all authors agree on their usage (Grimshaw, 2003) -- nevertheless allow us to define the complex framework in which discourse is produced (Biber, 1995; Guenther & Knoblauch, 1995; Ravid & Tolchinski, 2002): all three involve a linguistic variation based on context. "Genres" are different types of productions, as defined by their function, e.g., narratives, letters, recipes, manuals (Paltridge, 1997). "Modality" is defined by the characteristics of online production processes: presence/absence of an interlocutor, duration of the language signal, user's degree of control over the linguistic production (Ravid & Tolchinski, 2002; Strömquist, 2006). While the standard oral and written modalities oppose each other on these three dimensions, they also interact. Learning to write does not consist of simply of adding the written language onto an oral competency already acquired: the development of written-language mastery ends up having an impact on the development of the oral language (Strömquist, Nordqvist, & Wengelin, 2004). A "register" permits the expression of social dimensions like power, authority, politeness, and familiarity. Halliday (1964) defined "register" as a set of variations according to use in the sense that each speaker has a range of varieties and chooses between them at different times.

The concept of register, in combination with those of genre and modality, can be applied to emailing by hypothesizing that this setting is defined by a specific set of linguistic signs that differ from those used in standard writing. From a developmental standpoint, certain aspects of language registers are acquired early (orally: at age 4) with a progression that extends on into adolescence for both writing and speech (Berman, 2000; Gayraud, 2000). As children grow older, language variations used in different contexts become more systematic and increasingly complex.

Regarding the development of oral language, French and American 4-year-olds discriminate between a wide range of social situations and are able to speak in keeping with these situations by using intonation and by systematically varying the words, pronouns, request forms, and discourse markers they use (Andersen, 1996). In Japanese, children are sensitive to information drawn from the context,

such as their interlocutor's age, gender, and familiarity, and they also take the topic of conversation into account (Nakamura, 1997). Children make use of prosodic cues very early in order to differentiate between the roles and statuses of other people, regardless of the context. After using prosodic variations, children learn to make thematic and lexical variations to fit the context by choosing vocabulary words that suit each role and situation. These markers act as cues to the interlocutor's intentions (Brizuela, Andersen, & Stallings, 1999; Andersen, Brizuela, DuPuy, & Gonnerman, 1999; Andersen, 1996). This developmental course, already visible between 4 and 10 years, continues until adolescence.

The written-language register develops between ages 9 and 17 (Berman, 2005; Berman & Verhoeven, 2002; Nippold, 1998), and all aspects of the language evolve during this period: compositions get longer between ages 12 and 17, complex forms like the passive voice become more frequent between ages 9 and 17 (Jisa, Reilly, Verhoeven, Baruch, & Rosado, 2002), and lexical diversity increases between ages 12 and 17 (Strömquist, Johansson, Kriz, Ragnarsdóttir, Aisenman, & Dorit, 2002). By the age of 9 or 10, different types of text (narrative and expository) are differentiated by way of verb tense. Moreover, children know that the spoken and written languages are not the same by the time they are 9 or 10, and by age 16 or 17, adolescents have acquired the ability to express people's emotions and thoughts (Jisa, Reilly, Verhoeven, Baruch, & Rosado, 2002).

Based on prior research on the standard written-language register, which indicates an evolution during the adolescent period, we hypothesized that the email-writing register would also evolve during adolescence and that this development would show up as a change in message length and in the use of orthographic forms specific to this communication channel. To test this hypothesis, we assessed each participant's conventional written-language ability and considered it to be indicative of learning that had taken place before email-writing conventions were learned.

Email and CMC Skill

In an electronic mail setting, we need to consider not only the role of age, but also the role of CMC skill, which is acquired through practice on new medias. Although the school system provides all adolescents with equal access to instruction and experience with the conventional written language, this is not true for CMC skills, which are acquired via a more personal route. Beach and Lundell (1998) showed how CMC experience among 12- and 13-year-old middle school students actively engaged them in reading and writing, seen as social

communication strategies. CMC skill was found to have an impact on reading and writing. In our experiment, we therefore assessed each participant's CMC skill, and hypothesized that skilled CMC users would exhibit better mastery of the email-writing register than unskilled ones.

In this study, it was hypothesized that email -- as a new interaction context with characteristics inherent in the communication channel used -- constitutes a separate register, with linguistic signs that differ from those of the standard written language, as it is defined in dictionaries and grammar books. One of the tasks undertaken here was to show that, for the French language, which has a highly complex orthography, these signs deviate considerably from standard French orthography. It was also hypothesized that, as a communication register, email follows the general rules of pragmatics, and in particular, the rule of adaptation to the addressee. It was predicted that the strict rules for using the familiar and unfamiliar forms of "you" would be obeyed.

Email and Orthography

Compared to English, French has what is called a deep orthography. This makes it a good language for studying written-word production from the orthographic standpoint. To describe the types of orthographic mistakes made by French-speaking children and adolescents, we can refer to a recent study by Hoefflin and Frank (2005). These authors defined eight categories of orthographic errors.

1. Phonetic errors involving either omission of a phoneme in the written rendition, e.g. *gaçon* for *garçon* (boy), or substitution of one phoneme for another, e.g. [s] for [z] or [f] for [v].

2. Illegitimate phonographic errors involving the orthographic transformation of the phonetic value of a word, e.g. *gardin* for *jardin* (the grapheme used does not correspond to the phoneme in the word).

3. Legitimate phonographic errors, where the phonetic value is maintained but not the orthographic constraint, e.g. *bato* for *bateau*, or *bocou* for *beaucoup* (the grapheme used corresponds to the phoneme in the word, but is not the right one, resulting in a word with the right pronunciation but misspelled).

4. Morphographic grammatical errors, where silent letters that mark grammatical morphemes are left out or incorrectly spelled (e.g. omission of the plural marker "s" for nouns or "-nt" for verbs, neither of which are pronounced in spoken French).

5. Morphographic errors, where silent letters are missing or incorrectly spelled (e.g. omission of the final silent "t" in *petit*).

6. Homophonic errors on two words that are phonologically the same but semantically different, e.g. *vers* (worm) and *vert* (green), where neither final consonant is pronounced.

7. Ideographic errors, which involve improper capitalization or punctuation.

8. Nonfunctional errors, which are linked to a word's etymology (e.g. *boite* for *boîte*, or *farmacie* for *pharmacie*).

Briefly, Hoefflin and Frank's (2005) results indicated that typical 9- and 10-year-olds made mostly morphographic grammatical errors, and to a lesser extent, phonographic errors. Other types of errors were rare. In a study by Morris (2001), French-speaking Canadians learning English were also found to have more trouble with function words than with content words.

Studies on orthography in CMC are still scarce and pertain solely to adults. In a study conducted at a French university, Panckhurst (1998) gathered a corpus of emails sent by French students, professors, and researchers. Two types of errors were frequent: (1) technical errors (typographical errors), e.g. doubling a letter as in *momment* for *moment* (moment), omitting a doubled letter as in *rapeler* instead of *rappeler* (to recall), letter inversion as in *exactmeent* for *exactement* (exactly), and letter or word substitution, as in *vouz* instead of *vous* (you); and (2) errors called "fuzzy" because the cause of the error could not be determined, being potentially due either to poor knowledge of a grammatical rule or to faulty use of the communication tool, e.g. *n'importe qu'elle personne* instead of *n'importe quelle personne* (any person). In this example, one cannot be sure whether the incorrect apostrophe in *qu'elle* is a typographical error or an indication that the writer doesn't know the correct orthographic form. However, it is clear that these errors cannot be considered specific to email because the author found similar mistakes in other written communication modes, e.g. in an email: *je vous ai envoyer* instead of *je vous ai envoyé* (I sent you); in a written manuscript: *des personnes se sont disputés* instead of *des personnes se sont disputé* (some people fought with each other); on a word processor: *un document Hypertexte s'est un fichier* instead of *un document Hypertexte c'est un fichier* (a Hypertext document, that's a file). Note that in all of these examples, the correct and incorrect spellings would be pronounced the same way in standard spoken French. Panckhurst's (1998) findings thus do not allow one to conclude that there are email-specific orthographic forms.

Our goal was to supplement these data for a population of adolescents, interacting in a natural setting with interlocutors who had different social characteristics: a peer and a teacher.

Email and Personal Pronouns

The French language has specific rules for using second-person personal pronouns to address another individual. The existence of two different forms of "you" (*tu* for the familiar form and *vous* for the unfamiliar form) can be used to demonstrate speaker adaptation to the addressee's status. Various studies in French and English (Ko, 1996; Panckhurst, 1999; Collot & Belmore, 1996; Yates, 1996) have looked at pronoun use in electronic communication. The findings indicate that emails contain very few third-person pronouns (personal or demonstrative) compared to ordinary writing. By contrast, they have a high percentage of first- and second-person pronouns (email 64%, speech 58%, writing 27%). The present study supplements these earlier studies by examining the use of second-person pronouns in French to address a peer or a teacher.

Our goal here was to demonstrate -- using standard written French, as it is defined in dictionaries and grammar books, as the reference -- that email is a specific writing register from the point of view of orthography. There should be a substantial difference between the standard writing register and the email register in French, due to the deep orthography of this language. This hypothesis was studied for adolescents communicating with a peer and a teacher in a natural setting.

METHOD

Participants

The participants were adolescents from middle-class homes (as defined by the parents' occupations). They were recruited from three middle schools. Same-sex dyads were set up (girl-girl or boy-boy). Each dyad contained two same-age students from two different middle schools. The participants belonged to four age groups: 12-year-olds (24 students, mean age 11; 8), 13-year-olds (20 students, mean age 12; 7), 14-year-olds (20 students, mean age 13; 8), and 15-year-olds (16 students, mean age 14; 5). All participants were in the normal school grade for their age. Each age group contained as many boys as girls.

For each participant, two additional indexes were defined: standard French writing ability and CMC skill. The writing ability of each student was rated by his/her language arts (French) teacher, on a five-point scale ranging from "very poor" to "very good". In French middle schools, the language arts teacher knows the abilities of each student quite well, since students have five hours of French per week with the same teacher. Table 1 gives the distribution of participants into the different writing-ability levels, by age. The distribution was similar in each age group: the majority of students were rated "good" or "average", almost no students fell in the "poor" or "very poor" category, and the "very good" category contained between 12.5% (age 12) and 31.25% (age 15) of the students.

INSERT TABLE 1

For CMC-skill rating, participants were divided into two groups. The criteria for inclusion in the skilled CMC group were as follows: had an email address before participating in the experiment, wrote that they used instant messaging systems like MSN, and wrote that they played online games requiring instantaneous exchanges in writing with other players. Table 1 also presents the assignment of participants in each age group to the two skill levels. There were skilled and unskilled CMC users in every age group, with more skilled ones among the older adolescents ages 14 and 15. In these last two age groups, the number of skilled and unskilled participants was balanced.

In the last part of Table 1, we can see that there is a great deal of crossing-over between the four age groups, the two CMC-skill levels, and especially, the "very good", "good", and "average" ability levels in written French.

Materials

The materials consisted of computers connected to the internet. The computers were installed in the computer room of the students' schools. Each room had about ten workstations.

Procedure

The experimenter informed the participants that they would be corresponding by email with adolescents and teachers from another middle school. They were asked to contact their interlocutors by email and introduce themselves. Each participant was to exchange emails with two interlocutors: a

"pen pal" (a same-age, same-sex peer from another middle school) and a teacher. In fact, the experimenter acted as the teacher (alleged to be at the other school). For the girls, the teacher was a woman; for the boys, the teacher was a man.

The participants became familiar with the email tool and with their interlocutors in the course of at least four semi-collective sessions. During the first session, the experimenter made sure that every participant had an email address. Those who already had one used it for the experiment, and those who did not were assisted by the experimenter in creating one. As recommended by the French Ministry of Education, the new email addresses were requested from the server of the French Post Office; in cases of technical or connection problems, the choice of an address provider was left up to the participant.

Once all participants had an email address, the experimenter explained how electronic mail works. The following points were covered: connecting to the internet, opening up the web page of the email server, identifying oneself (address and password) to access one's email account, finding the commands for sending and receiving mail, writing a message and sending it, and receiving a message and replying. To make sure the participants would always know what steps they had to take to send an email, the experimenter handed out a sheet listing the steps.

After the instructions were given, the participants exchanged emails with both of their interlocutors. During the sessions that followed, the participants checked their mail and replied to messages from their pen pal and from the teacher. The experimenter intervened only when technical problems occurred, but never helped the participants write their messages.

To collect the exchanged messages, the experimenter created 40 mailing lists, one per participant dyad. By signing up on the mailing list, the participants were not only agreeing to take part in the study but also to let the moderator read the emails. A mailing list can be said to have the same characteristics as email insofar as it is a natural extension of emailing.

Examples of Messages (for anonymity, the real names of the participants are not given here)

To illustrate, here are some sample messages written by two adolescents, one to each type of addressee.

Example 1

Message addressed to a peer:

salut katia! c lali sa va? moi oui. t o kel kolege? tabite a poitiers? moi g 14 ans
et toi? moi je suis o kolege françois rabelai.

je te laisse et jespere ke tu me repondra vite! salut

Rough translation:

hi katia! im lali how r u doing? me fine. wht skul do u go 2? do u live
in poitiers? im 14 and u? i go 2 françois rabelai.

i'll let u go and i hope u answr soon! bye

Message addressed to a teacher:

Bonjour,

Je m'appelle Lali, j'ai 14 ans, je suis en 4e au collège François Rabelais à
Poitiers. Vous êtes prof de quoi et à quel collège.

je vou laisse

lali

Rough translation:

Hello,

My name is Lali, I'm 14, I'm in 8th grade at François Rabelais
Middle School in Poitiers. What do you teach and at what school.

i'll let u go

lali

Example 2

Message addressed to a peer:

lu ... heu bon koi dire a par mapel tanguy g 14ans .chui trop bo .. lol (:...;)
en faite g rien envi de te tire alors tg ... en faite si vé juste te dire ke je suis
torp fort a war 3 é a counter strike .. je croi ke g un don ... encore lol .. chui trop
drole .. hahahaha

en faite si tu conné po sa tu vo rien .. alors tg (lol te vex po) nan en faite la
je sé po pk chui la .. sa sert a rien .. en + tt a leure g un vieu controle d'angais ...
comprend rien a ca :'(

*bon je te laisse tu m'as déjà chier alors ke je t'as rencontré ... alors je croi
kon a aucun avenir ensemble .. lol*

bon bé ++ a toi é oubli js TG !!!!

Rough translation:

hi ... uh so wht 2 say bside my name is tanguy im 14.im very
handsome .. lol (;..;)

actually i dnt feel like sayng n e thng 2 u so syt [shut your trap] ...
actually yes i do im just goin 2 say tht im supr good @ war 3 & counter
strike .. i thnk im giftd ... more lol .. im so funny .. hahahaha

actually if u dnt kno it u r worthless.. so syt (lol dnt get mad) nah
actually i dnt kno y im here.. its useless.. bside l8er ive got a stupd english
test ... dnt undrstnd any of it:'(

well i'l let u go u bor me 2 shit alrdy evn tho ive nvr met u... so i thnk
thers no hope 4 r future together .. lol

uh well c u l8er & nvr frget SYT!!!!

Message addressed to a teacher:

*Lu M.Garreau ! koment allé vous ? kom vs avé du le voir j'écri lengage
tchat ! (;..;) +_+*

*Chui un eleve 2 4eme a ronsard. chui un exelent élève surtt en Latin ..
lol je frise lé 6 de moyne =] moi mon truc c le foot é lordiiiiiiiiiiiiiiii ... !!
(+_+) (lol) Sur lé jeu vidéo (san me venté) je sui un dieu ... =) é le foot c une
passion pr moi !*

parlon de vs maintenant .. kel matiere ebseigné vs ? (jesper po le latin)

bon ++

Rough translation:

Hi Mr.Garreau! how r u ? as u cn see im writng n chat language!
(;..;) +_+

Im n 8th grade @ ronsard. im n xlent studnt esp in Latin .. lol
my avg is abt 60 =] my thng is soccer & cpuuuuuuuus... !! (+_+) (lol) On
video games (wo/bragging) im a god ... =) & soccers my passion!

lets talk abt u now .. wht subjct do u teach? (i hope nt latin)

so c u l8er

Coding

Three linguistic cues were analyzed: clauses, orthographic deviations, and personal pronouns.

Clauses. Not all participants sent the same number of emails. Message length also varied. Message length was measured in terms of the number of clauses in the emails. The emails were broken down into clauses in the following manner (see examples below): a clause was defined by a verb and its modifiers. Paralinguistic elements such as smileys (J, L) and "lol" (laughing out loud, or in French *mdr* for *mort de rire*) were counted as clauses. Two judges coded 10% of the corpus. Inter-coder agreement was assessed by Kendall's coefficient- $(W = 0.87)$. Kendall's coefficient ranges from 0 to 1. Values close to zero indicate strong disagreement across judges in the ratings of the variables, whereas values close to 1 indicate nearly perfect agreement.

Examples (clauses are separated by slashes)

1. /Je suis en troisième/ (I'm in ninth grade/)
2. /Je pratique la GRS/et je fais également de la salsa/ (I do hiking/and I also dance the salsa/)
3. /Il est super trop beau/lol/ (He's super too beautiful/lol/)

Example 1 above has one verb so it was coded as one clause, Example 2 has two verbs so it was coded as two clauses, and Example 3 has one verb and a paralinguistic element, so it was coded as two clauses. For each participant, the total number of clauses was divided by the number of messages sent.

Orthographic deviations. Any difference from standard French orthography was counted as an orthographic deviation. Table 2 presents the various deviation categories, with definitions and examples of each one. Several types of morphological deviations from standard French were observed: noun agreement errors, verb agreement errors, grammatical homophone errors, and missing negatives. Lexical deviations were also found: misspelled words and accent mistakes. The observed morphological or lexical errors corresponded to those listed in earlier studies on standard written French (Hoefflin & Frank, 2005; Morris, 2001). Two other types of deviations showed up in the emails: graphic

form changes (neographic forms, morpholexical particularities, and paralinguistic indications) and typographical errors like those noted by Panckhurst (1998). For each participant, occurrences of each type of orthographic deviation were counted and divided by the number of clauses.

INSERT TABLE 2

Personal pronouns. Again, email is a correspondence mode involving an addressee. In our study, the messages were addressed to two interlocutors who differed in social status. In the French language, social status is always marked linguistically in both speech and writing. Here, we looked at the extent to which the familiar form (*tu*) of the second-person pronoun was used to address the peer, and the unfamiliar form (*vous*) was used to address the teacher. We also compared the frequency of first-person (*je, nous*) and second-person (*tu, vous*) pronouns to third-person pronouns (*il, ils, elle, elles*). For each participant, the personal pronouns (*je, nous, tu, vous, il, ils, elle, elles*) employed were counted and then divided by the total number of clauses.

RESULTS

Number of Clauses

The dependent variable "number of clauses per message" was analyzed in a three-factor ANOVA: age (12, 13, 14, or 15), CMC-skill level (skilled or unskilled), and addressee (pen pal or teacher). The effects of age and CMC skill were nonsignificant. The addressee effect was significant ($F(1,72) = 6.31$, $p < .02$). Messages addressed to the pen pal contained more clauses (12.5 per message, standard deviation = 10.21) than those sent to the teacher (9.75 per message, standard deviation = 5.84).

Orthographic Deviations

The number of orthographic deviations (divided by the number of clauses) was analyzed in a three-factor ANOVA: age (12, 13, 14, or 15), CMC skill (skilled or unskilled), and addressee (pen pal or teacher). The results are presented in Table 3. The age effect was nonsignificant. The CMC-skill effect was significant ($F(1,72) = 8.52$, $p < .005$), as was the addressee effect ($F(1,72) = 5.04$, $p < .03$) and the interaction between addressee and CMC skill ($F(1,72) = 4.12$,

$p < .05$). Skilled CMC users made more orthographic deviations (1.246 per clause) than unskilled ones did (0.866 per clause), and messages sent to the pen pal contained more orthographic deviations (1.148 per clause) than ones directed at the teacher (0.963 per clause). The skilled CMC group made more orthographic deviations in messages written to the pen pal (1.428 deviations per clause) than in ones written to the teacher (1.064 deviations per clause). For the unskilled CMC group, the proportion of orthographic deviations was similar in pen-pal messages and teacher messages (0.869 and 0.863 deviations per clause, respectively).

INSERT TABLE 3

To show that email is a separate register of the standard written language, it is important to make sure that the orthographic characteristics of the emails were not linked to the participants' writing ability, and that they differed from those of standard writing.

Correlation Between Orthographic Deviations in Emails and Standard French Writing Ability

The correlation between the number of orthographic deviations and the participants' writing ability (as rated by their language-arts teachers on a 5-point scale ranging from very poor to very good) was analyzed. Writing ability and orthographic deviations were not correlated, whether the addressee was a peer ($r = 0.063$, NS) or a teacher ($r = 0.21$, NS). Deviations were found not only for poor writers, but also for good ones. This result means that standard written-language ability and the written language used in emails are not linked from the standpoint of orthography: one can be a very good writer of standard French (i.e., not make mistakes) and still produce numerous orthographic deviations in emails.

Types of Orthographic Deviations

The orthographic deviations made by the adolescents (were categorized using the coding scheme shown in Table 2 and then analyzed in a four-factor ANOVA: age (12, 13, 14, or 15), CMC skill (skilled or unskilled), addressee (pen pal or teacher), and type of deviation (noun, verb, grammatical homophone, negation, misspelled word, neographic form, morpholexical particularities, accent, paralinguistic indication, or typographical error). The results are presented in Tables 4 and 5. The age effect was nonsignificant. The effects of CMC skill

($F(1,72) = 7.36, p < .01$), addressee ($F(1,72) = 5.94, p < .02$), and deviation type ($F(9,648) = 37.91, p < .0001$) were significant. The two-way interactions involving the variable "type of orthographic deviation" are interpreted below.

The interaction between age and deviation type was significant ($F(27,648) = 1.66, p < 0.2$). The emails of the 13-, 14-, and 15-year-olds contained more neographic forms (about one every two clauses) than other types of deviations. This difference did not exist for the 12-year-olds (about one deviation every five clauses, as also noted for morphological mistakes on nouns) (see Table 4).

INSERT TABLE 4

The interaction between CMC skill and orthographic-deviation type was significant ($F(9,648) = 4.28, p < .001$). The skilled CMC adolescents used nearly twice as many new graphic forms (0.575 neographic forms per clause) in their emails than the unskilled ones did (0.285 per clause) (see Table 5). The addressee and the orthographic-deviation type interacted significantly ($F(9,648) = 4.37, p < .0001$). Messages addressed to the pen pal contained more new forms (0.482 per clause) than those addressed to the teacher (0.320 per clause) (see Table 5)

INSERT TABLE 5

Personal Pronouns

Familiar/unfamiliar comparison. The number of second-person pronouns per clause was analyzed in a four-factor ANOVA: age (12, 13, 14, or 15), CMC skill (skilled or unskilled), addressee (pen pal or teacher), and type of pronoun (*tu/vous*). The results are presented in Table 6. The effects of age and CMC skill were nonsignificant. The effects of addressee ($F(1,72) = 5.01, p < .0282$) and type of pronoun ($F(1,72) = 11.03, p < .0014$) were significant, and so was the addressee by type-of-pronoun interaction ($F(1,72) = 162.35, p < .0001$). The important finding here is that emails addressed to the pen pal contained more familiar forms (*tu*: 0.245 occurrences per clause) than those directed at the teacher (*tu*: 0.025 per clause) and emails sent to the teacher contained more unfamiliar forms (*vous*: 0.170 occurrences per clause) than ones sent to the pen pal (*vous*: 0.001 per clause) (see Table 6).

First/ second/third person comparison. For this analysis, the singular and plural forms of each person were grouped together, i.e., *je* and *nous* for the first

person, *tu* and *vous* for the second person, and *il*, *ils*, *elle*, and *elles* for the third person. The number of pronouns per clause was analyzed in a four-factor ANOVA: age (12, 13, 14, or 15), CMC skill (skilled or unskilled), addressee (pen pal or teacher) and type of pronoun (first, second, or third person). The results are presented in Table 6. Concerning the main effects, only the type-of-pronoun effect was significant ($F(2,144) = 148.66$, $p < .0001$): first-person (0.556 per clause) and second-person (0.219 per clause) pronouns were more frequent than third-person pronouns (0.031 per clause).

INSERT TABLE 6

DISCUSSION

First of all, when 11- to 16-year-old adolescents had to introduce themselves to an interlocutor by email, they produced messages containing between 8 and 15 clauses. The length of their messages did not increase with age, and peer-directed messages were longer than teacher-directed ones.

The results obtained provided answers to the questions raised. Regarding our main question -- Does email constitute a separate communication register containing linguistic signs that differ from those of the standard written language, as it is defined in dictionaries and grammar books? -- the answer is yes. The adolescents' emails contained many orthographic deviations (more than one per clause), and the skilled CMC participants deviated more than the unskilled ones. In addition, the number of orthographic deviations was not related to the participants' standard French writing ability: even very good writers deviated considerably. The most frequent deviations -- neographic forms -- were specific to email since these forms are not found in standard written French (Morris, 2001; Hoefflin & Frank, 2005). Importantly, neographic forms were produced by skilled CMC users twice as often as by unskilled ones. These findings, which differ from Panckhurst's (1998), show that an email-specific register (not observed among university students) exists for adolescents tested in a natural, nonacademic situation (middle school students introducing themselves to a pen pal and a teacher in a situation that had nothing to do with school work). Email thus appears to be a written-language register, in the sense that it has its own specific set of orthographic signs (neographic forms). Moreover, our study allowed us to stress the importance of relating the concepts "register", "genre", and "modality" to each other when analyzing linguistic productions (Paltridge, 1997; Ravid & Tolchinski, 2002; Strömquist, 2006; Strömquist, Nordqvist & Wengelin, 2004). We

demonstrated the existence of the email register using a particular genre: the production of discourse whose function is to introduce oneself to an unknown person. Email constitutes a particular modality of the written language: in email, as in a standard writing situation, the listener is absent, but unlike standard writing the listener can reply "almost as quickly" as in the oral modality; as in standard writing, the signal is long; and the user undoubtedly has more control over his/her production than in speech, but certainly less control than in a conventional writing situation.

In relation to prior research on speech and writing registers (Berman, 2005; Ravid & Tolchinski, 2002), our study stands out on the question of age: this variable had virtually no effect between age 11 and age 16 on any of the indexes. There was only one important exception: fewer neographic forms (orthographic forms typical of email) were used by 12-year-olds than by adolescents in the other three age groups (13, 14, and 15 years). This absence of an age effect on an index like the number of clauses per message could be a task-related ceiling effect: fifteen or so clauses may be enough to introduce oneself to another person. For the other indexes, it is highly likely that the age effect was masked by the CMC-skill effect, shown by Beach and Lundell (1998) to be great. Our data indicated that skilled CMC users employed more neographic forms than unskilled ones. The results for the CMC-skill variable support the idea that the email register, with its specific characteristics that deviate from standard writing, are learned gradually.

For our second question -- Does electronic mail, as a communication register, obey the general rules of pragmatics, particularly the rule of adapting to the addressee? -- the answer is also yes. The data pertaining to personal-pronoun use clearly showed that the adolescents employed the familiar form with the pen pal and the unfamiliar form with the teacher. The strict rules for using these forms in French, both in the spoken and written languages, thus seem to be applied by adolescents communicating via email. Another result we obtained can be interpreted in terms of a conflict between two rules: adapting to the communication channel and adapting to the addressee. The skilled adolescents produced more orthographic deviations with their pen pals than with the teachers (with whom they "avoided" making what would ordinarily be called mistakes). It seems that complying with norms about talking to people of a higher status "collides" with following the rules about email-specific usage. The larger amount of conversing done with the peers is another indication of addressee adaptation in the email register (and thus, adherence to the general pragmatic rules of interaction): one is usually more "reserved" with an interlocutor of a higher status. In the oral modality of language, adaptation to the interlocutor is one of the first

variations observed (Andersen, 1996; Andersen, Brizuela, DuPuy, & Gonnerman, 1999; Brizuela, Andersen, & Stallings, 1999; Nakamura, 1997). Here, tuning to one's addressee was found to be in effect in the email register by the age of 11, although in a more complex way. The greater use of first- and second-person pronouns as compared to third-person ones is consistent with earlier findings (Panckhurst, 1999; Collot & Belmore, 1996; Yates, 1996; Ko, 1996): the writers got more involved in their emails than they would have in a standard writing situation. Speaker accountability in emails seems to be close to that found in speech.

In this study on adolescents in a situation involving introducing oneself to an interlocutor, we showed that, from the standpoint of the linguistic signs used, email indeed constitutes a specific written-language register. Moreover, communication in this register was found to follow the pragmatic rules of interaction in terms of addressee adaptation (use of personal pronouns). The characteristics of the French language undoubtedly contributed here to bringing out how this new communication mode works.

Much remains to be discovered in the area of written language and computer-mediated communication. The novelty and rapidity at which communication modes like electronic mail, online chatting, and SMS are developing provide a unique opportunity to conduct longitudinal studies in view of investigating the processes through which linguistic conventions are established within various social groups.

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Table 1. Number of participants in each writing ability and CMC skill category. Percentages are shown in parentheses.

Standard French writing					
	Very good	Good	Average	Poor	Very poor
12-year-olds N=24	3 (12.5%)	11(45.83%)	9 (37.5%)	0 (0%)	1 (4.17%)
13-year-olds N=20	3 (15%)	6 (30%)	9 (45%)	2 (10%)	0 (0%)
14-year-olds N=20	3 (15%)	10 (50%)	4 (20%)	3 (20%)	0 (0%)
15-year-olds N=16	5(31.25%)	4 (25%)	6 (37.5%)	1 (6.25%)	0 (0%)

CMC skill		
	Skilled	Unskilled
12-year-olds N=24	6 (25%)	18 (75%)
13-year-olds N=20	5 (25%)	15 (75%)
14-year-olds N=20	12 (60%)	8 (40%)
15-year-olds N=16	9 (56.2%)	7 (43.8%)

Standard French writing and CMC skill					
	Skilled in CMC				
	Very good	Good	Average	Poor	Very poor
12-year-olds N=24	1(4.17%)	3(12.5%)	2(8.33%)	0	0
13-year-olds N=20	1(5%)	1(5%)	3(15%)	0	0
14-year-olds N=20	1(5%)	7(35%)	3(15%)	1(10%)	0
15-year-olds N=16	3(18.75%)	2(12.5%)	3(18.75%)	1(6.25%)	0
	Unskilled in CMC				
	Very good	Good	Average	Poor	Very poor
12-year-olds N=24	2(8.33%)	8(33.33%)	7(29.16%)	0	1(4.17%)
13-year-olds N=20	2(10%)	5(25%)	6(30%)	2(10%)	0
14-year-olds N=20	2(10%)	3(15%)	1(5%)	2(10%)	0
15-year-olds N=16	2(12.5%)	2(12.5%)	3(18.75%)	0	0

Table 2. Types of Orthographic Deviations

TYPE OF DEVIATION	EXAMPLES*
<i>Morphological Deviations</i>	
Noun (agreement in gender and number)	<i>les personne</i> for <i>les personnes</i> (the people), <i>quel langue</i> for <i>quelle langue</i> (what language)
Verb (verb ending agreement, confusion between infinitive and past participle)	<i>tu passe</i> for <i>tu passes</i> (you pass), <i>tu connaît</i> for <i>tu connais</i> (you know)
Grammatical homophone (words with the same pronunciation but a different grammatical function and spelling)	<i>ils ce battaient</i> for <i>ils se battaient</i> (they were fighting)
Negation (missing part)	<i>j'aime pas</i> for <i>je n'aime pas</i> (I don't like)
<i>Lexical Deviations</i>	
Misspelled word	<i>asser</i> for <i>assez</i> (enough), <i>conection</i> for <i>connection</i> (connexion)
Accent (missing or incorrect)	<i>pere</i> for <i>père</i> (father), <i>collège</i> for <i>collège</i> (middle school)
<i>Graphic Form Transformations</i>	
Neographic form (misspelled word based on homophony but not corresponding to another word in the French language)	<i>je voulé</i> for <i>je voulais</i> (I wanted), <i>kelkun</i> for <i>quelqu'un</i> (someone), <i>mé</i> for <i>mes</i> (my), <i>toa</i> for <i>toi</i> (you)
Morpholexical particularity (truncations: missing parts of words, e.g. <i>ordi</i> for <i>ordinateur</i> , <i>prof</i> for <i>professeur</i>) and words borrowed from English, e.g. "kiss" for <i>bises</i>)	<i>techno</i> for <i>technologie</i> (technology), <i>bye</i> for <i>salut</i> (bye)
Paralinguistic indication (capitalization, acronyms, and smileys)	<i>j'adore TRAGEDIE</i> (capitalization), <i>MMORPG</i> (acronym), :-) :- (^ _ ^ (smileys)
<i>Technical Errors</i>	
Typographical error	<i>correpondante</i> for <i>correspondante</i> (pen pal)

* In the examples, the incorrect form written by the student is shown followed by the correct form (the English equivalent is in parentheses), Note that all of the morphological or lexical deviations and neographic forms are graphically incorrect but phonetically correct.

Table 3. Mean number of orthographic deviations per clause, by addressee and CMC skill. Standard deviations are shown in parentheses.

	Pen pal	Teacher	Mean
Skilled in CMC	1.428 (0.842)	1.064 (0.814)	1.246 (0.762)
Unskilled in CMC	0.869 (0.714)	0.863 (0.767)	0.866 (0.572)
Mean	1.093 (0.721)	0.944 (0.776)	1.018 (0.676)

Table 4. Mean number of orthographic deviations per clause, by deviation type and age. Standard deviations are shown in parentheses.

BY AGE										
	Morphological deviations				Lexical deviations		Graphic-form transformations			Technical errors
	Noun	Vb	GH	Neg	Spell	Accent	Neo	MLP	Paral	Typo
12 years	0.211 (0.210)	0.134 (0.136)	0.068 (0.087)	0.07 (0.021)	0.079 (0.082)	0.100 (0.109)	0.219 (0.334)	0.016 (0.036)	0.004 (0.015)	0.113 (0.153)
13 years	0.209 (0.154)	0.090 (0.082)	0.114 (0.085)	0.004 (0.014)	0.063 (0.056)	0.109 (0.100)	0.543 (0.803)	0.015 (0.026)	0.004 (0.014)	0.104 (0.119)
14 years	0.148 (0.104)	0.072 (0.080)	0.037 (0.049)	0.017 (0.039)	0.064 (0.055)	0.119 (0.114)	0.471 (0.501)	0.030 (0.036)	0.001 (0.006)	0.061 (0.078)
15 years	0.131 (0.095)	0.060 (0.046)	0.079 (0.081)	0.006 (0.010)	0.042 (0.035)	0.101 (0.103)	0.409 (0.425)	0.034 (0.059)	0.004 (0.010)	0.049 (0.071)

Morphological deviations

Noun: noun agreement errors

Vb: Verb agreement errors

GH: grammatical homophones

Neg: missing negatives

Lexical deviations

Spell: misspelled words

Accent: accent errors

Graphic-form transformations

Neo: neographic forms

MLP: morpholexical particularities

Paral: paralinguistic indications

Technical errors

Typo: typographical errors

Table 5. Mean number of orthographic deviations per clause, by deviation type, CMC skill, and addressee. Standard deviations are shown in parentheses.

BY CMC-SKILL LEVEL										
	Morphological deviations				Lexical deviations		Graphic-form transformations			Technical errors
	Noun	Vb	GH	Neg	Spell	Accent	Neo	MLP	Paral	Typo
Skilled in CMC	0.195 (0.174)	0.096 (0.106)	0.070 (0.077)	0.007 (0.014)	0.076 (0.070)	0.128 (0.122)	0.575 (0.683)	0.020 (0.038)	0.002 (0.007)	0.076 (0.119)
Unskilled in CMC	0.168 (0.142)	0.090 (0.095)	0.076 (0.084)	0.010 (0.029)	0.056 (0.055)	0.094 (0.092)	0.285 (0.400)	0.025 (0.041)	0.004 (0.014)	0.091 (0.114)

BY ADDRESSEE										
	Morphological deviations				Lexical deviations		Graphic-form transformations			Technical errors
	Noun	Vb	GH	Neg	Spell	Accent	Neo	MLP	Paral	Typo
Pen pal	0.184 (0.188)	0.091 (0.125)	0.090 (0.112)	0.112 (0.036)	0.049 (0.076)	0.107 (0.149)	0.482 (0.604)	0.026 (0.56)	0.005 (0.023)	0.084 (0.178)
Teacher	0.173 (0.178)	0.095 (0.108)	0.057 (0.087)	0.005 (0.017)	0.079 (0.088)	0.107 (0.126)	0.320 (0.594)	0.020 (0.049)	0.001 (0.007)	0.086 (0.134)

Morphological deviations

Noun: noun agreement errors

Vb: Verb agreement errors

GH: grammatical homophones

Neg: missing negatives

Lexical deviations

Spell: misspelled words

Accent: accent errors

Graphic-form transformations

Neo: neographic forms

MLP: morpholexical particularities

Paral: paralinguistic indications

Technical errors

Typo: typographical errors

Table 6. Mean number of occurrences per clause of each type of pronoun. Standard deviations are shown in parentheses.

Familiar/ Unfamiliar Comparison			
	Familiar form <i>(tu)</i>	Unfamiliar form <i>(vous)</i>	Mean
Pen pal	0.245 (0.153)	0.001 (0.007)	0.123 (0.076)
Teacher	0.025 (0.091)	0.170 (0.140)	0.097 (0.070)
Mean	0.135 (0.095)	0.086 (0.070)	0.110 (0.059)

First/ Second/ Third Person Comparison			
	First person <i>(je, nous)</i>	Second person <i>(tu, vous)</i>	Third person <i>(il, ils, elle, elles)</i>
	0.556 (0.283)	0.219 (0.115)	0.031 (0.068)