

Good Spellers Write more Textism than Bad Spellers in Instant Messaging: The Case of French

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ABSTRACT

The increased use of digital writing has led to the emergence of a new form of communication between discourse and writing. We elaborated a research protocol to target the processes linked to the use of instant messaging to look for differences in the use of spelling modifications as a function of French students' spelling levels. The task required students to use Digital Writing in Instant Messaging (DWIM) in a semi-natural situation. Analyses showed that modifications that may be confused with misspellings in traditional writing (i.e. substitutions like "sa" instead of "ça") occurred more often than those that may not (e.g. reductions/ alterations like "chepa" instead of "je ne sais pas"), regardless of spelling level. These results show no impact of the use of DWIM on the quality of spelling (for good spellers only).

Keywords: *Instant messaging (textism), Teenagers, Spelling, Writing, Writing.*

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1. Introduction

It seems hard to know what kind of impact the use of digital writing has on the quality of spelling production. Taking the spelling level into account could be a starting point to answer this question.

First, we introduced (a) a description of Instant Messaging, traditional and digital writing to provide (b) a definition of DWIM use and its impact on spelling through a description of discourse and writing. We also made (c) a literature review on what has been found about using texting and instant messaging and (d) about its impact on spelling production.

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Secondly, we chose to see whether or not spelling level would have something to do with the amount of modifications produced by French adolescents enrolled in 8th grade and which kind of modification they would use the most.

1.1 Towards an analysis of Instant Messaging (IM)

Throughout the world, the use of Information and Communication Technologies (ICT) has expanded extensively in the past few years (Zhang, Aikman and Sun 2008). Such technologies include everything related to hardware and software (Hudson, 2006; Mairesse, Cette and Kocoglu 2000). A French survey showed that among all digital activities on the Internet, 85% of the 14-25 year olds answered using the Internet to search for information, 76% said they had a profile on a social network, and 67% indicated that they wrote instant messages (Ipsos 2011). Furthermore, Fairon, Klein and Paumier (2006a) specified that Instant Messaging (IM) was one of the most popular tools on the Internet for communication.

IM as a digital tool is often compared with Short Message System (SMS), which is a mobile phone option created in 1992 that allows one to text (Simoës-Perlant et al., 2012). IM and texting display similarities of form, use of abbreviations and content. They are similarly viewed as time-saving means of communication (Panckhurst, 2009).

While research about texting is becoming more prevalent (e.g., Coe and Oakhill, 2011; Drouin and Davis 2009; Drouin 2011; Fairon Klein and Paumier 2006a; Kemp and Bushnell, 2011; Plester and Wood, 2009a; Plester, Lerkanen, Linjama, Rasku-Puttonen and Littleton 2011; Simoës-Perlant et al., 2012), studies that relate specifically to writing in IM are limited in number. The limited number of signs per text message and some financial reasons were often used to explain the emergence of new written forms such as abbreviations (Pétillon, 2006). But IM never had a cost and such written forms also appeared on computer screens. So it seems that the development of these spelling variants may be due to the fact (a) that users wanted to save time while typing; and (b) that it reflects current social practices and conventions.

Furthermore, some differences have become obsolete such as the fact that people still use their ten fingers in IM but usually text with their thumbs (Ling and Baron, 2007). But communication in IM still occurs in real time more broadly than in texting, even if both tools are now available on smartphones. On an IM account, it is possible to make use of a chat window where the whole conversation between two parties or more is transcribed. The user can write his/her digital messages on a word processing bar and then choose an emoticon to elaborate on what has been said. Users can add

photography to their name or pseudonym to complete their profile, and can keep track of the status of their contacts (e.g. on-line, off-line, or busy).

1.2 From traditional writing to digital writing

IM allows people to correspond in a less formal way than is possible through letters to meet the demands of instantaneous communication (Anis, De Fornel and Fraenkel, 2004; Fairon Klein and Paumier, 2006a; Marcoccia, 2004a, 2004b; Panckhurst, 1997, 2003). New forms of writing have consequently appeared, variously referred to as (a) “oralisations” (Bouillaud, Chanquoy and Gombert, 2007), (b) “textisms” (Plester, Wood and Joshi, 2009b), “SMisms” (Macedo-Rouet, 2010) or (c) “grammatical violations” (Wood, Kemp, Waldron and Hart, 2014). None of these terms fully applies to IM since they refer either to (a) only one part of spelling variants or (b) to texting, or (c) to something that is not “legal”. If French is mostly based on phoneme-to-grapheme correspondence (it is 80% phonogrammic, Rafoni, 2007), 20% of the language is not phonogrammic (i.e. a phoneme is the smallest sound unit, and a grapheme its written transcription).

It seems important to better understand the structure of each traditional system (both spoken and written) to know the structure of digital writing and find the appropriate term to define the deviations from standard spelling that are used in IM. Spoken and written traditional systems have to be used within a clearly defined set of syntactic and lexical rules (Demougin, 2003). Written conventions tend to complicate the structure of sentences if compared to oral sentences, both in lexical and syntactic ways. We have to be more specific when we write something, and thus to provide more information about the location, non-verbal clues, etc. Sometimes, the written language helps to translate reality through the transcription of speech (e.g., *I said to myself that...*), and then the use of deictic expressions becomes possible, which may not allow the protagonist to be identified with certainty (Crystal, 2001). In contrast, speech allows interlocutors to share and exchange information directly in a mutually understood context. The lexicon of casual speech is often poor and sentences are often bound to the here and now. However, deictic expressions do not have to be previously defined.

The distinction between oral and written forms of communication has become vaguer due to digital writing bringing together some of the characteristics of oral and written forms (Fairon Klein and Paumier, 2006a; Lanchantin, Simoës-Perlant and Largy, 2012). Shortening utterances does not guarantee that the message will be understood as if they had been spoken; hence emoticons may be used to improve communication

(Grinter and Eldridge, 2001). Regarding IM's structure, Tagliamonte and Denis (2008) mentioned that digital writing reflects the components of contemporary – or traditional – English writing, and Baron (2010) that the use of lexical items in IM is reduced to a minimum. Digital writing thus reflects the emergence of a “hybrid” form of communication (Anis, 1998; Jalabert, 2006; Mourlhon-Dallies, Rakotonoelina and Reboul-Touré, 2004; Pétilion, 2006; Tagliamonte and Denis, 2008). To focus on modifications, many typologies have been done (e.g., Anis, 2003; Fairon, Klein, & Paumier, 2006a; Kobus, François and Damnati, 2008; Liénard, 2008; Panckhurst, 2009; Simoës-Perlant et al., 2012; Véronis and Guimier de Neef, 2006). Every typology focused on texting, except Panckhurst's (2009). She worked on the production of “eSMS” (for “texting online”, which includes every kind of written forms that looks like texting, Panckhurst, 2010) to show “eSMS” structure. This tool is organized along four categories (“substitutions” or the exchange of graphemes (e.g. “*bo (beau)*”); “reductions/alterations” where one part of the word is not used (e.g. “*vou (vous)*”); “deletions, absences or rarefaction” or the deletion of graphic signs (e.g. “*ca (ça)*”); “increases and additions”, that includes the addition of graphic signs (e.g. “*suuuuuppeeerrr !!!!!*”).

1.3 Impact of the use of DWIM on spelling

To a greater extent, research has examined links between traditional and digital writing. Wood, Jackson, Plester and Wilde (2009), and Plester Wood and Joshi (2009b) found positive links between digital writing and texting literacy. Plester Wood and Joshi (2009b) invited British children from 10 to 12 years old who never owned a mobile phone to text. They found that reading “textism” easily would allow better decoding. Furthermore, bad readers would spend more time per day using their mobile phones than good spellers. But good spellers would create more textism and read texts more quickly than bad readers (Coe and Oakhill, 2011).

If we consider the impact on spelling, Bouillaud, Chanquoy and Gombert (2007) gathered French 5th, 7th and 9th grade students together to write texts in traditional and digital writing. Their results showed that the more the child knew the digital world, the more he created “oralisations” in the dictation written on mobile phones. They also concluded that a high spelling level was correlated to a larger creativity in texting, but only for the 5th grade students. It was impossible to know if their participants used textism that may be confused with misspellings on purpose or if they really did/did not know how to spell words correctly in traditional writing. About this particular kind of

modifications referred to as “substitutions” in the present study, Jaffré (2006) showed that both children and adults had the greatest difficulty in correctly writing verbal homophones in French traditional and digital writing (e.g. -é/-és/-ée/-ées/-er /-ais/-ait/-aient). In these cases, it is impossible to accurately determine whether it is a modification or a misspelling. In another study, Plester, Wood and Bell (2008) proved that 5th grade students who used textism the most got the best scores in spelling. They indeed asked English-speaking participants between 10 and 12 years old to translate some sentences from traditional to digital writing and vice versa. They concluded that the amount of modifications may be related to spelling level (i.e. good spellers would produce more textism than bad spellers). Bernicot, Goumi, Bert-Erboul and Volckaert-Legrier (2014) showed the same thing for French students). Other authors asked teenagers and adults to text on a sheet of paper and on a mobile phone (De Jonge and Kemp, 2012). Results showed that textism was negatively correlated with scores for reading, spelling and morphological awareness. But Drouin (2011) demonstrated positive correlation between the frequency of use of textism and literacy skills in terms of reading fluency and spelling. The author also showed that there was a negative correlation between the use of digital writing on social networks and e-mails and reading skills. Other results showed no significant difference between children’s, teenagers’ and adults’ production of “grammatical violations” when texting and literacy skills (Wood, Kemp, Waldron and Hart, 2014). We can notice that there are a lot of differences when it comes to list the results. According to Drouin (2011), all these differences can be explained by such factors as procedures or population (e.g. children, teenagers or adults).

1.4 Between spelling level and production of modifications: a real relationship?

Every teenager born after the emergence of digital writing learned how to read and write while using both traditional and digital writing at the same time. People from the previous generation started learning how to read and write traditionally. Most of the studies that introduced a typology have been built on the written production of this previous generation. It then seems important to build a typology that relates to the production of teenagers but also that focuses on IM. IM is mostly synchronous (contrary to texting that is mostly asynchronous) since it allows the production of text. We also chose to focus on French and not on English since English spelling is reported to be more opaque than French spelling (Seymour, Aro and Erskine, 2003), but the latter includes a greater diversity of verbal homophones than English spelling.

Consequently, it may be sometimes hard to say if one user wrote a textism on purpose or if s/he really knows how to spell the word correctly in traditional writing, especially when it does not alter the phonic value (Bouillaud, Chanquoy and Gombert, 2007). Then, it seems important to discover the proportion of these modifications - referred to as substitutions - to better define the impact of the use of IM on spelling. In addition, we wanted to start from Plester, Wood and Bell's conclusions (2008) (i.e. spelling level may have an impact on the amount of textism).

As a consequence, it would be interesting (a) to make a typology to know the proportion of substitutions, and (b) to compare the production on IM of good and bad spellers, as Bernicot, Goumi Bert-Erboul and Volckaert-Legrier (2014) did for textism. In their study, their participants never used a mobile phone before. We would like to prove the same thing for teenagers who are used to produce DWIM for at least more than a year.

If a teenager who uses a lot of textism were able to keep a good level in spelling, it would be a first step to find no negative impact between the use of DWIM and the spelling level (for good spellers only).

2. Method

We compared the DWIM productions of teenagers who were used to produce DWIM on the basis of their spelling level. We were able to hypothesize that good spellers would produce more modifications than bad spellers. We chose not to compare traditional to digital writing, since we focused on the amount of modifications produced in DWIM as function of the spelling level, and not on the amount of misspellings produced in traditional writing as function of spelling level.

2.1 Participants

Forty French-speaking adolescents enrolled in 8th grade in the same French region, regular users of texting and instant messaging, participated to the study. We chose this grade since French students are supposed to have enough developed their spelling skills.

All the participants completed a questionnaire (available in Lanchantin, Simoës-Perlant and Largy, 2012) to assess traditional and digital habits in reading and writing. It helped to constitute homogeneous groups and showed that good and bad spellers

had a good level of knowledge as regards the ICTs of which IM is a part (no significant difference was noticed).

To constitute groups in accordance with their spelling abilities, we assessed students' spelling by means of the French Spelling Level Test (SLT) of Doutriaux and Lepez (1994). The SLT assesses standard spelling (e.g. how to spell *charrette*) and the application of grammatical rules (e.g. the agreement of the past participle). The two groups differed significantly with respect to SLT scores, $t(38) = -9.458$, $p < .001$, but not with respect to age (cf. Table 1).

Group	Bad spellers	Good spellers
Gender	10 girls/10 boys	9 girls/11 boys
Average age	13.5	13.55
Standard deviation (age)	0.6	0.6
Average score (SLT) (distinction threshold: 37)	31	40.1
Standard deviation (SLT score)	3.6	2.36

Table 1 Participants' characteristics

2.2 Ethical clearance

We ensured to respect the French "Code of conduct applied to researchers in behavioral sciences" (Caverni, 1998).

We first contacted the head teachers of two different schools, who asked for the students and their parents' approval to participate to the study. Adolescents who participated in the study gave their free and informed consent. We mentioned that they could leave the scientific process at any time. Our material was built in such a way as to leave no misunderstanding on any matter at all. We ensured that no one would feel upset or hurt and that the objective of the study was clearly defined to participants.

We communicated our results to both head teachers of the schools, who were able to provide the information to the participants. Their anonymity has been respected and protected.

2.3 Material and procedure

Participants were asked to go to their school's computer room since we did not want to collect writing samples from the students themselves for confidentiality reasons (we

do know that the participants do not want to share personal information from home). Participants were classmates, so they had to choose the peer they wanted to communicate with. To ensure that there was no oral communication between the two participants, they were asked to sit as far as possible from each other. Researchers supplied each participant with an e-mail address, specially created for the occasion. Participants had to open a window part for instant messages. They could see their e-mail address on the upper left window and instant messages received in the middle; they could write their instant messages in the taskbar at the bottom window and select the emoticon they wanted.

To approximate a natural situation, the researchers asked the participants to produce instant messages as if they were at home, on their own computer. Two conversation topics were prepared in case a participant needed ideas, but their use was absolutely not mandatory (i.e. their conception of friendship and career prospects).

The researchers organized two sessions of one hour each; (a) participants filled in the questionnaire and SLT during the first session and (b) were invited to do a semi-structured written production task on an IM website during the second session that lasted for one hour. One hour of IM production was scheduled in order to highlight automatisms linked to written production in IM.

3. Results

A typology was used to characterize the features of instant messages and then to classify spelling modifications. It was submitted to an interrater reliability calculation – or Cohen's Kappa – (with two of the authors), which showed acceptable tolerance (0.897).

We chose to organize the typology on the basis of the study of Panckhurst (2009) and the alteration/non alteration of the phonic value of words (this criterion results from the work of Catach (1980) who chose such indicator to classify the different kind of misspellings).

The typology is divided into three parts:

- All kinds of additions that include either an alteration or a non-alteration of the phonic value (cf. Table 2).

Table 2 Additions

Additions	Examples (form the corpus)
Addition of letters	<i>D'accccccccccccccc</i>
Addition of punctuation marks	<i>!!!!</i>
Copied/pasted tool	http://www.ffnatation.fr

2. All kinds of substitutions that include a non-alteration of the phonic value (cf. Table 3).

Table 3 Substitutions

Substitution	Examples (corpus)
Extra-substitutions (on several words) :	
<ul style="list-style-type: none"> ▪ Deletion of diacritical marks replaced by spaces ▪ Graphic overwritings 	<ul style="list-style-type: none"> ▪ <i>là bas (là-bas)</i> ▪ <i>quil (qu'il)</i>
Whole substitutions (on one word) :	
<ul style="list-style-type: none"> ▪ A word replaced by a letter/an arithmetical sign ▪ A shorter homophone 	<ul style="list-style-type: none"> ▪ <i>c (c'est),</i> <i>1 (un)</i> ▪ <i>ses (c'est), a (à)</i>
Incomplete substitutions (missing letters in a word):	
<ul style="list-style-type: none"> ▪ One letter takes the place of another ▪ A long grapheme replaced by a shorter or a most frequent grapheme. It could be either: <ul style="list-style-type: none"> - A digraph replaced by a letter or a sign (e.g. arithmetical); - A trigraph replaced by a letter or digraph. 	<ul style="list-style-type: none"> ▪ <i>cinon (sinon),</i> <i>tu (Tu)</i> - <i>é → et</i> - <i>bo → beau</i>
Deletion of a letter with no phonic value	<i>salu (salut),</i> <i>pane (panne)</i>
Variants of French words:	
<ul style="list-style-type: none"> ▪ Of existing words ▪ Anglicism 	<ul style="list-style-type: none"> ▪ <i>mwa (moi)</i> ▪ <i>bugger</i>

- All kinds of reductions/alterations that include an alteration of the phonic value (cf. Table 4).

Table 4 Reductions/alterations

Reductions	Examples (corpus)
Extra-reductions (on several words) :	
<ul style="list-style-type: none"> ▪ Initials: letters read one after the other, Acronym: group of letters read as a word would be; 	<ul style="list-style-type: none"> ▪ <i>mdr (mort de rire),</i> <i>lol (laughing out loud)</i>
<ul style="list-style-type: none"> ▪ Graphic overwritings on one or several words; 	<ul style="list-style-type: none"> ▪ <i>chepa (je ne sais pas)</i>
<ul style="list-style-type: none"> ▪ Emoticons and other graphic signs. 	<ul style="list-style-type: none"> ▪ ☺
Whole reductions (for one word):	
<ul style="list-style-type: none"> ▪ Truncations, slang 	<ul style="list-style-type: none"> ▪ <i>ciné (cinéma)</i>
<ul style="list-style-type: none"> ▪ Consonantal skeletons (Anis, 2003) 	<ul style="list-style-type: none"> ▪ <i>slt (salut)</i>
Incomplete reductions or alterations:	
<ul style="list-style-type: none"> ▪ Deletion of a letter/diacritical mark 	<ul style="list-style-type: none"> ▪ <i>ui (oui)</i>
<ul style="list-style-type: none"> ▪ Replacement of a letter by another 	<ul style="list-style-type: none"> ▪ <i>connécance (connaissance)</i>
Variants of French forms:	
<ul style="list-style-type: none"> ▪ Words of another language 	<ul style="list-style-type: none"> ▪ <i>bye</i>
<ul style="list-style-type: none"> ▪ Modifications of French words 	<ul style="list-style-type: none"> ▪ <i>po (pas)</i>

These data were submitted to 2 groups (bad spellers vs. good spellers) x 3 types of modifications (additions vs. substitutions vs. reductions/alterations), with mixed design ANOVAs. The percentage of modifications with regard to the total number of words per participant was taken into account.

Mauchly's tests were used to test the sphericity theory. If the sphericity theory were rejected, we would have used Greenhouse-Geisser's correction. Each result was reported with a partial Eta squared η^2p as effect size. If $\eta^2p < .06$, the effect is small; if $.06 < \eta^2p < .14$, the effect is medium; if $\eta^2p > .14$, the effect is high (Cohen 1988).

First, we wanted to know which group would use modifications the most. As a consequence, we compared the quantity of modifications produced by participants from both groups (i.e. good and bad spellers). The group effect was found to be significant,

$F(1,38) = 4.83, p < .04, \eta^2_p = .11$. Consequently, if we consider the total amount of modifications, good spellers produced more modifications (59.57%; $SD = 21.24$) than bad spellers (43.93%; $SD = 23.68$). It means that the higher the spelling level the more modifications are produced. Second, we wanted to know if spelling level would cause a differentiated use of additions and reductions/alterations. As a consequence, we compared the three kinds of modifications (i.e. additions, substitutions and reductions/alterations) to know which was the most used. The kind of modifications effect was also found to be significant, $F(2,76) = 75.18, p < .001, \eta^2_p = .66$. If we consider the total amount of words in the corpus, the larger proportion was correctly spelled (48.24%; $SD = 23.57$). If we focus on textism, substitutions (31.27%; $SD = 2.87$) represented the kind of modification that was the most used over reductions/alterations (18.93%; $SD = 1.3$) and additions (1.56%; $SD = 0.45$). This effect was significant for both groups and between (a) additions (1.56%; $SD = 0.45$) and substitutions (31.27%; $SD = 2.87$), $t(39) = -9.858, p < .001$, which shows that substitutions were more used than additions; between (b) additions (1.56%; $SD = 0.45$) and reductions/alterations (18.93%; $SD = 1.3$), $t(39) = -13.984, p < .001$, where reductions/alterations were more used than additions; and between (c) substitutions (31.27%; $SD = 2.87$) and reductions/alterations (18.93%; $SD = 1.3$), $t(39) = 4.5, p < .001$, where substitutions were more used than reductions/alterations. Some words were used with the good spelling (48.24%; $SD = 23.57$).

When the kinds of modification were considered separately (i.e., additions of good spellers and additions of bad spellers, substitutions of good spellers and substitutions of bad spellers, reductions/alterations of good spellers and reductions/alterations of bad spellers) to determine the interaction effect, results indicated a non-significant difference between both groups.

4. Discussion

This study aimed (a) at making a typology based on the instant messages production of French-speaking adolescents to know the proportion of textism that alter the phonic value of words and (b) at comparing the production on IM of good and bad spellers. Then, if good spellers are able to keep a good spelling level while they use DWIM, it would help to conclude that the use of DWIM is not as negative as it is thought.

It was found that the proportion of the different kinds of textism as compared to the whole corpus differed across all groups. The proportion of substitutions (31.27%) is significantly higher than the proportion of reductions/alterations (18.93%) and additions (1.56%). This may help to show that teenagers modify the spelling of some words, but mainly respect their phonic value (48.24% among all words were not modified). Fairon, Klein and Paumier (2006b) qualified these modified words as “place of resistance”.

Our results confirmed our hypothesis, which stipulated the spelling level has an impact on the production of modifications: the higher the spelling level the more modifications were used. These results show no impact of the use of DWIM on the quality of spelling (for good spellers only). As Plester, Wood and Bell (2008) and Bernicot, Goumi, Bert-Erboul and Volckaert-Legrier (2014), we showed that the amount of textism was significantly higher for good spellers than bad spellers. The first group used 59.57% of textism with regard to the total number of words (i.e. 40.43% of words were used with the good spelling) whereas the second group used 43.94% of textism (i.e., 56.06% of words were used with the good spelling). In both cases, participants used more words with the good spelling than words with the modified spelling. As mentioned before, this study would be a first step to say that the use of textism by good spellers would have no negative impact on the quality of spelling. It is impossible to conclude the same thing for bad spellers. It is thus extremely important to focus on the impact of DWIM use on the spelling performance of bad spellers. Pétilion (2006) was already worried about the performance gap that could increase between French students who know how to modify the language and who feel very good about it, and those who still do not own strong literacy skills that would allow playing with the language.

But sometimes, it is impossible to confirm that a textism is not a misspelling. When a word included several kind of textism (e.g. *mintenen* instead of *maintenant* which means *now* in English), we counted and classified two modifications (i.e. S3.2 for the modification of *ain* in *in* and S4 for the deletion of the final *t*) but the digraph *an* written *en* was not taken into account, since it was considered as a misspelling. We had the same problem than Bouillaud, Chanquoy and Gombert (2007) because we were unable to determine if some forms corresponded to a misspelling or to a real modification (e.g. *ain* instead of *in* in the word *maintenant*).

Besides, we have to take into account the structure of French orthography to understand how modifications are structured. The values of a letter can be very different (e.g. the letter *s* has seven values) or not (e.g. the letter *j* has only one value)

(Cellier, 2003). Then, (a) the basic value is the most frequent (e.g. the letter *s* generally corresponds to the phoneme [s], as in the word *salut – hi* in English – that is not suppressible or replaceable in digital writing). But it may also get (b) a position value when it is in intervocalic position (e.g. the letter *s* is read [z] in the word *précise – precise* in English – that could be replaced by a *z* in digital writing). When the letter gets (c) an auxiliary value, it is because its suppression would alter the phonic value of the word (e.g. the letter *e* in the word *petite – little* in English – could be unused in DWIM, as in *une petit fille – a little girl* in English). Silent letters with no phonic value (Riegel, Pellat and Rioul, 1994) get (d) a zero value and are often unused in digital productions (Anis, 2003). However, these letters usually supply grammatical or spelling information (as the final *t* in the word *petit* allows the inflexion *petite*), or etymological information (as the letter *g* in the word *doigt* that helps to spell the word *digital*). Double consonants are regularly unused in digital writing because they are often useless (e.g. the word *aprendre*, usually spelled *apprendre* in French – *learn* in English). The last category includes (e) digraphs and (f) trigrams, already defined supra. Other graphic signs may have a value. Emphasis defines every expression that translates an accentuation or an insistence (Riegel, Pellat and Rioul, 1994), and generally corresponds to emoticons in IM (Dresner and Herring, 2010; Varnhagen et al., 2010). But these graphic signs are different, since they get a semantic value that means either an action (e.g. to eat) or a feeling (e.g. to be sad) (Dresner and Herring, 2010).

If we knew that substitutions were problematic, we now know their proportion. In future studies, it will help to better define the use of DWIM and its impact on the quality of spelling. It would also be interesting to consider these different kinds of textism from a qualitative perspective (i.e. based on values of letters). It would require to understand what helps the production of textism, whether it is effective or not and to discover if the efficiency of textism has a link with participants' spelling level. The fact that one user of digital writing may modify the same word differently has to be taken into account (Yvon, 2010) (e.g. the word *nombreux* in traditional writing – *large* in English – becomes *nbrx* or *nbr* or *nombreux* in digital writing).

4.1 Conflict of Interest Statement

We were not bound to any company by an employment contract and did not receive any financial support for conducting this study. We had to ask for the Inspection

Académique, the head teachers and the teachers' permissions to meet with students. The method and approach has been peer reviewed to manage conflict of interest and to guarantee that the ethical principles have been respected.

Students were free to participate and were then invited to participate to the study during two hours of French classes. They did not receive any financial contribution for their participation. However, they were highly motivated, since they had to write on an instant messaging website.

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