Bits of emotion
The process and outcomes of sharing emotions online
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Chapter 3

Expressing emotions in blogs:
The role of textual paralinguistic cues
in online venting and social sharing posts

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1 An earlier version of this chapter won the best student paper award at the first regional conference of the Association for Education in Journalism and Mass Communication (AEJMC), held in Catholic University, in Santiago, Chile (2015).
Chapter 3

Abstract

Textual paralanguage cues (TPC) have been signalled as effective emotion transmitters online. Though several studies have investigated their properties and occurrence, there remains a gap concerning their communicative impact within specific psychological processes, such as the social sharing of emotion (SSE, Rimé, 2009). This study content-analysed Live Journal blogposts for the occurrence of TPC in three phases of online SSE: initiation, feedback and repost. We compared these to TPC to a second type of emotional expression, emotional venting. Based on social information processing theory (SIP, Walther, 1996), and on the emotion mimicry in context (EMC, Hess & Fischer, 2013) framework, we study predictive relationships in TPC usage in our phased model of online SSE. Results showed that TPC prevailed in SSE blogposts and strongly dominated in emotional venting posts. TPC was more common in affective feedback than cognitive. Moreover, the presence of tactile affective cues (i.e., hugs, kisses) in the initiation post predicted their presence in affective feedback. Results lend support to the idea that TPC are used in sociocontextual ways in online SSE and particularly extrapolate certain FtF nonverbal behaviors, such as the provision of socio-affective touch.
The once widespread assumption that computer mediated communication (CMC) was necessarily less emotional than face-to-face (F2F) communication has been proven wrong for about a decade (Derks, Fischer & Bos, 2008). Textual paralanguage cues (TPC) such as emoji’s or emoticons (:-D), character repetitions (yeeei) and nonstandard or multiple punctuations (!!!, #%#!!) have been found to be effective communicators of emotion in CMC (Harris & Paradice, 2007). TPC provide emotional context, strengthen the intensity of verbal messages and can be used for disambiguation (Derks, Bos & Grumbkow, 2007; Riordan & Kreuz, 2010). Research has studied how receivers interpret TPC (Carr, Wohn & Hayes, 2016; Harris & Paradice, 2007; Lo, 2008; Riordan & Trichtinger, 2017), individuals’ motives to use TPC (Vandergriff, 2013; Walther & Parks, 2002), and the occurrence of TPC in different platforms (Kaye, Wall & Malone, 2016; Luangrath et al, 2017). However, there is a lack of empirical knowledge about how TPCs are used in the social sharing of emotions (SSE, Rimé, 2009; Rimé, Mesquita, Boca & Philippot, 1991).

Studying online SSE is important, since the process of SSE may bring benefits to both the initiator and the listener. The first, due to a temporary relief of negative emotions or a re-surge of positive emotions, and the second, due to a fostering of emotional connection and closeness between both (Rimé, 2009). TPC may make a special contribution to online SSE, because of their ability to make CMC more warm, eloquent and “human,” may ultimately affect message effectivity and interactivity in online settings.

To close this research gap, we investigate the role of TPC based on the SSE framework, because it adequately accounts for possible beneficial and reciprocal effects between the sender and receiver. SSE has been found to occur naturally in online social networks (Hidalgo, Tan & Verlegh, 2015). To analyse TPC usage, we draw on Hidalgo et al.’s (2015) conceptualization of initiation, feedback, and repost (the initiator’s reaction to feedback), and propose hypotheses for each phase. In order to understand how TPCs are used in the different phases, we draw on social information processing (SIP, Walther, 1996), a framework which may explain why and how TPCs would be used to emulate non-verbal behaviours from F2F communication online.

To empirically test differences in TPC usage, we analyse emotional venting blogposts and compare TPC occurrence in these posts to online SSE. To add robustness, we also consider TPC usage in non-SSE blogposts. Introducing and operationalizing online venting (or expressing emotion ‘outbursts’) may be useful in identifying venting expressions in general in SNSs and identify whether TPC may have a stronger presence in these posts.
Because SSE involves a chain of interactions between individuals, we investigate the assumption that TPC may be mimicked. Mimicry is highly dependent on the social context of the interaction, and it likely results in an increased feeling of empathy (Hess & Fischer, 2013). Although some researchers have questioned the idea that mimicry (at least in the case of emoticons) can exist, due to the asynchronous character of CMC, which some researchers argue is less spontaneous than FtF (Derks, Fischer & Bos, 2008), we suggest that correspondence between TPC may be expected in highly contextual scenarios like the provision of socio-affective feedback.

To test our assumptions, we content-analyse a sample of blogposts in Live Journal, a platform which has been proven suitable to run empirical studies on emotions and online social networks (i.e., Gaudeul & Giannetti, 2013; Zafarani, Cole & Liu, 2010). Another reason to choose Live Journal is its character of a blogging tool with SNS features, where users create a profile and establish a list of friend connections which can be browsed, a key characteristic of a SNSs (boyd & Ellison, 2007). In addition, Live Journal grants a greater degree of anonymity compared to other more popular SNSs (i.e. Facebook), in which natural occurrences of online SSE already were found (Hidalgo et al, 2015).

In investigating these objectives, our study contributes by a) studying the use of TPCs in three phases of online SSE, b) comparing TPC usage in different forms of emotional expressions and blogposts, c) analysing the correspondence of particular cues between sender and the receiver, and d) provide evidence as to which particular nonverbal behaviours from FtF communication may be extrapolated to CMC. Our research thus advances our understanding about the role of TPC in online emotional exchanges.

**Theoretical framework**

**Textual Paralanguage Cues in CMC**

Luangrath, Peck and Barger (2017) define TPC as “written manifestations of nonverbal audible, tactile, and visual elements that supplement or replace written language and that can be expressed through words, symbols, images, punctuations, demarcations, or any combination of these elements” (p. 1). Several studies have noted that TPC are effective emotion communicators (e.g., Derks et al, 2008; Harris & Paradice, 2007; Laflen & Fiorenza, 2012). TPC have been found to have two main functions. The first is message disambiguation or helping the receiver to interpret the meaning of the message (i.e., Riordan & Kreuz, 2010;
Walther & Parks, 2002). The second function is increasing message intensity, by making it seem emotionally stronger (Derks, Fischer & Bos, 2008). Moreover, a number of studies have focussed on the functions of one particular type of TPC, and found that exclamation marks and onomatopoeic words (e.g., ‘HAHAHA’ for laughter) emphasize the message (Laflen & Fiorenza, 2012) and make the message more expressive (Sasamoto & Jackson, 2016). Likewise, repeated punctuations set the tone of the message (i.e. ‘that would be a nice idea…wouldn’t it?’ (Carey, 1980).

**TPC usage intensity**

The frequency or intensity of usage of TPC reported in recent studies has ranged from .6% per word in email messages (Kalman & Gergle, 2014), to .95% per word in a German chat corpus (Vandergriff, 2013). In a study of five large corpora (including discussion forums and electronic mailing lists), Riordan and Kreuz (2010) reported a base rate of 0.47% TPC per word. This low frequency does not imply that TPCs are unimportant. For example, a single ; or dot can change the meaning of a long sentence. Thompson and Foulger (1996) found that a happy emoticon at the end of an unfriendly message changed its perceived hostility. Moreover, an experiment by Walther & D’Addario (2001) found that the presence of a negative element (verbal or nonverbal) changed the message interpretation to a negative one. Regarding punctuation, Gunraj, Drumm-Hewitt, Dashow, Upadhyay and Klin (2016) found that sentences which ended with a period in text messaging were perceived as less sincere than those without.

Though the question of whether emoticons and other paralinguistic symbols can be considered as analogue to facial expressions and other nonverbal language remains being subject of some debate (i.e., Derks, Bos & Grumbkow, 2008; Walther & D’Addario, 2001), for the purposes of this study we choose to focus on the nonverbal aspects only, largely based on the premise that in FtF communication, the nonverbal language employed can easily override the meaning of a verbal message, particularly when there is conflict between the two (Burgoon, 1985; Burgoon, Buller & Woodall, 1996; Philpott, 1983). Additionally, CMC study findings seem to sustain the notion that TPC disambiguate the emotional meaning of messages and/or increase their intensity (Derks, Fischer & Bos, 2008; Harris & Paradice, 2007). Therefore, we define TPC intensity parsimoniously as the number of times TPC appear in messages and assume that a larger number of TPC would add up to the message’s emotional intensity.

Regarding TPC intensity, few studies have focussed on a wide array of paralinguistic cues in SNSs. Luangrath et al (2017) found that approximately 21% of tweets, 19% of Facebook
posts and 31% of Instagram posts, all brand-related, contained one or more TPC. However, the authors based these frequencies in the proportion of posts where TPC occurred. While we largely base ourselves in the TPCs categorizations made by the authors, and in line with Vandergriff (2013) and Riordan and Kreuz (2010), we argue that the intensity of TPC usage should be related to the length of the post. For instance, one blogpost containing 5 words with one TPC (1 out of 5 words = 20%) has likely a higher TPC intensity than a blogpost of 40 words containing 4 TPC (4 out 40 words = 10%).

The social sharing of emotion

When a person experiences an episode that affects their emotional balance, the resulting emotions are quickly expressed to recipients close to that person, triggering a process known as the social sharing of emotions (SSE) (Luminet, Bouts, Delie, Manstead, & Rimé, 2000). SSE is an intrinsic interpersonal communicative act, which requires at least two persons who communicate, i.e.: 1) the person who experiences an emotion, feeling an urge to affiliate and express it, and 2) the recipient of the shared emotion. SSE is very prevalent in the wake of emotions; at least in 60% of cases people communicate emotions to others on the same day the episode occurs. After one week, this percentage increases to 90% (Rimé, Mesquita, Boca, & Philippot, 1991). Furthermore, SSE is believed to occur regardless of emotion type, gender, age, culture and level of education (Rimé, Finkenauer, Luminet, Zech, & Philippot, 1998). Chronemics aspects could also be expected to play a role (Walther & Tidwell, 2009).

We conceptualize SSE as occurring in a manner that facilitates the understanding by part of the listener, when the initiator provides a balanced explanation of the emotional episode and/or the feelings associated with it. However, the expression of emotion can also occur in an unorganized, impulsive manner. This is commonly referred to as the emotional ‘venting’ of emotions (Nils & Rimé, 2012).

Emotional venting

Emotional venting implies an emotional “outburst” meant to “take the feelings off one’s chest” (Nils & Rimé, 2012). Venting has been equated with catharsis, or the release of all negative emotion (Scheff, 1979). Initially it was believed that venting would be psychologically beneficial, because it would enable a person to ‘let go’ of the negative feelings. However, venting actually exacerbates the negative emotion (Nils & Rimé, 2012), because it increases the focus towards the negative and hinders coming to terms with the negative experience (Carver, Scheier & Kumari, 1989). Moreover, venting diminishes the possibilities of receiving
constructive feedback, due to the disregard for the listener (Nils & Rimé, 2012).

Importantly, online venting differs from the more known phenomenon of online flaming. Though online flaming has common characteristics with our definition of online venting (for instance its uninhibited character), the difference is that flaming refers mostly to an uninhibited expression of aggression normally directed at another (O’Sullivan & Flanagan, 2003), while in online venting, the expression of emotion is uninhibited and referring mostly to feelings about oneself or a personal situation experienced.

Since TPC increase message intensity (Derks, Fischer & Bos, 2008), we argue that blogposts depicting emotional venting will abound with these cues because venting is supposed to occur quite intensely (an emotional ‘outburst) compared to SSE blogposts, in which the expression of emotion is more composed and comprises a rather balanced account of feelings and/or the situation which provoked the episode. We propose our first hypothesis concerning the initiator blogpost:

\[ H1a. \ \text{TPC usage will be more intense in emotional venting blogposts, compared to social sharing (SSE) blogposts.} \]

Social information processing theory

Social information processing theory (SIP, Walther, 1996) recognizes that CMC lacks the nonverbal language proper of FtF communication, but proposes in turn that individuals, motivated by a deep desire to form interpersonal relationships and affinity with others, adapt their communicative behaviours using the cues available in the CMC medium to fulfil these relational goals. SIP posits that individuals are able to form interpersonal impressions and build close personal relationships through the medium, thanks to their usage of different cues. Importantly, by ‘cues’ the theory refers to both language and paralanguage, including the timing aspect of messages, as well as the use of TPCs such as emoticons (Walther, 2011).

SIP posits that TPCs have metacommunicative properties and can transmit affection (Walther, 1992, p. 79; Walther, Loh and Gronka, 2005) SIP suggests that users can convey affection by both verbal and nonverbal behavioural expressions in CMC, and that the social context is vitally important to emit and interpret these signals. This supports our proposition that the specific communicative context of online SSE would enable certain behaviours in individuals such as socially expressing emotions and providing socio-affective feedback online (expressing encouragement, support and warmth), a context in which we would expect individuals to use TPCs relationally and to express affiliation.
Emotional mimicry

An important aspect of nonverbal communication in FtF settings is that it can be mimicked. Emotional mimicry occurs when others' posture, gestures and facial expressions are mimicked (Hess & Fischer, 2013). The recent emotion mimicry in context (EMC) framework postulates that mimicry is highly dependent on the social context, particularly on the type of emotional signal being mimicked and the relationship between the initiator and the observer (Fischer, Becker & Veenstra, 2012).

Importantly, EMC sees mimicry as having an important social regulation role, that is, the mimicry of certain symbols may help to manage emotions within social relationships (Hess & Fischer, 2013). Additionally, mimicry is critically dependent on whether both parties have an initial affiliative stance towards one another. Since previous experimental studies have found that emoticons can serve the same function as actual nonverbal behaviour online (Derks, Bos & von Grumbkow, 2007), we propose that some gestures may be mimicked in psychological and communicative affiliative contexts online. We argue that when both counterparts are engaged in successful online SSE, first the initiator is engaged in a process of narration of an emotional, and second, a listener provides socio-affective feedback, acting in an affiliative stance and experiencing a certain degree of empathy towards the initiator.

Building on SIP, we would expect users to use TPCs to adapt to the affordances of CMC to convey affinity, empathy and/or emotional support. Findings by Liebman & Gergle (2016) support this reasoning, as they found in an experiment that the use of TPC increased the perceived affinity between two persons in an Instant Messaging (IM) conversation, while this effect disappeared when TPC were absent. These postulates and findings bring out relevant questions to the fore in an online context: could TPC be used and ‘mimicked’ in the context of SSE in SNSs as well? We can investigate this by studying the natural process of online SSE in its three phases.

The three phases of online SSE

Rodríguez Hidalgo et al. (2015) conceptualized the process of online SSE in three distinguishable phases: initiation, feedback and the initiator’s reaction to the feedback. A diagram depicting the main phases is displayed in Figure 1. The typical structure of a Live Journal blogpost is similar to that of other SNSs, consisting of posts by A that can initiate a cycle, followed by responses from B (or C, D and so forth) and possible reposts by A in the same comment thread. These phases may be iterative, as both the initiator and listener can comment repeatedly in the thread.
First phase: online SSE initiation

SSE initiation occurs when a non-fictional, personal emotional story is narrated, or when the initiator is describing a particular emotional state or include both altogether (the situation and the feelings). Importantly, the feelings must be experienced or felt by the initiator. SSE initiation may also occur as witnessing the emotions or events occurring to somebody else that is relevant to the initiator. In this case, the author appraises this situation as personally relevant, i.e., ‘I’m feeling sad because my sister did not pass her driving exam.’

Since TPC are used to display, strengthen and disambiguate emotions (Derks, Fischer & Bos, 2008; Harris & Paradice, 2007), we may expect TPC usage in SSE initiation blogposts to differ to that of non-SSE blogposts, because the former depict emotional experiences. We pose our second hypothesis concerning SSE initiation:

**H1b. TPC intensity will be more intense in SSE blogposts, compared to non-SSE blogposts.**

*Figure 1. The three-phased cycle of online social sharing*
Second phase of SSE: Feedback

Feedback to SSE occurs when a person other than the initiator reacts by posting a message below the initiator blogpost. SSE theory recognizes two main types of feedback: affective and cognitive. Affective feedback appeases and emotionally contains the initiator, showing empathic or emotionally supportive behaviour. Cognitive feedback provides rationales and arguments to re-establish shattered world views, understand the event, and learn valuable lessons (Rimé, 2009). Additionally, we considered the category general feedback, which are feedback expressions which aren’t affective nor cognitive.

Regarding the use of TPC, a relevant question is how these cues would be used in different types of feedback. Since TPC increase the emotional intensity of a message (Derks et al., 2008; Kavanagh, 2010), and because affective feedback has more of an emotional tone than cognitive feedback, which is more focussed on providing rationales, we build on the precepts put forward by SSE and SIP theories, to argue that users would adapt their paralinguistic expressions to the medium to provide affective feedback. We posit our first hypothesis concerning feedback:

\[ H2. \text{TPC usage will be more intense in affective feedback, compared to (a) cognitive feedback and (b) general feedback.} \]

Specifically, SSE theory proposes that non-verbal haptic demonstrations of affection (i.e., hugging, kissing, a pat in the shoulder) are an important component of affective feedback in FtF communication, because it is comforting and decreases the interpersonal distance between two persons (Rimé, Finkenauer, Luminet, Zech & Philippot, 1998). Touch has been recognized as an intensifier of emotional displays and a communicator of warmth and intimacy (Knapp & Hall, 1997). Likewise, positive expressions of touch have been related to having a prosocial disposition towards others (Hertenstein, Keltner, App, Bulleit & Jaskolka, 2006). Extrapolating this tenet of SSE theory to online behaviour and based on SIP, we argue that there will be a higher presence of haptic affective cues (hugs, hearts, and kisses) in affective feedback, as a means to adapt to the medium and in this way, provide a feeling of being the recipient of physical affection.

\[ H3. \text{The usage of tactile affective paralanguage cues will be more intense in affective feedback, compared to (a) cognitive feedback, and (b) general feedback.} \]
Third phase of SSE: the initiator reacts to feedback

A repost occurs when the blogpost author posts a new comment in the blogpost’s comment thread, as a response to feedback received. Including reposts in our scheme allows us to investigate TPC behaviours in subsequent phases of online SSE. Since a blogpost has received feedback and reposts which occur within the specific context of SSE, and based on the emotion mimicry in context theory, we can assume that at least a bulk of the nonverbal messages exchanged in the phases occur within the context of SSE. This gives us empirical ground to ask whether these cues would be mimicked, alike a FtF situation, in the comment thread. SIP theory (Walther, 1996) further supports the notion that people would take full advantage of the resources available in the medium (in this case, TPC), and adapt their nonverbal emotional expressions in contextual ways. We pose two hypotheses related to the initiation, feedback and repost phases:

\[ H4a. \text{The intensity of TPC in the SSE initiator blogpost will predict the intensity of TPC in feedback.} \]

\[ H4b. \text{The intensity of TPC in feedback posts will predict the intensity of TPC in reposts.} \]

Method

Materials

Sample generation. After written permission was requested from Live Journal, the download of initiator blogposts took approximately three weeks and ended by beginning 2014. Blogposts were downloaded respecting the following criteria: a minimum length of 200 characters, have at least two comments, and belong to a personal blog profile (thus not belonging to a certain group). The length criteria were adopted with the aim of finding descriptions of emotional stories that would qualify as SSE. The minimum of two comments was to facilitate finding ‘complete’ cycles with feedback and reposts. In total, this procedure generated 8.8 million posts.

Since a number of blogposts were found in other languages (Russian in particular), blogposts in English were found using Python’s ‘guess language’ application. This reduced the sample to 7.701.284 blogposts (87.3% of the original). Importantly, from this random sample, an affect sample was generated, made with blogposts with a high presence of affect words.
In order to be able to make comparisons, our study uses a proportion of blogposts taken from the random sample, and blogposts from the affect sample for the analyses. The generation of a sample with a high presence of Affect words was to increase the chances of finding blogposts where SSE took place. For further details relating to the Affect sample generation and examples of blogposts, please consult the appendix.

This study’s sample consists of a randomly generated subsample from Rodríguez-Hidalgo et al.’s (2015) study. As of beginning 2017, the large majority (98%) of the blogposts in our original sample were still all publicly accessible in Live Journal, which makes our sample current at the time of writing. In spite of the fact that blogposts in Live Journal cannot be personally identifiable, as users are not requested to display their real name, location, gender, education and other demographics and mostly use a nickname, we decided against publishing full examples of blogposts, as blogposts may be quite easy to find given their title, for instance. Since these users have not chosen for their blogposts to be published in other platforms other than Live Journal, we decided against this practice not to endanger the privacy of a single user.

To be able to establish comparisons between non-SSE and the different SSE blogpost types, we drew a random sample that would yield a similar proportion between these as in our original sample. At the end of this procedure, 63 blogposts (24%) had come from the random sample and the remaining 200 (76%) from the Affect sample. Therefore, our sample had a higher prevalence of affect sample blogposts.

Blogposts were reutilized for two main reasons. Firstly, the convenience of disposing of a sample already scanned for the presence of affect words, a procedure that took several weeks to compute. Secondly, we already disposed of the human coding ratings for important variables (presence of SSE, SSE type, SSE valence) from our previous study.

**Coding Procedure**

A coding procedure to code for the presence of TPC was executed over the course of five weeks. Four English-proficient coders (different from the coders in the first study) worked in pairs (double coding). Two coders were West-European, one was South American, and the last coder was a native English speaker. To prevent possible language interpretation problems, the opinion of the native English coder was taken as the baseline in case of disagreements.

Coder training took place in three separate sessions, during which the TPC categories were explained and coders worked on practice blogposts. In subsequent sessions, disagreements and questions were resolved. After training was completed, coders were given
their first batch of blogposts to code. An inter-trainer reliability test of the first 20 initiator blogposts reached a satisfactory reliability for TPC presence (Krippendorff’s $\alpha = .89$). Afterwards, coders worked independently at home.

Coding occurred as follows: each coder pair independently coded half of the sample each, divided in two main batches of blogposts. In each batch, coder pairs coded a similar proportion of non-SSE and SSE blogposts (50/50). During the coding procedure, it was discovered that thirteen blogposts had to be removed. Six blogposts had been erased and the privacy settings of the remaining seven had been restricted.

**Coding negotiations.** One important negotiation concerned whether coders should code for separate phrases constituting online SSE in the initiating post, instead of coding the totality of the post. After some discussion, since SSE is about the narration of a personal emotional story, the team felt that the totality of the initiating blogposts quite frequently accounted for the totality of the SSE, making the extraction of single sentences difficult. However, the most phrases deviating from the unit definition (i.e. cognitive feedback), were found in feedback, which is why the team decided to code for deviating phrases separately (constituting the category ‘general feedback’).

A second important negotiation constituted the definition of some TPC, with voice qualities presenting the greatest challenges. For instance, whether a single question or exclamation mark should be considered TPC. After some discussion, the team decided to code from two question marks and above as TPC, since the double (or more) character of the symbol would imply a stronger intonation than a single question or exclamation mark, which may simply denote intellectual curiosity or emphasis, instead of emotion.

Another point of negotiation for voice qualities were CMC abbreviations (e.g., ‘cause’ or ‘coz’ to signal ‘because,’ or ‘CU’ for ‘see you’), since these are often meant to shorten the way a word is written, and not necessarily to alter pronunciation, a key characteristic of TPC. The team decided that these abbreviations would not be considered voice qualities because their usage may be due to simple convenience. However, a few exceptions were made with abbreviations that directly resembled a spoken utterance (i.e. LOL for ‘laughing out loud’). A last negotiation for voice qualities involved the use of ellipsis, particularly ‘…’. After some debate, there were included in the coding because they signal a pause in the speech and may have a strong non-verbal meaning (Vandergriff, 2013).

**Coding units.** Coding had three main units of analysis, which can be found within one single blogpost (a blogpost is the posting of an individual text entry by the blog author in his or her blog profile). Hence, the blogpost is different than the blog profile, which constitutes a much larger unit. The three main units correspond to the three phases of online SSE: the
Coding: main categories

**Textual paralanguage cues.** The TPC categories used in this study were strongly inspired on the Textual Paralanguage (TPL) typologies of Luangrath et al (2017). However, we made two minor adaptations. The first is that the term TPL was modified to Textual Paralanguage Cues (TPC), as the word ‘cue’ is thoroughly employed in the CMC literature to refer to paralinguistic symbols (i.e. Walther, Loh & Granka, 2005). The second adaptation refers to our TPC category ‘kinesics’ and ‘tactile,’ which are outlined below. Therefore, all TPC definitions below follow Luangrath et al (2017), unless stated otherwise.

**TPC: auditory cues.** Auditory cues indicate how the words should be spoken, conveying sound characteristics. These cues are comprised of voice quality and vocalizations. Voice qualities strengthen the intonation (pitch), pronunciation, stress (emphasis) and tempo (rhythm). They are comprised of capitalizations, underlining, punctuation and special characters, or a combination of these, for instance: ‘I REALLY want that!!,’ ‘it’s m-i-n-e,’ ‘Best.Joke.Ever.’ ‘WHAT?@#@#.’ Vocalizations refer to ‘utterances, fillers, terms’ (Luangrath et al, 2017, p. 101) that result in audible noise of non-verbal expressions (for instance, ‘uhm,’ ‘hmmm,’ ‘ugh’). Our coding scheme added onomatopoeic expressions, because of their phonetic imitation of the source of the sound (i.e., ‘boom’ for an explosion). Additionally, ‘yeah’ was considered a voice quality (despite it being a word), since it has an utterance character.

**TPC: tactile cues.** Luangrath et al (2017) defined ‘tactile kinesics’ as involving any type of physical movement with another (i.e., *high five* as involving touch between two people and the smiling emoji, which depicts a facial movement, respectively). However, and to fulfil the purposes of this study, we felt that there was a need to differentiate between affective and non-affective movements with another. For instance, *slap* represents a negative body movement to another, while *dancing* represents physical movement alone or with another. For this reason, our coding scheme considered tactile cues as those TPC which imply affectionate gestures towards another, for instance the words kiss, HUGS, HEART, and so forth. Given our interest to detect nonverbal signs of affection in affective feedback, we thus deviated from Luangrath et al (2017) and considered affective tactile cues as exclusively using physical touch to express affection.

**TPC: visual cues.** Visual TPC are defined as ‘non-verbal communication related to movement of any part of the body or the body as a whole’ (Luangrath et al, 2017: p. 3). However, since kinesic cues also convey bodily movements, we reduced this definition in our
codebook to only visual representations of facial or bodily movements to express emotion, such as emoji’s and emoticons.

**TPC: kinesics cues.** We defined kinesics TPC as expressing bodily movements to another (for instance, a slap) or alone (i.e. rowing), with the exception of bodily movements expressing affection (i.e. a hug emoji), which belonged to the tactile affective category.

Additionally, we excluded visual artifacts, which refer to artistic qualities of the blogs’ font type, colour and other stylistic elements, because their interpretation may be more ambiguous from a nonverbal and emotive point of view (i.e. a strong blue versus a light blue background).

**Emotional venting post**

A blogpost was considered to be venting when there was an obvious display of strong emotions about a real, personal circumstance or event and the description of the event or feelings was made in an evidently unorganized, impulsive and/or careless manner.

**Non-SSE blogpost.** A non-SSE blogpost contained no information about (a) an initiator’s emotion, or (b) an emotional episode the initiator reports to have gone through. Hence, they aren’t clearly informative about a circumstance that was consequential for the initiator’s affect and the initiator does not clearly describe an emotional state as a consequence of them.

**SSE blogpost.** The main characteristics of SSE are defined in section 2.6.1. We generally found that very frequently the bulk of the post concerned the description of a narrative emotional story. As to how much of the bulk of the initiation blogpost should refer to SSE to be qualified as such, having one emotional sentence as an indicator of an emotional state would be sufficient to make the post qualify, though with the strong indication that the emotional state should be explicitly stated as occurring to the initiator. For this reason, if a blogpost contained poems, lyrics or other fictional language, it would not count as SSE, because the reference to an explicit feeling or emotional event occurring to the initiator is lacking.

**Feedback.** Feedback was coded considering the categories affective, cognitive and general. The characteristics of affective and cognitive feedback are described in section 2.6.2. General feedback consisted on all other phrases which weren’t affective nor cognitive in the comment thread.

**Reposts.** Reposts occur when the initiator publishes a new comment in the comment thread.

**Coding measures**

The presence of the following categories was scored yes/no and were taken from Hidalgo et al (2015) based on the ratings of two coders: SSE post (Cohen’s Kappa = .84, V = .83),
venting post (Cohen’s Kappa = 8.1, V = 7.9), repost (Cohen’s Kappa = 8.2, V = 7.9). Reposts were calculated for all types of blogposts. The following reliabilities were calculated based on the aggregated ratings of two coder pairs from the new round of coding for this present study (no drastic differences were observed between each of the coder pair ratings before aggregating). The presence of feedback was scored yes/no: affective (Cohen’s Kappa = .80, V = .81), cognitive (Cohen’s Kappa = .80, Cramer’s V = .81), general (Cohen’s Kappa = .77, V = .78). All reliabilities were significant at p < .001 level. Feedback was coded for all types of blogposts.

**Word count.** Coders annotated the total amount of words of the initiator blogpost (including title), the feedback and repost. For each feedback type, coders aggregated the word count of all the sentences in which the feedback appeared in the comment thread. Tables 1, 2 and 3 display the word count per category. The coding reliabilities were as follows: Initiator blogpost Krippendorff α: .95, 95% [CI: .88, .10], affective feedback Krippendorff α: .85, 95% [CI: .73, .95], cognitive feedback, Krippendorff α: .80, 95% [CI: .65, .92], general feedback Krippendorff α: .75, 95% [CI: .61, .87], repost, Krippendorff α: .88, 95% [CI: .67, 1.0].

**TPC presence and intensity.** Coders counted and annotated each of the five TPC (voice qualities, vocalizations, tactile, kinesic and visual) in each of the three coding units (initiating post, feedback, and repost). TPC intensity was measured by dividing the total number of TPCs with the total number of words pertaining to the category (i.e. affective feedback) per coding unit (i.e. initiator blogpost).

**Data Analysis**

Mean TPC intensity scores ranged from .011 (TPC intensity cognitive feedback, lowest) to .075 (TPC intensity affective feedback, highest). Additionally, some TPCs presented a high number of zeros (kinesic cues in particular). Due to this, our data showed a Poisson distribution and was heavily skewed to the right. Due to the non-normality in our data (all Shapiro-Wilk tests for TPC intensity variables were significant to the p < .001 level), we conducted nonparametric tests. Effect sizes were calculated and interpreted according to Rosenthal (1991) and Field (2009).

To calculate the reliability of TPC presence, we used Kalpha reliability index (Hayes & Krippendorff, 2007). Kalpha can accommodate to any number of coders as well as to different types of categories (nominal, ordinal and scalar). Because our word count scorings consisted of count data, we converted scores of each coder pair to a nominal scale to calculate Kalphas. This was as following, for initiator blogpost: 1 to 250 words (1), 251 to 500 words (2), 501 to
For testing predictive relationships, we conducted negative binomial regressions, because this type of regression can accommodate a Poisson distribution and a rather high presence of zeros in the data (Cameron & Trivedi, 2013). Another reason to use negative binomial regression is that the data was overdispersed, in that the variance of our dependent variables was often not identical to the mean, a critical requirement to conduct Poisson regressions (Field, 2009; Hilbe, 2007).

**Results**

**Descriptive statistics**

TPC were frequent in both types of blogposts, as 83% of SSE blogposts and 76% of non-SSE blogposts contained at least one type of TPC. Auditory cues (vocalizations and voice qualities) were the most common (in both non-SSE and SSE blogposts), followed by visual cues, while tactile and kinesic cues appearing less frequently. Tables 1, 2 and 3 display the occurrence and percentages of TPC in initiator blogposts, feedback and reposts.

With regards to TPC occurrence in feedback to SSE blogposts, 75% of general feedback, 77% of affective feedback and 60% of cognitive feedback contained at least one type of TPC. Auditory cues appeared much less frequently in cognitive feedback (12%) than in affective and general feedback (34%, $z = -3.709$, $p < .001$, and 47%, $z = -2.142$, $p < .05$, respectively). Visual cues also appeared less in cognitive feedback (12% versus 28% in affective feedback, $z = -5.851$, $p < .001$, and versus 37% in general feedback, $z = -4.833$, $p < .001$). Finally, tactile cues, were much more frequent in affective than in cognitive and general feedback (43% versus 5%, $z = -6.609$, $p < .001$, and 43% versus 16%, $z = -3.902$, $p < .001$, respectively). These results signal that TPC were generally less present in cognitive feedback both in non-SSE and SSE blogposts.

With regards to reposts, 77% contained at least one type of TPC. Since there was a very low frequency of non-SSE blogposts which received cognitive feedback, the presence of TPC cues is uninterpretable. However, and in spite of this, we note that the low percentage of occurrence of reposts as a response to cognitive comments in total sample composed of 103 blogposts is already noteworthy. Additionally, the presence of TPC cues is remarkably low in the few blogposts found with TPCs (3), in spite of its average word count (62 words).

**Hypothesis testing**
**Initiator repost hypotheses.** Hypothesis 1a predicted that TPC intensity would be higher in emotional venting blogposts, compared to social sharing (SSE) blogposts. TPC intensity of SSE venting blogposts ($Mdn = .048$) differed significantly from non-venting SSE blogposts ($Mdn = .014$), $U = 2402.50$, $z = -5.67$, $p < .001$, which represents a medium effect ($r = .34$). We find that TPC intensity is significantly higher in SSE venting blogposts, compared to non-venting SSE blogposts. This result suggests that TPC are significantly more present in venting posts than in non-venting emotional posts. Hypothesis 1a is supported. Table 1 presents an overview of the frequencies of the different types of TPCs in the different types of SSE initiation posts.
Table 1. Textual paralanguage cues (TPC) occurrence, initiator blogposts

<table>
<thead>
<tr>
<th>Blog type</th>
<th>Word count</th>
<th>Vocalization</th>
<th>Voice quality</th>
<th>Kinesic</th>
<th>Tactile</th>
<th>Visual</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M (SD)</td>
<td>M (SD)</td>
<td>%</td>
<td>M (SD)</td>
<td>%</td>
<td>M (SD)</td>
</tr>
<tr>
<td>Venting SSE</td>
<td>242.7</td>
<td>1.62</td>
<td>28 (59.6)</td>
<td>10.62</td>
<td>47 (100)</td>
<td>.11</td>
</tr>
<tr>
<td>SSE</td>
<td>227.78</td>
<td>1.06</td>
<td>71 (46.40)</td>
<td>5.34</td>
<td>(79)</td>
<td>.033</td>
</tr>
<tr>
<td>Non-SSE</td>
<td>311.30</td>
<td>1.10</td>
<td>37 (33.6)</td>
<td>5.30</td>
<td>34 (31)</td>
<td>.02</td>
</tr>
</tbody>
</table>

Note: Mean (M), Standard Deviation (SD) statistics based on total number of TPC occurrence (count). All frequencies and respective percentages based on TPC occurrence in total number of blogposts Venting SSE (n = 47), SSE (n = 153), Non-SSE (n = 110).
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Hypothesis 1b predicted that TPC intensity would be higher in social sharing blogposts (SSE blogposts), compared to non-SSE blogposts. Results show that the TPC intensity of SSE blogposts ($Mdn = .020$) significantly differed from non-SSE blogposts ($Mdn = .013$), $U = 6880.50, z = -2.53, p < .05, (p = .011)$. We find that TPC intensity is significantly higher in SSE blogposts compared to non-SSE blogposts. However, this represents a small effect ($r = .015$). Hypothesis 1b is supported.

**Feedback hypotheses.** Hypothesis 2a stated that the intensity of TPC would be higher in affective feedback, compared to cognitive feedback. The TPC intensity of affective feedback ($M = .075, SD = .165, Mdn = .126$), significantly differed from that of cognitive feedback ($M = .011, SD = .049, Mdn = .014$), $W = 381.500, z = -2.47, p < .050, (p = .013)$, which represents a small effect ($r = .25$). This result suggests that TPCs are significantly more used in affective feedback compared to cognitive. Hypothesis 2a is supported. Table 2 presents an overview of the frequencies and intensities of the different types of TPCs in the different types of feedback.

Hypothesis 2b predicted that the intensity of TPC would be higher in affective feedback, compared to general feedback. The TPC intensity of affective feedback ($M = .075, SD = .165, Mdn = .126$), significantly differed from that of general feedback ($M = .040, SD = .170, Mdn = .068$), $W = 4210.00, z = -2.91, p < .010, (p = .004)$. This result suggests that TPCs were significantly more used in affective feedback compared to general feedback, which represents a small effect ($r = .24$). Hypothesis 2b is supported.

Hypothesis 3a predicted that the intensity of tactile affective cues would be higher in affective feedback than in cognitive feedback. The intensity of tactile cues in affective feedback ($M = .104, SD = .141, Mdn = .064$), did not significantly differ from that of cognitive feedback ($M = .037, SD = .021, Mdn = .037$), $W = 494.00, z = -1.54, p = 122)$. However, we note that tactile affective cues only occurred in five blogposts for cognitive feedback, due to which this result may not be interpretable due to a small sample size.

Hypothesis 3b posited that the intensity of tactile affective cues would be more intense in affective feedback compared to general feedback. The intensity of tactile affective cues in affective feedback ($M = .104, SD = .141, Mdn = .064$), significantly differed from that of general feedback ($M = .028, SD = .033, Mdn = .013$), $W = 4470.50, z = -2.04, p < .050, (p = .041)$. This result suggests that tactile affective cues were significantly more used in affective feedback compared to general feedback, which represents a small effect ($r = .18$). Hypothesis 2d is thus supported.
Table 2. Textual paralanguage cues (TPC) occurrence, according to feedback, SSE and non-SSE blogposts

<table>
<thead>
<tr>
<th>Blogpost type</th>
<th>Feedback type</th>
<th>Word count</th>
<th>Vocalization</th>
<th>Voice quality</th>
<th>Kinesic</th>
<th>Tactile</th>
<th>Visual</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>M (SD)</td>
<td>M (SD)</td>
<td>%</td>
<td>M (SD)</td>
<td>%</td>
<td>M (SD)</td>
</tr>
<tr>
<td><strong>SSE</strong></td>
<td>Affective</td>
<td>36.50 (47.76)</td>
<td>.58 (1.24)</td>
<td>41</td>
<td>1.80 (2.77)</td>
<td>63</td>
<td>.025 (20)</td>
</tr>
<tr>
<td></td>
<td>Cognitive</td>
<td>53.9 (62.65)</td>
<td>.077 (.274)</td>
<td>7</td>
<td>.846 (.98)</td>
<td>32</td>
<td>.00 (0.0)</td>
</tr>
<tr>
<td></td>
<td>General</td>
<td>165.5 (473.41)</td>
<td>1.65 (4.52)</td>
<td>79</td>
<td>3.52 (6.82)</td>
<td>115</td>
<td>.071 (.37)</td>
</tr>
<tr>
<td><strong>Non-SSE</strong></td>
<td>Affective</td>
<td>48.60 (65.06)</td>
<td>.55 (.19)</td>
<td>6 (30)</td>
<td>2.15 (2.62)</td>
<td>15</td>
<td>.05 (22)</td>
</tr>
<tr>
<td></td>
<td>Cognitive</td>
<td>62.80 (80.26)</td>
<td>0 (0)</td>
<td>0 (0)</td>
<td>0 (.0)</td>
<td>0 (0)</td>
<td>.20 (.44)</td>
</tr>
<tr>
<td></td>
<td>General</td>
<td>202.70 (568.53)</td>
<td>1.91 (4.73)</td>
<td>55 (50)</td>
<td>1.91 (4.73)</td>
<td>74</td>
<td>0 (0)</td>
</tr>
</tbody>
</table>
Chapter 3

*Note:* Mean (M), Standard Deviation (SD) statistics based on total number of TPC occurrence (count). All frequencies and respective percentages based on TPC occurrence in total number of blogposts. SSE blogposts with affective feedback \((n = 122)\), cognitive feedback \((n = 57)\) and general feedback \((n = 170)\). Non-SSE blogposts with affective feedback \((n = 20)\), cognitive feedback \((n = 5)\) and general feedback \((n = 110)\).
**Repost hypotheses.** Table 3 presents the occurrence of TPC in reposts according to SSE, non-SSE blogpost and feedback type. Hypothesis 3a predicted that the intensity of TPC cues in the initiator blogpost (IB) would predict their intensity in feedback posts. Results showed that only the presence of tactile cues was positively associated with their intensity in affective feedback posts ($B = .770$, $p < .05$), all other cues *ns*. For cognitive and general feedback, no presence of cues in the IB were significantly associated with their presence in feedback posts.

Table 4 presents the results of the negative binomial regression. Hypothesis 3a is partially supported. Hypothesis 3b predicted that the intensity of TPC cues in feedback posts would predict TPC intensity in reposts. Results showed that no TPC had a significant relationship with their subsequent presence in reposts. Hypothesis 3b is unsupported.
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*Table 3. Textual paralanguage cues (TPC) occurrence in reposts, according to SSE, non-SSE blogpost and feedback type*

<table>
<thead>
<tr>
<th>Blogpost type</th>
<th>Feedback type</th>
<th>Word count</th>
<th>Vocalization</th>
<th>Voice quality</th>
<th>Kinesic</th>
<th>Tactile</th>
<th>Visual</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>M (SD)</td>
<td>%</td>
<td>M (SD)</td>
<td>%</td>
<td>M (SD)</td>
<td>%</td>
</tr>
<tr>
<td>SSE</td>
<td>Affective</td>
<td>77.49</td>
<td>1.69 (5.16)</td>
<td>24 (39.3)</td>
<td>2.79 (4.92)</td>
<td>37 (61)</td>
<td>0.02 (1.13)</td>
</tr>
<tr>
<td></td>
<td>Cognitive</td>
<td>53.37</td>
<td>0.17 (0.46)</td>
<td>4 (13.3)</td>
<td>1.23 (2.31)</td>
<td>17 (57)</td>
<td>0 (0)</td>
</tr>
<tr>
<td></td>
<td>General</td>
<td>87.78</td>
<td>1.00 (3.02)</td>
<td>50 (40.3)</td>
<td>2.69 (5.88)</td>
<td>79 (63.7)</td>
<td>0.02 (1.12)</td>
</tr>
<tr>
<td>Non-SSE</td>
<td>Affective</td>
<td>48.60</td>
<td>0.55 (1.19)</td>
<td>6 (30)</td>
<td>2.15 (2.62)</td>
<td>15 (75)</td>
<td>0.05 (0.22)</td>
</tr>
</tbody>
</table>
Paralinguistic cues in online venting and sharing

<table>
<thead>
<tr>
<th>Category</th>
<th>Mean (M)</th>
<th>Standard Deviation (SD)</th>
<th>Count</th>
<th>Percent</th>
<th>Mean (M)</th>
<th>Standard Deviation (SD)</th>
<th>Count</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cognitive</td>
<td>62.80</td>
<td>1.67</td>
<td>2</td>
<td>66.6</td>
<td>.33</td>
<td>.33</td>
<td>1</td>
<td>33.3</td>
</tr>
<tr>
<td>General</td>
<td>132</td>
<td>3.63</td>
<td>46</td>
<td>63.01</td>
<td>.01</td>
<td>.01</td>
<td>9</td>
<td>12.3</td>
</tr>
</tbody>
</table>
Table 4. Negative binomial regression results predicting total intensity of TPC cues, affective feedback

<table>
<thead>
<tr>
<th>Cues</th>
<th>B</th>
<th>SE</th>
<th>Wald $X^2$</th>
<th>df</th>
<th>95% CI Exp (B)</th>
<th>95% CI Exp (B)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>LL</td>
<td>UL</td>
</tr>
<tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>UL</td>
<td>UL</td>
</tr>
<tr>
<td>Vocalizations</td>
<td>-0.03</td>
<td>.030</td>
<td>.007</td>
<td>1</td>
<td>-0.86</td>
<td>.033</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>.997</td>
<td>.920</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.079</td>
<td>.917</td>
</tr>
<tr>
<td>Voice qualities</td>
<td>0.27</td>
<td>.040</td>
<td>.764</td>
<td>1</td>
<td>-0.83</td>
<td>.076</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.974</td>
<td>.917</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.034</td>
<td>.703</td>
</tr>
<tr>
<td>Tactile</td>
<td>0.770</td>
<td>.083</td>
<td>84.72*</td>
<td>1</td>
<td>.606</td>
<td>.934</td>
</tr>
<tr>
<td></td>
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<td></td>
<td>2.15</td>
<td>1.83</td>
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<td></td>
<td></td>
<td></td>
<td>2.544</td>
<td>1.703</td>
</tr>
<tr>
<td>Kinesic</td>
<td>-.161</td>
<td>.097</td>
<td>2.73</td>
<td>1</td>
<td>-3.53</td>
<td>.030</td>
</tr>
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<td></td>
<td></td>
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<td>.851</td>
<td>.703</td>
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<td></td>
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<td></td>
<td>1.030</td>
<td>.703</td>
</tr>
<tr>
<td>Visual textual</td>
<td>-.169</td>
<td>.082</td>
<td>4.24</td>
<td>1</td>
<td>-3.30</td>
<td>-.008</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.845</td>
<td>.719</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.992</td>
<td>.719</td>
</tr>
<tr>
<td>Total cues</td>
<td>0.044</td>
<td>.030</td>
<td>2.01</td>
<td>1</td>
<td>-0.17</td>
<td>.104</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.156</td>
<td>.983</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.110</td>
<td>1.110</td>
</tr>
</tbody>
</table>

Note. *p < .001. CI = confidence interval; LL = lower limit; UL = upper limit
Paralinguistic cues in online venting and sharing

Discussion

This study focussed on the role of textual paralanguage cues (TPC) in online emotional expressions by content analysing a randomly generated sample of blogposts in Live Journal. Specifically, we assessed the usage intensity of five particular types of TPC within each of the three communication phases of SSE (initiator, feedback and repost), and further investigated predictive relationships between the TPC usage in each of the three phases. We find that TPC are used in socially-contextual ways in Live Journal, which conveys a relevant role to TPC, particularly in the feedback phase of online SSE, to express physical affection.

TPC occurrence. Our study particularly contributes to research in investigating different types of TPC, as many studies have focussed only on one symbol, mainly the emoticon (e.g., Derks, Bos, Grumbkow, 2008; Walther & D’Addario, 2001). Regarding TPC presence, we find that auditory cues generally form the bulk of TPC usage, in all three phases. This finding may seem surprising given the bulk of research focussing on emoticons as main nonverbal cue (e.g., Kaye, Wall & Malone, 2016; Lo, 2008). Although previous studies have suggested the importance of altered punctuations and other creative uses of paralanguage in the expression of emotions (e.g., Hancock, Landrigan & Silver, 2007), our finding provides further evidence that vocalizations and voice qualities may be more suggestive of the emotional tone of a message than initially expected, and as such deserve greater attention. This result is corroborated by Luangrath et al (2017), who also found a prominence of auditory cues in brand messages in social media. This finding lends support to several studies on nonverbal behaviour in CMC, which account TPC as carrying for meaningful message aspects such as tone, volume and speech rhythm (e.g., Carey, 1980).

The fact that emoticons came overall in a second place compared to vocalizations, may be a sign that this particular cue serves more to complement the message, rather than constituting it, an idea backed up by previous findings (Derks, Bos & Grumbkow, 2007; Walther & D’Addario, 2001). It might be worthwhile to investigate also whether this result may have been due to the particular platform, since TPC usage may vary across platforms, as Kaye, Wall and Malone (2016) found higher emoticon usage in SMS messages compared to SNSs.

Moreover, the rather modest presence of haptic and kinesic cues (with the exception of affective feedback), may be as well surprising, but it may have been due to the particular affordances of the platform. An interesting avenue for research would be to investigate the use of memes or (moving) stickers to add to the TPC of kinesics to transmit nonverbal information in particular contexts in other SNSs platforms.
**SSE versus non-SSE posts.** Our results provide evidence that TPC were more common in messages containing SSE, compared to those messages which do not convey SSE. This finding is in line with previous research pointing at that the higher the message cues, the more that the message is emotional (Harris & Paradice, 2007) and that TPCs are used to convey emotions (Derks, Fischer & Bos, 2008). It is important to note that the presence of TPC in non-SSE posts is all the more relevant in our sample, since not every non-SSE post was necessarily 'non.emotional,' because these blogposts frequently depicted songs, lyrics or narrative works of fanfiction. This highlights the importance of comparing TPC usage between SSE initiation versus purely informative texts (such as news), in order to establish more differences with purely emotional texts.

In spite of this, our result that TPC usage in SSE blogposts was more intense lends support to both the SSE and SIP frameworks. The first, in that ‘emotions are to be shared,’ with users readily available to share their emotional experiences in the platform, and the second in that users adopt the affordances of CMC to narrate the emotional episode and/or the feelings associated with them. This result suggests that people who socially share their emotions online may be adept at 'metacommunication', because they use the whole array of TPCs to complement their SSE expression.

**Emotional venting.** Our study also contributed to the literature by introducing a definition and operationalization of online venting. In particular regarding venting, our study brings striking evidence that these posts abound with voice qualities. Further research, ideally experimental, is strongly encouraged to assess whether these symbols really do coincide with emotional venting expressions. One practical application of our online venting definition and evidence, is to enable the finding of venting expressions online to tailor possible online feedback interventions to help individuals who may be undergoing difficult life circumstances or are feeling emotionally unstable.

**TPC in feedback.** Since there is a lack of knowledge as to the particular ways people communicate nonverbally online (Riordan & Kreuz, 2010), our study presents evidence that supports the idea that TPC are used in socio-contextual ways and are contingent upon the framework of the interaction. The finding that TPC were stronger in affective feedback suggests that TPC do not only express emotions or disambiguate messages but may also be used to express affection and emotional support, at least in the context of online SSE. This is in line with recent studies which focus on paralinguistic affordances as a means of social support (Carr, Wohn & Hayes, 2016). Moreover, this finding suggests a beneficial process of
online SSE, as listeners seem ready to engage in reciprocal affective behaviour and emotionally support the individual, extending our previous work related to the presence of empathy and emotional support in feedback (Hidalgo et al, 2015). It may be worth to investigate other forms of paralinguistic emotional support in newer platforms (i.e. Instagram, Snapchat) in line with Andalibi, Ozturk and Forte (2017) which found evidence of affective social support in Instagram in the case of depression.

**Tactile affective cues in feedback.** Our study found evidence that TPCs, particularly tactile affective cues, were predominant in affective feedback, compared to general feedback. Firstly, this result brings strength to the idea that SSE theory can be extrapolated online, as users do appear to express physical affection as a form of affective feedback, a comforting behaviour from FtF communication. Secondly, this finding further supports the SIP framework, as people adapt their communicative means to the medium, and in highly contextual ways in SNSs (Vandergriff, 2013). Additionally, we believe this finding remarkably refers to the importance of the sense of touch for humans, which is an emotion intensifier in FTF communication. Since basically, the same property has been found about emoticons (Derks, Bos & Grumbkow, 2008), it may not be surprising to find that TPC cues would be used to express touch in CMC.

**Emotional mimicry.** Regarding the mimic of TPC symbols in the three communication phases, that our study found evidence that only the presence of tactile affective cues in the initiating message predicted their presence in the feedback post seems striking, due to several reasons. Since TPC expressions appear to occur contextually in online SSE and previous experimental studies found a high correspondence in the affective qualities of both CMC and FtF (Walther, Loh & Granka, 2005), it may seem surprising that other symbols (for instance auditory cues), were not predictive of their presence in subsequent posts. The first reason to explain this finding may rely on our measurement, since we must note that investigating the possible ‘mimicry’ of these symbols in its entirety escapes the scope of this investigation. Establishing a causal link between the user and receiver would require an experimental design, in which the correspondence of specific cues is strictly examined. We believe that this represents a relevant endeavour for future research.

A second reason for this finding may be the exclusion of other factors in our analyses, for instance, the previous existence of online or offline friendships, the length of the friendship, belonging to the same gender, sub or main culture. We may speculate that these factors may influence whether nonverbal mimic takes place, particularly since earlier studies have found evidence of stylistic accommodation online between individuals (Welbers & Nooy, 2014). Moreover, this accommodation has been found to be influenced by aspects such as belonging
to the same group or power aspects in the relationship (Muir, Joinson, Cotterill & Dewdney, 2016). This suggestion is supported by recent research findings regarding differences in TPC interpretations between friends versus strangers (Riordan & Trichtinger, 2017), which suggests that particular factors may influence the correspondence of these symbols between the sender and receiver. We suggest that further research into the online mimicry or a phenomenon of ‘paralinguistic accommodation’ considering different contextual and individual factors in CMC, and particularly within emotional contexts, is necessary. In particular, it would be relevant to assess users’ motivations in returning the gesture of physical affection, as it may be likely due to reciprocation and/or empathy, however we need more empirical proof of this.

We believe that our finding related to tactile cues, though it may appear modest at first, may bring importance to a larger implication, that is, the issue of enabling effective means of providing affective feedback online, particularly in the context of SNSs, where users’ often face the problem of having a multiplicity of contacts online thus managing interpersonal impressions to different audiences (Vitak, 2012). Although some SNSs have incorporated a ‘react’ system by which users can show their support, emotions and appreciation online (by means of ‘likes’ or emotion buttons, i.e. Carr, Wohn & Hayes, 2016), there still is no option in some platforms to ‘hug’ the sender virtually, an option which may seem more appropriate in the case of sharing highly negative emotions or events, as the button ‘love’ may signal that the listener somehow likes or enjoys what is being described. This implication seems overly relevant when considering that users seem to share more positive emotions in SNSs than negative ones (Walther, 2011).

Limitations

We note at least three major limitations of our study. The first lies in its observational nature, due to which we cannot be certain about users’ actual emotional responses underlying the coding and decoding of TPC in messages. Experimental studies of online SSE in action seem needed to assess the degree to which TPC are actual expressions of emotions.

A second limitation of this research is its parsimonious approach that considers TPC presence as additive in the message for intensity, as it may be argued that certain combinations of TPC may outweigh one another (for instance, 😊 and 😞 when occurring in the same sentence). We must note that, if this was encountered in our sample, it was only very rarely, and acknowledge that while certain symbols may cancel each other out, this may affect the overall message’s valence, not its intensity. Additionally and relatedly, our study did not account for other sentiment analysis aspects, such as the presence of sentence intensifiers
or modifiers (i.e. very, not), because our focus did not lie on the relationship between the verbal and nonverbal aspects of the message, but focused on the nonverbal aspect. In spite of this, we note that previous studies have found a very low occurrence of these sentence modifiers in their corpora (i.e. Tagliamonte & Denis, 2008). A third limitation concerns Live Journal’s dual nature of a blog SNSs. It may be that the greater anonymity of the platform may have affected the manifestation of online SSE in some respects, affecting the generalizability of our study to other SNSs. Therefore, we encourage replications in other more popular platforms (i.e. Facebook).

Conclusion

Our study brings light into the relational dynamics of online communication within the specific context of online SSE. We find that users seem adept at conveying emotions through TPC while socially sharing emotions online, and that TPC are used in contextual ways within the context of the interaction. Particularly, haptic cues are an important means by which users may transmit physical affection online. Overall, and in line with other studies (Riordan & Trichtinger, 2017), our study highlights the importance of using a ‘contextual lens’ to study TPC usage in CMC.
**Appendix**

**Affect sample generation.** The blogposts in our original pool were scanned to detect the occurrence of affect words, using a database of emotional words known as the Affect database (Neviarouskaya, Prendinger, & Ishizuka, 2007). Neviarouskaya et al (2007) used this database to recognize and interpret the affect communicated in 160 sentences in text messaging. The words “refer directly to emotions, moods, traits, cognitive states, behaviour, attitude, sensations, but also words that carry the potential to elicit affective states in humans” (Neviarouskaya et al, 2007, p. 223). The emotional intensity of each word in the database was assessed by three independent coders (*ibid*), the most frequent of which were joy and sadness (34.3% and 30%, respectively). Interestingly, coders agreement in intensity measure, was high for negative emotions (Shame, $M = 5.9$, Anger, $M = 5.0$) compared to positive emotions (Joy, $M = 1.9$, Interest, $M = 1.5$). Authors posited that the low ratings for positive emotions may be due to ‘the huge diversity of ‘joyful’ words’ (Neviarouskaya et al, 2007, p. 225).

Importantly, because our initial goal was to detect SSE in the *narration* of an emotional story, our main interest for the original download of the blogposts relied on linguistic elements, not paralinguistic ones. Therefore, the blog scanning procedure specifically considered: emotion-signalling verbs (401), adjectives (973), nouns (940) and adverbs (249) from the Affect database. For instance, and respectively (positive/negative): ‘attack/win’; ‘wonderful/horrifying;’ ‘love/hell;’ ‘adorably/miserably’). Therefore, *initiator blogposts* were scanned for the occurrence of a total of 2,563 affective words. The rest of the elements that compose the Affect sample ($n = 884$), such as abbreviations (356), comfunctions [sic] (40), emoticons (364), interjections (9), modifiers (115), were not considered in blog scanning procedure to generate the Affect sample. For instance and respectively: *imco* (in my considered opinion), good-bye, 9_9, alas, very. In sum, the presence of paralinguistic elements was not a prerequisite to create the Affect sample, which allows us to study their natural occurrence when affective words are employed.

Since the intensity score for each word in the Affect database was originally scored for the presence of nine emotions (anger, disgust, fear, guilt, interest, joy, sadness, shame and surprise) but not in terms of positive and negative valence, the SentiStrength web service (Thelwall et al., 2010) was used to assess the polarity of each Affect word. SentiStrength is a free lexical sentiment analysis software, which outputs a positive sentiment score (ranging from 1 to 5) and a negative sentiment score (ranging from -1 to -5) for each word or sentence (for a full description of Sentistrength and its generation, refer to Thelwall, 2013). The programme has been used profusely as a means to determine the sentiment polarity of texts on the social web (i.e., Honkela, Izzatdust & Lagus, 2012; Gruzd, Doiron & Mai, 2011; Guzman, Azócar & Li, 2014).
Determining the polarity of each of our selected Affect words \((n = 2,563)\) implied that words had a double sentiment polarity score. To determine the overall sentiment polarity of the initiator blogpost, the value of the polarity of all affect words in the blogpost was summated and divided by the total number of affect words in the post, a procedure inspired by the SentiRank algorithm (Feng, Wang, Yu, Yang, & Yang, 2009). For instance, the word ‘love’ has an assessed sentiment polarity of positive strength +3 and negative strength -1 in Sentistrength. Summated, love would acquire a positive polarity score of 2. This polarity would be summated to that of other affect words present in the post, divided by their overall number, which gave us the post total SentiRank score.
Blogposts examples

Non-SSE initiator blogpost

“Favourite movies:

Which movie makes you cry like a baby?
Which one makes you laugh until you are sore?
Which one makes you bored as hell?
Which one makes you have an overall wonderful feeling?
Which one makes you so scared you almost make poopies in your pants?
Which one is your absolute all-time favourite?

Just thought it would be interesting to see peoples responses, and it will help me pick some movies to watch :)

Non-SSE initiator blogpost:

“I’m trying to find a recording of the electronic “robot” voice that the trains in the Atlanta Airport used in the 80s. I know there has to be a recording of it *somewhere*. There’s nothing on Youtube, and Google has failed me. Any ideas?

‘The next station is concourse D. The color-coded maps and signs in the vehicle match the station colors. Please move to the center of the vehicle and away from the doors. Please hold on. This vehicle is now leaving the station’"

Full cycle SSE venting blogpost

“guys suck… no lie… they suck… and they LOVE to hurt your feelings and make you feel SOO bad… some happen to be very nice and sweet… but then they can turn around and stab you in the back… gay gay gay!! I’m bout to give up on trying to find a guy!!! Cuz I don’t wanna get hurt anymore! It sucks!

uuuuugggggggggggggggggggghhhhhhhhhhh.............................. it SUCKS..

:(

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Replier #1:

“I’m sure he didn’t mean to. I mean from what I can tell i’ll bet you and your boyfriend broke up and you thought he was really nice and sweet but then you must have done something that made him want to get over you and you think he is trying to be mean. But if I am right and that is how it is then he isn’t trying to hurt you.”

Initiator repost:

“thank you!! who ever you are! Lol”

Replier #2:

“I TOTALLY AGREE.
BOYS ARE STUPID.
I HATE THEM.
EACH AND EVERYONE OF THEM.
I LOVE YOU HUN.
& SOON, THOSE GUYS THAT HURT YOU, WILL REALIZE WHAT THEY MISSED OUT ON.
& SOON, YOU’LL FIND SOMEONE WHOSE PERFECT FOR YOU.
& & TO THINK, YOU HAVE THE WHOLE REST OF YOUR LIFE. YOU’LL MEET SOMEONE
AMAZING & PERFECT FOR YOU.
BELIEVE ME.”

Full SSE cycle blogpost:

“I’m inebriated and philosophical again. Here goes.

I love everyone. That is to say, everyone I’ve met. I can’t automatically empathize with everybody on the planet. But those I’ve talked to become a part of my life very quickly. It is fair to say that I would do almost anything for you, even if you think of me only an acquaintance. I find it very easy to get to know people. Even to understand those things they would rather keep hidden about themselves. People can also recognize this in me, I’ve heard the line “I don’t know why I’m telling you this,” many times. My understanding nature must be very evident.

One of the difficult side effects is how easy it is for me to fall in love. If you can understand a
person as well as they understand themselves, it is only natural to love them as well as they love themselves. I enjoy this, but it can be hard. The worst feeling I get is when I understand, but can’t help. When any advice is trite, no matter how well intentioned. I can feel the hurt they can, but I can’t ease that hurt.

That’s why I’m a comedian. They say a good comedian can only be born from hurt. I have no deep personal hurt (honestly, I’m just a fat guy, and I came to terms with that in third grade!), but I can, in Clinton’s words, feel your pain. It becomes my pain when I talk to you.

To sum up the ramblings, I love you. Unconditionally, if you can read this post, I love you. I’m always ready to offer you an affirmation of my existence. Just ask.”

Replier #1:

“Some comedians are born from personal suffering and pain.
Others are born from being able to empathize and understand other people.
Both can lead to pretty funny folks.”

Replier #2:

“You must have been one painful birth because you are one of the funniest people I know. Right back at ya brother.”

Replier #3:

“Thank you.”

Replier #4:

“I love you too, man.
I think it’s a bear thing. I’m the same way. :)
Oh... and this post isn’t secured, so anyone can read it :)”

Initiator repost comment nr. 1:

“Yeah, it was unsecured on purpose. Of course, I doubt many people are surfin’ for my blog.”

Replier #5 comment nr. 1:

“Because you’re probably sobered up by the time I’m replying.. do I exist?”

Initiator repost comment nr. 2:

“Cogito Ergo Sum, as Descartes would have it. Of course, with both of us in teach week, I haven’t seen you in a while. These posts could be those of the crazy person who killed you and stole your identity. But that seems highly improbable. You will always exist in my mind and heart.”
Replier #5 comment nr. 2:

“The Crazy Person is the techie that's been hiding out since the beginning of college . . .
And . . . (wait for it) . . . g'awwwww . . . so sweet!
Okay, really though – ditto.”

Replier #6:

“You are on incredible person! I love you too!
(the fact that you were raised by pretty cool parents mighta helped, too, no?)
Love, love, love to you too. Though I am awfully curious about what brought this post on. *nudge, nudge*”

Replier #7:

“I´m a big fan of the drunken “I love you, man!” posts, and I applaud you :)

14.5. Full SSE cycle blogpost example nr. 2:

“So I've been doing a lot of thinking.
and for most of my life I've hated change.
like, been like scared of it.
but I've come to realize...
that what's meant to change will
and what isn't- won't.
actually that sounds really stupid but it's hard to explain.
take a former relationship of mine.
I don't hate him. not at all.
&& I don't cry about it anymore either.
I'm just to the point where I'm indifferent.
sure i hope he's doing well and if he ever truly needs anything I'll be there,
because i did/do consider him a good friend before all the crap between us happened.
but I've let the past go.
I don't feel the same way.
not at all.
and I'm sooo much better off.

good change.
sidenote:
I probably have the most AMAZING boy in my life right now.

just so you know :)

and an example of things not changing-
me and rachel.

she is seriously my best friend ever.
we can go with out hanging out for a loooong time
and it just picks up like no time at all.
we have probably the best times ever-

I love her to death.
we're still just as tight as we were in kdg. wearing biker shorts :)
and thing are about to change. big time.
it's seriously 2007... how crazy is that.
like ohman, we're going to graduate in like 6 months.

&& then college.
(it's between UofM-Dearborn and GVSU)
crazy stuff for real.
i'm excited i guess...
it's just weird though.
crazy crazy crazy

new years was uh eventful.
I had fun :) 
it was nice to bring in the new year with my boy

yes yes yes.
love love love.

cheer is frustrating.
I love it and all.
for real I do
but this season...
I'm just always teed off when I get out.

I dunno.
whatever I guess.
I'm actually REALLY excited for the musical.
yuuuuuuuuuppppppppppppppp.
guess I should go do something productive.
for once haha <3"

Replier #1:
"uhhhhhhhhm.
iloveyou :]
forrrrreal.
<3"

Replier #2:
"I can't believe 2007 is already here. It went by so fast. It's crazy. I miss you girl. You're adorable! :)

Replier #3:
"for real I miss you too...
YOU'RE cute!"

Replier #4:
“may I put a vote in for uofm-dearborn..
then we can go to orientation together,
and have classes together,
and go out for lunch together,
and study in the library together,
and meet for coffee together,
and.. hahaha i loveeee youuuuu!!! :D"

Initiator repost #1:
“ALRIGHT WELL THAT DECIDES IT THEN HAHAHA
THAT MADE ME LAUGH! :]
SEE YOU THEN!
<3 YOU!”