# ORCA – Online Research @ Cardiff

**Emotions, everyday life and the social web: age, gender and social web engagement effects on online emotional expression**

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**Abstract**

Emotional expression is key to the maintenance and development of interpersonal relationships online. This study develops and applies a novel analytical framework for the study of emotional expression on the social web in everyday life. The analytical framework proposed is based on previous ethnographic work and the self-reported measurement of the visual cues, action cues and verbal cues that people use to express emotions on the social web. It is empirically tested, using an online survey of Spanish frequent Internet users (n=301). The analysis focuses particularly on how age, gender and social web engagement relate to emotional expression during online social interactions. We find that both personal characteristics (age and gender) as well as levels of social web usage affect emotional communication online. The effect size is particularly strong for gender. The paper illustrates and reflects upon the potential of the proposed analytical framework for unveiling norms and strategies in online interaction rituals.

**Keywords:** emotions, social interaction, social web, gender, age, social web engagement

**INTRODUCTION**

Human interaction lies at the heart of social life: a central feature of the human condition is that our daily life is spent in the presence of others (Goffman, 1983). Over the last two decades, social encounters in everyday life have diversified significantly, taking on new and different forms due to social media. The Internet has introduced new possibilities for communication, and to be co-present (Author 2015), and the social web[i] now plays a significant role in the social relationships of many individuals. With the popularity of the social web and mobile devices, people have at their disposal a broad array of technologies for communicating with others and being social. Today, in the north part of the globe, for some of us it is difficult to imagine social relationships without access to the social web.

Emotions are key to the dynamics experienced in social relationships, and this is also valid for those social encounters that take place online (van der Löwe and Parkinson, 2014). In this study, emotions are understood as relational, i.e. relationships and practices are involved in the production of emotions (Burkit 1997). Daily acts of emotion constitute one important thread in the fabric of civilization (Gross and Thompson, 2007), given that all social relations–from the simplest face-to-face (F2F) encounter to complex social interactions–involve emotional responses. People might express emotions online and are able to perceive the emotions of others online too (von Scheve and Salmela, 2014; Benksi and Fisher, 2013). In this way, emotions could be understood as 'patterns of relationships' between individuals or groups of people (Burkitt 2014: 6). Consequently, the ways in which emotions are communicated online surface in 'patterns of relationships […] and these also result in patterns of activity that can become dispositions–ways of acting in particular situations […]' (Burkitt, 2014: 6). These patterns of relationships can vary for particular social groups and settings. The present study is interested in beginning to explore the patterns of activity (or interaction rituals) in expressing emotions during social interactions online, as well as the factors that affect them. Recent research suggest that interaction rituals are possible online to a micro-level. Now, this study tries to extend those results to the meso-level of analysis and offer potential for further macro-level analysis.

Individuals consider each other's attitudes, and rehearse actions and social acts online. Groups of individuals generate interaction rituals that are common to them (Hardey, 2008; Thelwall et.al., 2012). Considerable variation exists in the experience and display of emotions in F2F interactions (Stearns and Stearns, 1986). This variability suggests that, to an important degree, subjective experiences and emotional beliefs are both socially acquired and socially structured. The social web could be expected, then, to have a role in shaping emotional expression online.

Collins' (2004) theoretical approach suggests that assembling human bodies in F2F interaction allows an interaction ritual to be constructed. However, recent theoretical developments suggest that co-presence is possible online too, entailing a wholly different and complementary set of strategies–and interaction rituals–to, for instance, signal immersion on the online encounter (Author, 2015; Campos-Castillo and Hitlin, 2013). Moreover, in online encounters, emotional expressions can emerge and can become particulars ways of acting, affected by social factors and socio-cultural characteristics (such as socio-cultural background or Internet use). This article is particularly concerned with exploring the extent to which emotional expression during online interactions is affected by two social factors–age and gender–and by individuals' level of engagement with the social web, in a particular socio-cultural context.

The article is structured as follows: the Literature Review discusses existing research on age, gender, social web engagement and emotion, and provides the basis for developing a conceptual framework for the analysis of emotional expression online; Research Questions, Data and Method introduces the data and methods used to contrast the framework empirically; the following two sections outline and discuss the results; the final section presents conclusions and future directions for research.

**LITERATURE REVIEW**

In earlier Internet studies, the dominant view was that emotions are very difficult to express online (e.g. Rice and Love, 1987). More recently, the study of the relationship between emotions and the Internet has become a central theme of analysis: a trend that has been aided by the proliferation of public data–mainly textual–that social web applications make available, and by the advances in techniques that can be used to obtain and analyse such

data, like text mining, natural language processing and sentiment analysis (Thelwall and Kappas, 2014; Pang and Lee, 2008). Several studies argue that emotions can be expressed just as well online as in F2F situations (e.g. Walther and Malcolm, 2002). Some studies go even further, suggesting that emotions can be expressed more openly online, given the lack of social constraints (Turkle, 1995) and the 'disinhibition factor' that the Internet may offer (Joinson, 2001). There is currently a limited but growing body of research that deals with the role of emotions in online social relationships (e.g. von Scheve and Salmela, 2014; Benksi and Fisher, 2013), and how emotions matter in online communication (Maloney, 2012; Thelwall, 2010). Today, few would question that emotions can be conveyed online, thus the focus of research has shifted from whether emotional communication is possible online towards the analysis of the differences between emotional expression online and F2F (Derks et al., 2008; Parkinson, 2008). However, the analysis of differences in how social groups experience and express emotions on the Internet is scarcer.

**Differences in emotional expression online**

There is a large body of literature dealing with age and gender differences in Internet use (e.g. Hargittai, 2010; Helsper, 2010; van Deursen and Van Dijk, 2014). Following an initial focus on inequalities in Internet access, the interest has shifted to the study of the background characteristics that impact how the Internet is used (Hargittai, 2010). This section reviews literature that studies how age and gender affect Internet use, focusing on their impact on emotional expression online. It also introduces the concept of social web engagement as an additional variable that could potentially affect emotional expression online.

Young people are a particularly active group on the social web (Boyd, 2014; Livingston and Brake, 2010). Although the term 'digital native' has been rightly criticised (e.g. Helsper and Eynon, 2010), it is acknowledged that young people hold a privileged position regarding individual capacity for technology use, as they grew up with digital technologies as an integral part of their everyday lives. This view implies that year of birth is a key determinant of Internet use, in terms of quantity and quality and in terms of digital skills (DiMaggio and Bonikowski, 2008; Hargittai, 2010). Consequently, there is a considerable amount of literature about age differences regarding Internet use and online behaviours (e.g. Lenhart

et al., 2010; van Deursen and Van Dijk, 2014). However, we do not know much about age differences in the expression of emotions online. Previous literature on F2F emotions suggests that people become less emotional (Bromley, 1990) and that they seem to have less emotional expressivity as they get older (Gross et al., 1997). Thus, age could be expected to be a relevant factor affecting the self-report of emotional expression on the social web too.

Gender differences in online emotional expression are a more established area of research. A number of studies agree that female Internet users are more expressive of their emotions (Fallows, 2005; Kapidzic and Herring, 2011; Thelwall, 2010), and are more prone to use the social web to communicate with others, than males (Junco, 2013; Cotten, 2008; Van Doorn, 2009). The results pointing at gender differences are broadly consistent with those on F2F communication research (Simon and Nath, 2004; Shields, 2002). Yet, the evidence is not unequivocal regarding the gendered use of the Internet to communicate. Helsper (2010) finds no gender differences in the use of the Internet as a communication tool. In addition, Preece and Ghozati (2001) do not find a relationship between empathy expression in an online group and gender, although the presence of women in the groups correlates with a higher number of empathic messages. To further develop this research, we consider gender differences in emotional expression on the social web.

Internet usage can no longer be described only in terms of frequency or Internet connection versus non-connection. Some people go online to interact with others only occasionally; many others make it an integral part of their lives, connecting regularly or constantly through mobile devices. This variation can be expected to have consequences on the ways in which people use the Internet (Hampton et al. 2011). Whilst some research has been conducted on social media usage as an online venue where emotional communication takes place (e.g. Ellison et al., 2011; Marwick and Boyd, 2011), there is much scarcer research on the effects of social web level of use on emotional expression online. A study about online gaming (Seo et al., 2012) suggests that greater Internet experience can reduce emotional competence. Yet, other studies suggest that more skilled users are likely to engage in more types of online activities–including communicating with others–and with greater frequency (e.g. Rainie et al., 2006; Livingstone and Helsper, 2010). Differences in emotional expression for users with different levels of social web engagement could also be expected, but they

have been largely ignored by previous research. For this reason, this study controls for levels of access, by focusing on frequent Internet use, and investigates which kinds of web applications have a larger effect on emotional expression.

**Emotions online in social relationships**

People use a wide variety of cues to express emotions online. We take into account this variety, and explore the use of three types of cues: non-verbal, action and verbal (written). These three categories are used to conceptualise emotional expression on the social web and to develop a conceptual framework (Figure 1). The definition of these three cues on the social web is based on a previous ethnographic study about online social interaction (see Author 2015) as discussed below. We expand previous ethnographic findings and use this conceptual framework to explore whether emotional expression on the social web is affected by gender, age or levels of social web engagement.

**FIGURE 1**

*Non-verbal cues:* Non-verbal cues are the observable actions that accompany social interactions and do not imply language and words: facial expressions, blinks, speech pauses, gestures (conscious and unconscious) etc. In F2F research, non-verbal cues, which are typically produced outside conscious awareness, are considered as signals conveying reliable information about people's emotions (Planalp, 1999) and a measure of affect and socialisation (Malatesta and Haviland, 1982). The same points do not necessarily hold for online communication, as non-verbal cues are, primarily, conscious decisions and the only way of conveying non-verbal cues unconsciously is through the webcam or Voice over Internet Protocol (VoIP). Previous research argues that the equivalent to facial expressions online are the emoticons (Dresner and Herring, 2010). Hence, emoticons could be used as a strategy for non-verbal emotional expression on the social web. Furthermore, existing literature suggests that the use of multimedia elements (such as video or audio) to express emotions is a common practice among Internet users (Author, 2015; Kanautz and Stock, 2011).

*Action cues:* Action cues occur when people purposively act in response to something. They are different from body movement, because they are goal-directed or voluntary acts (Planalp, 1999). In addition, they are also perceivable stimuli that people produce and sense in their everyday interactions with others. Action cues can take place in online communication too. People may shut off their computers when they get angry, for instance, or may wish a hug or a kiss during online encounters. In relation to action cues, we also explored (as shown in Figure 3) individuals' tendency to increase communication (as a voluntary action) depending on the emotions they experience, in order to explore the concept of openness to communication (Author, 2015).

*Verbal cues:* It is commonly acknowledged that non-verbal communication is the prime medium for emotion. Despite this, the verbal expression of emotion is important in F2F interactions and even more so in online settings. The verbal/written cues of emotion online are those expressed in words. This expression can be direct, by coming outright and saying 'I am feeling happy today' or more subtle, such as through word choice or language intensity (for example, the use of capital letters). According to Baym, 'text based new media afford many ways to express emotions' (2010: 103).

As illustrated in this section, few studies have so far looked at how different social groups vary in their expression of emotions online. Questions about the relationship between age, gender and the way people engage with the social web and emotional expression remain under-theorised. Moreover, the bulk of studies on social media draw on college-aged samples and focus on specific applications. This does not allow for an examination of the use of the social web across generations and platforms. In order to address this gap, this study introduced a conceptual framework based on previous research, which is tested in the reminder of this article.

**RESEARCH QUESTIONS, DATA AND METHOD**

**Research questions**

This analysis explores the individual foundations of variations in self-reported emotional expression on the social web, an issue that has not been previously explored in the literature. In order to address this gap, we ask how age, gender and social web engagement

relate to self-reported volumes of emotional expression online, based on cues. In other words, do older people report more emotional expression on the social web than younger people? Do women report more emotional expression on the social web? Do people who report higher social web engagement also report higher levels of emotional expression?

**Sampling and survey administration procedures**

We use data collected from a non-probability sample of Spanish frequent Internet users (n=301). The dataset captured information on people's self-reports on emotional expression, as well as details of their social web engagement and social factors (gender and age) allowing us to analyse whether systematic differences exist between different ages, genders and social web engagement groups in the sample. The use of emotional expression self-reports on the social web is relevant for two reasons. First, it provides a quantitative research design that complements content analysis studies (e.g. Thelwall, 2010; Thelwall et al, 2012), which are necessarily focused on a single application (such as Twitter or Facebook) and generally analyse sentiment. Second, it is ethically responsible, unlike the recent, controversial Facebook experiment (Kramer et al., 2014). However, it also raises questions regarding the capacity of surveys to capture the complexity of emotions in relationships. In this sense, it is worth mentioning that the survey was carried out after an ethnographic project that focused on understanding those complexities (Author, 2015). The study also recognises the socio-cultural dimension of emotions and does not pretend to generalise results beyond the sample of Spanish frequent Internet users.

The questionnaire was distributed online using multi-modal administration methods. The social web is a viable means of obtaining a sample of individuals who frequently use the Internet (Kapteyn and Couper, 2011), i.e. the focus of this research. The researcher initially used their own Social Network Sites and email contacts to distribute the survey, asking those contacts to further circulate it. The survey included a set of questions to identify Spanish nationals who are frequent Internet users–our target group–regardless of their place of residency. In total, 301 individuals answered the survey.

As is generally the case with online surveys, caution in interpreting the results is required, due to the convenient nature of the sample and the biases of self-reported surveys (Bertrand and Mullainathan 2001).

**Measures**

The survey was prepared in Spanish and included 21 questions about emotional expression online (the dependent variable), background characteristics of respondents and social web engagement measures (the independent variables).

*Emotional expression on the social web*: Following previous ethnographic work on emotional communication online (Author, 2011; 2015), we developed a measure based on the conceptual framework presented in Figure 1, using a five-point Likert scale (from strongly agree, coded as 5, to strongly disagree, coded as 1) that asked respondents to self-report on a set of statements about their ways of expressing emotions on the social web (for further details see Figure 3). Responses were aggregated into non-verbal cues (three items), action cues (six items) and verbal cues (five items), and computed into a summary measure of emotional expression (with all items included in Figure 3 being weighted equally). The emotional expression values in the survey ranged from 19 to 63.

*Background variables:* Age was operationalised in five age groups (1 being the youngest (16–24) and 5 the oldest (55–64). As was to be expected, the sample was made up, predominantly, of young and middle-aged individuals: the largest group of respondents was those aged between 25 and 34 (42.53%), followed by those between 35 and 44 (33.89%). The least represented group was those aged between 55 and 64 (1.99%). There were no respondents over the age of 64.
Gender was operationalized as a binary dummy variable, indicating whether the individual reported to be male (coded 0) or female (coded 1). There were approximately the same number of women as men in the sample (52.16% — see Table 1 below for further details).

*Social web engagement:* Digital inequalities literature has demonstrated that Internet usage should no longer be operationalized in terms of time and frequency of connection only, but rather should take the type of use during connections into account too. We used five variables to measure social web engagement: frequency of Internet usage; number of email accounts used; number of Social Network Sites used; number of instant message systems used; and the types of interpersonal relationships that individuals maintained online.

We defined frequency of Internet use (IU) as an ordinal variable based on three levels of usage: 'I am **always** connected or at one click away from being connected' (coded as 4); 'I connect **daily**' (coded as 3); 'I connect at least once a **week**' (coded as 2). Survey respondents who reported to connect less frequently than once a week (coded as 1) were excluded from the analysis, given our interest in frequent Internet users and in those who make online communication an essential part of their social relationships.

To provide a more nuanced account of IU for social communication, we also asked respondents to report on their use in different platforms for communication through the Internet: the number of email (EMAIL) and instant message accounts (IM), and the number of Social Network Sites (SNS) in which they were active in the six months prior to survey. The EMAIL measure ranged from 0 to 20; the IM measure ranged from 0 to 7; and the SNS measure ranged from 0 to 10.

Finally, we asked respondents about the different kinds of interpersonal relationships (IR) that they keep online. It seems to be an important factor in understanding self-disclosure in online social interactions, so we would expect it to affect emotional expression as well. Participants were asked to report whether they communicated with their partner, friends, colleagues, family, acquaintances and/or strangers. The IR measure ranged from 1 to 6.

**Data analysis**

Data were analysed through descriptive statistics and hierarchical linear regression. The analysis first studied the IU of subjects in our sample (Table 1), then generated descriptive statistics on group differences based on IU alongside other forms of social web engagement. Gender and age differences in IU were examined using chi-square tests. T-tests and ANOVA were used to compare gender and age differences against IM, EMAIL and SNS.

Hierarchical linear regression was used to model the relationship between emotional expression online, individual characteristics (gender and age) and social web engagement: IU, IM, EMAIL and SNS, and IR. A hierarchical model is particularly appropriate to analyse the different levels of social web engagement.

In order to deal with missing data in the emotional expression variable, we used multiple imputation to create five complete datasets (m=5) using the Amelia statistical package for *R*

(Honaker et al, 2010). The regression coefficients from each dataset were combined using the rules described by Little and Rubin (2002).

**RESULTS**

**Individual characteristics and social web engagement**

Table 1 provides information on gender and age differences in IU in our sample.

<p style="text-align:center"><strong>TABLE 1</strong></p>

The percentage of respondents reporting daily connection (52.49%) or to be always-connected (42.53%) is considerably higher than for weekly connections (4.98%). Men in our sample are more likely to be in the 'always connected' (54.69%) category than women (45.31%), but the chi-square tests show that gender differences in IU are not significant (p=.49). Young respondents (from 25 to 34 years old) were more likely to be 'always connected' (40.63%) than other age groups. This was the highest figure for all age groups, followed by the 35 to 44 age range (37.50%). Differences in IU by age, however, are not significant (Fisher's p= 0.44). The lack of statistically significant differences between groups shows that gender and age differences are blurred among frequent Internet users.

<p style="text-align:center"><strong>FIGURE 2</strong></p>

Respondents had, on average, 3.06 (SD=2.23) email accounts, 1.97 (SD=1.42) instant message accounts and were active in 2.65 Social Network Sites (SD=1.86). Participants reported that they communicate chiefly with friends (95.8%) and colleagues (81.7%). The least popular kind of online communication was with strangers, but even so, around a third (34.3%) of respondents reported to interact within this category of social relationship (Figure 2). On average, respondents communicated within 4.00 (SD=1.40) types of interpersonal relationships, meaning that they maintain a broad range of kinds of relationships, including with strangers.

Table 2 presents summary statistics on IM, SNS, EMAIL and IR. This provides a more nuanced description of the social web engagement of our sample. Again, we find no statistically significant gender differences for either EMAIL, IM and SNS, or in the range of relationships kept online. Given the focus on social relationships, it worth emphasising that

there are not significant differences in the range of relationships by age or gender. All the participants interact mainly with friends, colleagues, acquaintances and family, but they also communicate with their partner and strangers to a lesser degree. Understanding social web use for emotional communication requires attention to both, the applications used and the relationships themselves.

**TABLE 2**

Regarding age, we found statistically significant differences for IM and EMAIL. To further explore the differences, we conducted a Tukey multiple comparison of means. The results show that the significant differences for IM and EMAIL are based on variances between those in the 55–64 and the 16–24 age groups.

**Emotional expression on the social web**

Figure 3 details respondents' self-reported experiences of emotional expression on the social web. Regarding the use of non-verbal cues to communicate, 50% of participants agreed or completely agreed that they use emoticons to express emotions online. However, previous research (Derks et al. 2008) has referred to the difficulties involved in recognising, interpreting and conveying emotions, due to the lack of non-verbal cues on the social web. Thus, participants were also asked about VoIP and webcam usage, as potential vehicles to express emotions better. As Figure 3 shows, surprisingly, the majority of respondents reported that they did not use webcams or VoIP tools to express their emotions better (37.0% disagree and 33.7% completely disagree). Thus, according to our respondents, these tools are not as effective as could be expected in offering non-verbal cues. Alternatively, it could be that individuals in our sample 'prefer' the limitations associated with the lack of provision for non-verbal cues. Indeed, video clips and music are used more often than webcams to express emotions (29.1% completely agree or agree, compared to 12.5%).

By contrast, verbal (written) cues are essential in online communication. Our findings, in line with those of Baym (2010), strongly suggest that written text assists in emotional expression: 42% of respondents completely agreed or agreed that they are more explicit in what they say when trying to convey emotions online. On the other hand, it is intriguing that frequent Internet users consistently reported that they use exclamation marks when they are surprised, but they do not use other strategies to signal negative emotions, such as

capital letters for shouting or using strong language. This pattern would suggest that negative emotional cues could be more suppressed online than cues associated with positive emotions or ambivalence.

**FIGURE 3**

This finding is consistent with the results for action cues, where respondents reported to use the web often to communicate a lot when they feel happiness (50% agreed or completely agreed), or always (50% agreed or completely agreed). By contrast, communication in relation to sadness is much more constrained: only 16.4% of respondents agreed or completely agreed that they communicate a lot with others online when they are sad. This difference supports the idea that the openness to communication is fundamental for encounters on the social web (Author, 2015), with this openness being mediated by the mood of the individual (Thelwall, 2010). Consistent with Quan-Haase and Collins (2008), we also found high levels of usage of the 'no replying' action (25.6% completely agree and 42.5% agree), which is an option that is much easier to implement online that F2F.

**Multivariate analysis**

Table 3 shows the results of the hierarchical multiple regression modelling. The analysis investigates the relationship between gender, age, levels of social web engagement (EMAIL, IM and SNSs, and IR) and the self-reported emotional expression on the social web (dependent variable). Seven models are presented, to explore which model best fits the data.

Emotional expression online is regressed, first, on respondents' gender and age (Model 1 and 2). The third model adds IU. Models 1 and 2 show that gender and age alone are not good predictors of emotional expression, as only 8% of the variance is explained. When IU is added (Model 3), the three independent variables are better predictors of emotional online: the model explains 17% of the variance. In Models 5 to 7, we include the independent variables EMAIL, SNS, IM and IR in the analysis. The model fit improves, with Models 6 and 7 explaining 26% of the variance.

**TABLE 3**

The modelling suggests one main finding regarding gender and emotion: women report expressing more emotion on the social web than men. This result is broadly consistent in all seven models. Alone, gender does not explain much variance in our sample, but the gender effect size increases when we include social web engagement variables in the models, which suggests that a model with a more nuanced description of social web engagement considering IU, IM, SNS and EMAIL provides a better fit and is able to explain differences in emotional expression on the social web to a greater extent.

We also find differences in the reporting of the independent variable between age groups. The results show a negative relationship between emotional expression online and age: older Internet users tend to report lower levels of emotional expression, although the effect size of age decreases when we include social web engagement variables in the model. This means that to understand why age is important better and explain the variable, we need to consider the interactions between age and social web engagement.

The effect size of IU decreases substantially as we introduce other social web engagement variables, suggesting that is also relevant to consider social web engagement variables such as IM, SNS and EMAIL to predict self-reporting of emotional expression. That is coherent with our theoretical point of departure and implies that we can achieve a more accurate prediction of people's emotional expression on the social web if we introduce complementary measures of engagement in the analysis, as illustrated by Models 4 to 7.

The study of the interaction of the regressors suggests that gender, age, IU, IM, SNS and EMAIL are relevant for the study of differences in self-reported emotional expression. Both Model 6 and 7 provide equal model fit ($r2= 0.26$), but as the inclusion of the IR regressor does not improve the fit of the model, we select Model 6. This model shows a positive relationship between gender, IU, IM, SNS, EMAIL and self-reported emotional expression: being female, younger or reporting greater levels of social web engagement are associated with higher levels of emotional expression. The effects of age and gender are larger than the effects of social web engagement. So, ascribed characteristics are, on the whole, better predictors of self-reported emotional expression than other aspects covered in this study.

**DISCUSSION**

To answer our research questions, we explored the ways in which the reporting of emotional expression online relates to gender, age, IU and social web engagement among Spanish frequent Internet users. Regarding whether women who are frequent Internet users report more emotional expression on the social web than men, our results concur with previous research that has studied gender differences in online emotions (i.e. Thelwall et al., 2010). First, females in our sample reported higher levels of emotional expression than males. These findings are also in line with those of Kapidzic and Herring (2011), which prove that woman tend to be more expressive of their emotions than men in their online communications. These results also suggest that self-reported emotional expression follows similar trends along gender lines to reported F2F emotional expression (Simon and Nath, 2004). Second, older people reported lower levels of emotional expression on the social web than younger users. This finding also aligns with F2F studies on emotions expression, which have found that younger people exhibit greater levels of emotional expression (Bromley, 1990). Finally, regarding the relationship between social web engagement and the independent variable, our results indicate that all the explored forms of engagement affect it. A covariate analysis allows a more detailed description of the effect of each Internet application–IM, SNS and EMAIL–in reported emotional expression. This shows that the impact of Internet usage decreases when we control for other engagement variables, such as IM. Among the covariates introduced in the model, the most substantial effect size is for IM, which is consistent with previous research that reports that much emotional communication on the social web happens in IM applications (Author, 2011). As already mentioned, the nuanced description of social web engagement offered by the inclusion of variables beyond connectivity suggests that taking into account the varied uses and platforms helps in predicting patterns of emotional expression online. Our results are limited but important in this respect, as they suggest that greater use of the social web is associated with greater levels of reported emotional expression online, and that being younger and female is also related with higher levels of reported emotional expression, which is consistent with the results obtained in F2F research. Moreover, the findings support the formulated theory that differences in the way people use the social web shape their emotional communication online.

By studying these social factors and characteristics, this study suggests that in these particular social interactions–i.e. online encounters–different ways of acting emerge that are affected by age, gender and social web engagement. It suggests that being female, young, with higher levels of Internet usage and social web engagement correlates with reporting higher levels of emotional expression during online social interactions. This study, following previous ethnographic findings (Author 2015), proposes that these practices can be considered interaction rituals, constructed in assembling communication acts in online interaction. Different ways of acting are being created and normalised online. Internet users have developed shared strategies to express emotions online and to build meaningful encounters, even without human bodies and F2F interaction — as theorised by Collins (2004).

Caution is warranted when interpreting these results, given the non-representative nature of our sample. One limitation of this study relates to the self-reported nature of the survey (Boase and Ling, 2013). Another limitation is the restricted background of the sample–i.e. only Spanish people–but this narrow scope also set the grounds for further studies comparing different socio-cultural realms.

Our analysis underlines several points. First, it highlights a need for online research to focus on aspects that go beyond specific web applications or connectivity when studying interaction rituals online. The results of this study suggest that different levels of engagement (which account for different types of social web usage, including the kind of relationship kept online) affect the self-report of emotional expression. This pattern indicates, in turn, that expressing emotions on the social web is a complex matter and should also be studied beyond the confines of a single web application and considering different kinds of interpersonal relationships. Although useful, research on specific web services can lead to oversimplification.

Second, our results suggest that measuring social web engagement only by frequency of connection could lead to an incomplete overview of group differences amongst high-frequency Internet users. The people in our sample do not interact on the social web by means of a single application, nor do they interact within one type of interpersonal relationship (Ruppel, 2015). Thus, a conceptualisation of engagement for IU is very limited.

An alternative to a technology-driven approach is a user-centred approach, focused on the Internet user and her/his social interactions (Author, 2011). The proposed conceptual framework aims to offer a quantitative way to study self-reported emotional expression on the social web that goes beyond sentiment analysis: it is able to analyse ritual interactions online once they have been described, and takes into account the different ways in which people engage with the social web to communicate with others.

**CONCLUSIONS**

This study aims to contribute to the emerging body of research that has been seeking to enhance our understanding of online interaction and, especially, of online emotions. The study introduces a novel theoretical and methodological approach to the literature of emotions in social relationships. In doing so, the approach follows recent calls for more diverse ways to study emotional experiences in everyday life, using a variety of methodological perspectives.

The framework introduced arises from the idea that greater attention should be devoted to the investigation of an emerging emotional terrain online, and aims to provide a framework to explore it. Through communication processes, societies develop interaction rituals, rules and strategies in different settings. A contemporary analysis of interaction rituals needs to consider the online realm as an integral part of socialisation processes and needs to explore differences in ways of acting online. The novelty of this approach lies in the fact that it does not focus on the content of the message (as the messages can be highly controlled) and does not describe what is being said only. Rather, our proposed approach underlines the importance of looking at emotional cues and whether they might become a general way of expression — a social norm. It is crucial to note that online social interactions are affecting structural factors (settings) that influence socialisation processes by themselves. For example, the structure of social web applications and services affects the way in which we experience and convey emotions. Moreover, as the highly controversial Facebook emotion experiment (Kramer et al., 2014) showed, emotional contagion is related to emotional expression, and it can happen online even without any verbal cues intervening in the communication process. This could be explored in the future, using the conceptual

framework proposed in this article to research to how we are brought up or trained to express and manage emotions online.

Future research could also use probabilistic and larger samples, as well as different types of social web users to further test our findings. Additionally, it could extend our study by exploring cultural differences in emotional expression online or the interaction rituals that are emerging in different social-cultural contexts, amongst different groups of users and geographies. This framework we have put forward has the potential to deal with the question of the commodification of emotions and the homogenisation of emotional expression, as well as the extent to which both take place on the social web. There are many unexplored issues in this area, such as the detailed study of specific emotions and their manifestation online. Finally, future research could seek to understand better the impact that online emotional expression may have in F2F emotional communication.

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**TABLES AND FIGURES**

**Figure 1. Conceptual framework to study emotional expression on the social web**
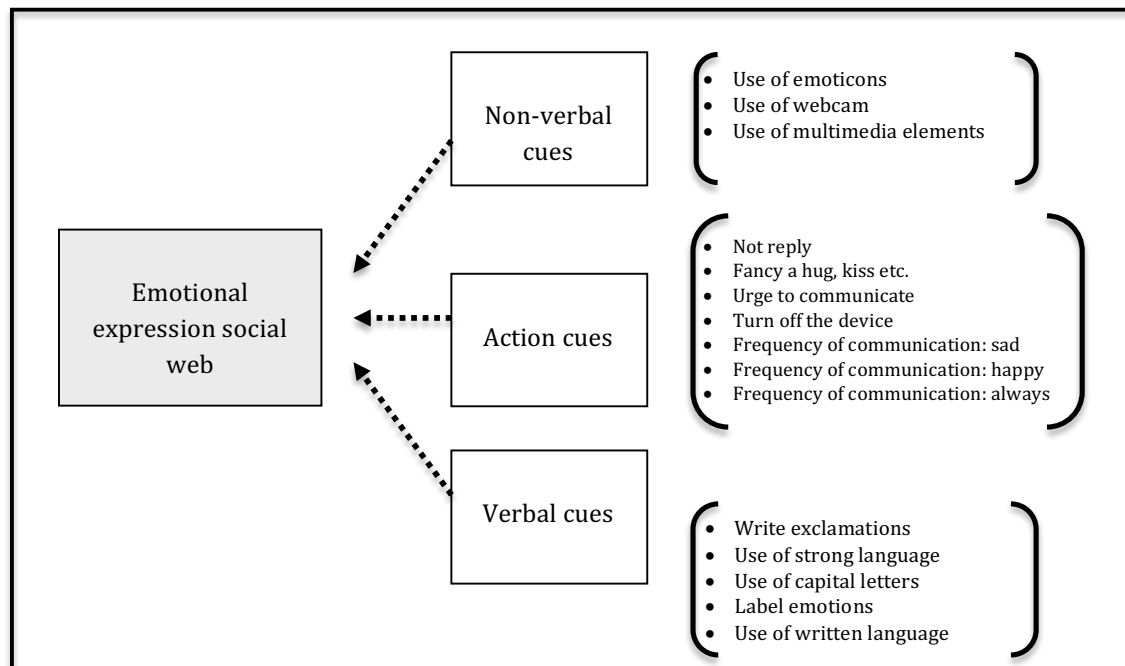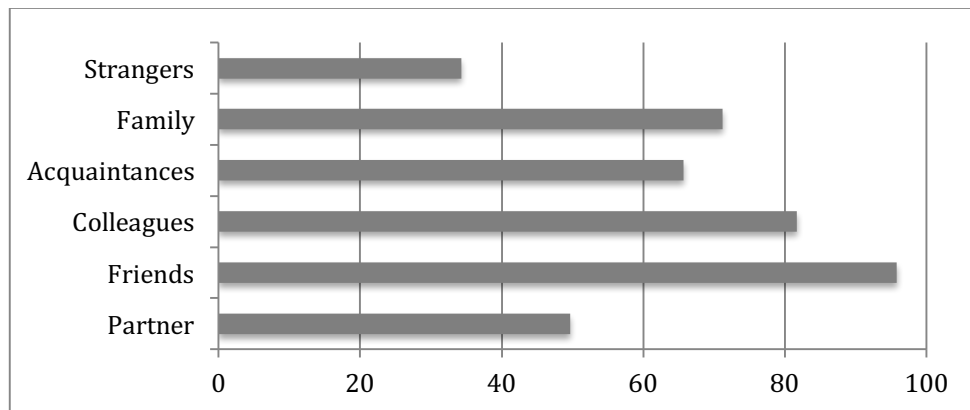


Source: Own elaboration.

**Table 1. Sample characteristics: age, gender and levels of Internet use**

| | | Number of respondents | | Frequency of Internet use (%) | | |
|---|---|---|---|---|---|---|
| | | n | % over total n | Weekly n % | Daily n % | Always n % |
| **Gender** | Male | 144 | 47.84 | 5 33.33 | 69 43.67 | 70 54.69 |
| | Female | 157 | 52.16 | 10 66.67 | 89 56.33 | 58 45.31 |
| | | | | Chi-sq = 4.77   df=2   p=.092 | | |
| **Age** | 16 to 24 | 41 | 13.63 | 3 <20.00 | 25 15.82 | 13 10.16 |
| | 25 to 34 | 128 | 42.53 | 4 26.67 | 72 45.57 | 52 40.63 |
| | 35 to 44 | 102 | 33.89 | 7 46.67 | 47 29.74 | 48 37.50 |
| | 45 to 54 | 24 | 7.97 | 1 6.67 | 10 6.33 | 13 10.16 |
| | 55 to 64 | 6 | 1.99 | 0 0.00 | 4 2.53 | 2 1.56 |
| | | | | Chi-sq = 7.47   df=8   p=.49 Fisher's p=.44 | | |
| **Total** | | 301 | 100 | 4.98 | 52.49 | 42.53 |

**Figure 2. Interpersonal relationships in social web communication (percentage)**

**Table 2. Gender and age differences on IM, SNS, EMAIL and IR kept online**

| | | IM | | SNS | | EMAIL | | IR | |
|---|---|---|---|---|---|---|---|---|---|
| | | **M** | **SD** | **M** | **SD** | **M** | **SD** | **M** | **SD** |
| **Gender** | Male | 2.07 | 1.48 | 2.82 | 2.05 | 3.16 | 1.99 | 4.07 | 1.45 |
| | Female | 1.89 | 1.37 | 2.46 | 1.66 | 2.96 | 2.42 | 3.93 | 1.35 |
| | Independent sample T-test | T= 1.12 P= .263 | | T= 1.51 P= .132 | | T=0.77 P=0.442 | | T=0.74 P=-456 | |
| **Age** | 16 to 24 | 2.49 | 1.80 | 2.90 | 1.65 | 2.20 | 1.65 | 3.66 | 1.28 |
| | 25 to 34 | 1.98 | 1.3.4 | 2.69 | 1.82 | 3.07 | 1.62 | 4.09 | 1.37 |
| | 35 to 44 | 1.85 | 1.37 | 2.57 | 1.95 | 3.29 | 2.56 | 4.09 | 1.48 |
| | 45 to 54 | 1.96 | 1.16 | 2.67 | 2.06 | 3.79 | 3.71 | 3.88 | 1.51 |
| | 55 to 64 | 0.5 | 0.84 | 1.33 | 1.51 | 1.67 | 1.03 | 3.67 | 0.82 |
| | ANOVA | F=3.22 P=.013* | | F=1.01 P=.402 | | F=3.15 P=.0147* | | F=.99 P=.414 | |

**Table 3. Gender, age, social web engagement and emotional expression online**

| | Social factors models | | IU model | Social web engagement models | | | |
|---|---|---|---|---|---|---|---|
| | **Model 1** | **Model 2** | **Model 3** | **Model 4** | **Model 5** | **Model 6** | **Model 7** |
| **Gender** | 2.44* | 2.32* | 2.90** | 2.93** | 3.04*** | 3.08*** | 3.08*** |
| | (0.95) | (0.92) | (0.90) | (0.90) | (.88) | (.86) | (.86) |
| **Age** | | -2.29** | -2.50** | -2.61** | -2.31* | -1.95* | -1.92* |
| | | (0.72) | (0.72) | (.63) | (.74) | (.74) | (.65) |
| **IU** | | _ | 4.12*** | 3.76*** | 2.28 | 1.85 | 1.93 |
| | | | (.95) | (.85) | (1.10) | (1.09) | (1.11) |
| **EMAIL** | | _ | _ | 0.44 | 0.30 | 0.12 | 0.12 |
| | | | | (0.22) | (.22) | (.22) | (.22) |
| **SNS** | | _ | _ | _ | 1.04** | 0.60* | 0.64 |
| | | | | | (0.31) | (.32) | (.32) |
| **IM** | | _ | _ | _ | _ | 1.42*** | 1.46*** |
| | | | | | | (.32) | (.36) |
| **IR** | | _ | _ | _ | _ | _ | -0.25 |
| | | | | | | | (.37) |
| **Adjusted r2** | 0.02 | 0.08 | 0.17 | 0.18 | 0.22 | 0.26 | 0.26 |
| **p** | 0.05 | 0*** | 0*** | 0*** | 0*** | 0*** | 0*** |

Source: Own elaboration.                    Signif. codes:  *= 0.1; **= 0.05; ***=0.01

**Figure 3. Use of non-verbal, verbal and action cues for emotional communication on the social web (percentages)**
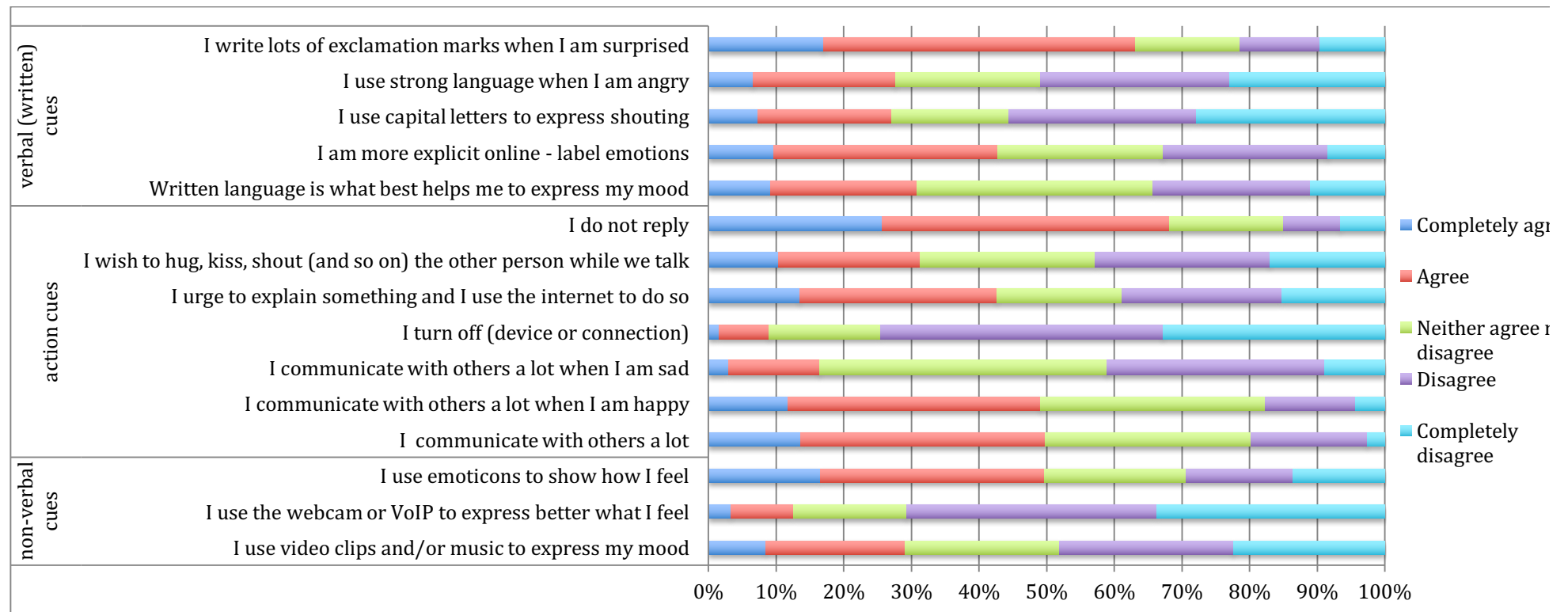


Source: Own elaboration.

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[i] Here, 'the social web' is defined as a set of relationships that link people on the Internet, also known as 'social machines' (Roure 2014). The social web concept is useful because, unlike terms such as Social Network Sites or Social Media, it stresses the social (relational and communicative) aspects beyond any software, platform or application, and beyond any device.