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Fullwood, C ORCID: 0000-0002-7714-6783, Orchard, L J and Floyd, S A (2013) Emoticon convergence in Internet chat rooms. Social Semiotics, 23 (5). pp. 648-662. doi:10.1080/10350330.2012.739000

Official URL: <https://doi.org/10.1080/10350330.2012.739000>

DOI: <http://dx.doi.org/10.1080/10350330.2012.739000>

EPrint URI: <https://eprints.glos.ac.uk/id/eprint/11780>

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Emoticon Convergence in Internet Chat Rooms

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The present study examines sex and age differences in the use of emoticons (graphic representations of facial expressions) in Internet chat rooms. Data were collected from four *Noesis* chat rooms ('18 plus', '30-something', '40-something' and '50 plus'). Although women were more likely than men to use emoticons, there was no difference between the sexes in the range of emoticons used. The fact that men expressed a similar range of emoticons to women implies a general convergence towards female expression in mixed-sex communication contexts. Chat room users without a profile picture were also more likely to use winking emoticons. This may be because these types of emoticons are more flirtatious in intent, and it is easier for chatters to engage in risky communications when they are less identifiable. Furthermore, age had little bearing on the uptake of emoticons as well as the types of emoticons expressed. We draw upon Communication Accommodation Theory to help explain why emotional expression may converge in the chat room context.









Keywords: chat rooms, emoticons, convergence, sex differences, age differences

Introduction

Literature Review

Non-verbal cues are a significant and substantial aspect of face-to-face communication (Argyle, 1994; Rezabek and Cochenour, 1994). In the online world many of these cues are missing or attenuated. For example, many forms of computer-mediated communication (CMC) are chiefly text-based, meaning that traditional non-verbal cues like facial expressions and eye contact are unavailable to communicators. Research has begun to explore CMC substitutes for non-verbal cues in an attempt to compare their use with traditional 'face-to-face' cues. A pertinent example would be the use of emoticons, which have been cited as a potential means of reducing the limitations of cue restriction (Fullwood and Martino, 2007). Emoticons are generally associated with female expression (Wolf, 2000) and are sometimes referred to as 'graphical accents' (Witmer and Katzman, 1997) or 'graphic icons' (Baym, 1995), but perhaps most commonly as 'smileys.' They are created by using several keyboard characters to denote a facial expression and are assumed to act as emblems for emotion (Derks, Fischer and Bos, 2008). In many online environments, for example chat rooms, more sophisticated graphical representations of emoticons can be created automatically by combining appropriate keyboard characters or selecting them from a list. Some examples of emoticon types available to use in Windows Live messenger can be seen in figure 1 below. Despite being more voluntary than face-to-face, non-verbal behaviour (Derks, Bos and von Grumbkow, 2007), it is argued that people respond to emotional communication online in a similar manner to how they respond to it offline (Derks, Fischer and Bos, 2008). Emoticons form part of what is known as a general user-created Netspeak (Crystal, 2001), and tend to be used in many CMC applications (Huffaker and Calvert, 2005). Research on emoticon use is somewhat limited and has tended to focus on gender differences.

Figure 1: Emoticon examples

	Happy		Surprised
	Confused		Cheeky
	Sarcastic		Embarrassed
	Sad		Disappointed

In a content analysis of 70 teenage weblogs and online journals, Huffaker and Calvert (2005) found that of those who used emoticons, there was a trend for males to use more than females. Similarly, in a study based on gender and e-mail usage, Punyanunt-Carter and Hemby (2006) concluded that males reported using emoticons more frequently than females in e-mail correspondence. Witmer and Katzman (1997), however, looked at the percentage of males and females using emoticons within 3000 messages posted on public newsgroups and special interest groups, and found women were significantly more likely to use emoticons more frequently than men. The authors attributed this finding to a female preference for aesthetic quality within discourse, which is provided by the visualisation of

expression through emoticons. Likewise, in a project focusing on gender differences in Instant Messaging (IM), Lee (2003a) found that females were more likely to use more emoticons than males in both same-sex and mixed-sex group settings. However, the study should be viewed with caution as data were collected from students living within close proximity to the researcher, which inevitably threatens generalisation.

Although the research outlined above seems to be conflicting, it is possible that the online environment in which the data were collected may have influenced the findings. It has been suggested that the gender balance within an online environment strongly influences male and female interaction. In a study of same-sex and mixed-sex newsgroups, Wolf (2000) found that the ratio of 'emoticons to posts' for males was much lower than females in same-sex groups (.17 and .33 respectively). However, in the mixed-sex group the difference between these ratios was not significant with both ratios rising to .38 for females and .39 for males. In this instance, it was concluded that males were adapting to the female norm of expression. The concept of male and female convergence during online interaction was also found in Lee's (2003a) research, whereby although females used more emoticons overall, males used emoticons considerably more frequently in a mixed-sex setting ($M=21$ in mixed-sex group, $M=9$ in same-sex group). It was concluded that although gender differences are particularly prominent in dominantly same-sex groups, in mixed-sex groups the gap between these differences are considerably reduced.

It is likely that the males' adoption of the female standard of communication was a deliberate attempt to communicate empathy, thereby reducing the possibility of being viewed as threatening or aggressive. In this sense, the emoticon may be viewed as a 'linguistic softener' (Crystal, 2001). These findings may also be explained with reference to Communication Accommodation Theory (CAT) (Giles, Coupland and Couplan, 1991). CAT argues that people change the manner in which they communicate with others in order to emphasize their similarities. In this sense, interlocutors may be directly attempting to minimise social differences so that they may gain approval from others within various social contexts. Moreover, Giles, Coupland and Coupland (1991) suggest that individuals may alter their communication in a variety of ways, for example in changing their accent, dialect, nonverbal behaviours and language choice. In a recent study of gendered language on MySpace, Fullwood, Evans and Morris (2011) noted that men and women adopt both feminine (e.g. emoticons) and masculine (e.g. swearing) language features in the construction of their 'about me' sections. The authors proposed that this 'linguistic androgyny' could have been an upshot of the networkers attempting to present themselves in a gender-neutral fashion in order to 'capture' a wider range of interested users. The authors also drew upon CAT to help elucidate these findings. More specifically, they argued that linguistic styles converged because these individuals may have been seeking approval from others and the 'about me' section functioned as an online 'social C.V.'

Behavioural patterns in mixed-group interactions may be different to those in within-sex interactions because of varying motivational differences for taking part in the exchange. In other words, men may have very different reasons for communicating with women online than with other men. To further substantiate this claim, it is necessary to understand the nature of how both sexes utilise emoticons in communication. Wolf (2000) expanded on the previously mentioned study by categorising both the types of emoticons used (i.e. the emotional expression which it conveyed) and the theme in which they were used (e.g. sarcasm, sadness, etc.). In the same-sex groups it was found that the majority of emoticons were used in a humorous manner by females but to express sarcasm or teasing in males. However, in the mixed-sex group, females used an increasing number of teasing/sarcastic and humorous emoticons than in the same-sex condition, whereas males used less. This further supports the notion of a convergence between the sexes, and also gives an insight into the motivational factors underlying the nature of use. It is however important to consider where the data have been collected. This particular study collected data from two supportive USENET groups focused on depression and divorce, which will inevitably impact on motivational factors compared to a more general group. In the Wolf (2000) study it is possible that females were more flirtatious in mixed-sex groups, whereas males were pursuing a more serious sexual connection and thus altered their use of emoticons to a neutral level to reflect female use. Although 'flirtation' may be defined as "any behaviour intended to arouse sexual feelings or advances without emotional commitment" (Dictionary.com), Eglund, Spitzberg and Zormeier (1996) note that its role in platonic friendships is perhaps a little more unclear. Moreover, they suggest that flirtations may be "a subset of the larger domain of immediacy behavior, which is likely to occur in a wide variety of interpersonal contexts" (Eglund, Spitzberg and Zormeier, 1996, 105).

Similarly, in their study of teenage weblogs, Huffaker and Calvert (2005) categorised emoticons into five types (happy, sad, angry, flirty and tired) and recorded the frequency of use for each sex. The authors identified that males used significantly more flirty emoticons than females. This may suggest that males use emoticons to convey a flirtatious intent; a theory that closely links to previous literature of males being more likely to search online for sexual interactions (Turkle, 1995) and further coincides with the speculative ideas above. The theory is further supported in a study by Calvert, Mahler, Zehnder, Jenkins and Lee (2003), which found that behaviour convergence in mixed-sex groups is more likely to occur in late childhood nearing adolescence, than earlier childhood. However, there was also a trend for males to use more sad emoticons than females, which the authors were unable to elaborate upon, however this may have been a direct attempt to gain sympathy from other chatters and draw them into communication. It is evident from the research so far that as well as frequency of emoticon use, the manner in which the sexes use

emoticons is also of importance in helping to determine the function and motivation underlying usage.

As well as gender, age has also been highlighted as a possible factor that could influence emoticon use (Rezabek and Cochenour, 1994), however there has been limited research invested into the topic itself. There have, however, been assumptions that older chat room users use fewer emoticons than younger chat room users (Danet and Herring, 2007), and this is supported by Krohn (2004), who aimed to categorise four age groups in terms of the appropriate etiquette regarding frequency of emoticons (for example, emoticons shouldn't be used in emails sent to 'Traditionalists' or those born before 1946). As well as frequency, interpretation and perceived use of emoticons may differ dependent on a user's age. In an unpublished study by Lee (2003b) younger chatters were able to correctly identify more emoticons than older chatters. A variety of the studies above, such as that by Calvert, Mahler, Zehnder, Jenkins and Lee (2003), also seem to confirm that age variations may alter emoticon use. Finally, the social context in which the communication is taking place is also liable to influence emoticon use. Derks, Bos and von Grumbkow (2007) found that emoticons were used more prevalently in a socio-emotional task (choosing a present for a friend) as opposed to a more task-oriented assignment (working on a school project).

Present Study: Overview and Hypotheses

Referring back to the above research, each study utilises a different medium of interaction (i.e. newsgroups, weblogs, e-mail, etc.), which may impact on the reasoning behind emoticon usage and the dynamics of the interaction itself. Therefore, the differences in the above findings may also be attributed to differences between various online applications and why individuals choose to use them. For instance, whether the interaction is synchronous (requiring a reply almost instantly) or asynchronous (allowing a time delay before the reply) may produce a different pattern of interaction. In asynchronous communication users are able to refine their response to its optimal level (Joinson, 2003), which may influence the types of messages that people send. Messages that are deliberated are likely to be very different to responses that are made quickly and with less consideration. Therefore, it may be argued that synchronous media allow for a more unconscious portrayal of interaction than asynchronous, and thus offer a better environment for observing emoticon use. Chat rooms, in particular, offer a unique exploration of online communication, but have been surprisingly neglected within the emoticon literature. Chat rooms tend to be largely unmonitored, unlike most discussion forums and newsgroups. This lack of authority may add to the online disinhibition effect, highlighted by Suler (2004), encouraging users to interact in a more natural state. Moreover, chat room users also have the option of creating a profile page and some members may choose not to identify themselves by leaving their profile blank. One might therefore expect chatters who do not reveal themselves (e.g. through the lack of a profile picture) to interact differently than chatters who do reveal themselves, and this may be reflected in the types of emoticons they use in communication. This may therefore help to highlight how varying motivational differences could influence emoticon use. In other words, one might expect more private chatters to use chat facilities for different reasons than identifiable chatters. Finally, it is also worth noting that chat rooms allow users to create sophisticated graphical representations of emoticons (often referred to as 'winks') rather than forcing users to rely on the more simple combination of keyboard characters (as would have been the case in the Witmer and Katzman study (1997) for example). It could therefore be argued that these types of emoticons would be less prone to misinterpretation and more readily adopted for use.

The current study aims to explore emoticon use in chat rooms, by focusing on sex and age differences in the frequency of emoticon use and the types of emoticons used by these groups. To achieve this aim, emoticon use was analysed in four general chat rooms ('18 plus', '30-something', '40-something' and '50 plus'), all of which were open to male and female chatters. By studying chat rooms specifically, and by using a naturalistic observational approach, it is thought that the study will view emoticon use in a unique context, and further allow for analogies to be made between emoticon use, as a form of virtual non-verbal behaviour, and offline facial expressions. The type of chat rooms observed were also specifically chosen as a representation of general offline interaction, as users of a themed room (for instance, support for a particular illness) would have more specific motivations for the interaction and may perhaps use the chat room for informational uses rather than social uses. Drawing on the current literature, it was expected that females would be more likely to use emoticons than males. However, it was also expected that the frequency and types of emoticons used by emoticon users would be similar between the sexes as research suggests a possible convergence in mixed-sex settings. Also, it was expected that the younger chatters would be more likely to use, and would express a greater range of emoticons. Finally, it was anticipated that chatters without a profile picture would use emoticons in a more 'risky' (e.g. in a more flirtatious manner) context than chatters with a profile picture.

Method

Data collection

Data were collected from four *Noesis* (formerly Lycos) U.K chat rooms ('18 plus', '30-something', '40 plus' and '50

plus'). Noesis chat rooms were chosen in particular because at the time of data collection they were one of the most well-known and popular chat rooms available in Europe, and claimed to have one of the largest membership groups. Noesis chat facilities are password restricted and users are required to become members in order to access the chat rooms. After logging into Noesis chat, users are taken to a lift area where they can choose to enter a number of chat rooms from nine themed decks. For example, one deck contains chat rooms that are broken down into geographical areas, whereas another is aimed at younger chatters and includes chat rooms like 'TechnoClub' and 'PirateBar'. The chat rooms investigated in this study all appear in the 'Romance' deck and would seem to target specific age groups. Once a chat member has logged in to a specific chat room they can interact privately with other members or communicate in the main chat screen. Main chat screen contributions can be viewed by all chat members present in the room at the time. All chat users also have a profile page, which includes default information (e.g. chat name, gender and age), but also may have additional information added to it at the user's discretion (e.g. pictures, information about the chatter etc.)

The studied chat rooms were chosen in particular because they were not themed around a specific topic, and therefore it was anticipated that would appeal to a larger demographic than themed rooms, which would likely only attract individuals who were specifically interested in that theme or topic. Our aim was to gather a representative view of emoticon use across different age groups and between both sexes and we considered general chat rooms to be most likely to achieve this. In order to access these chat rooms, the investigator was required to create an account. Private communications of the chatters were not accessed; data collection was restricted to the main chat board and to the profiles of the chatters; which were considered public domain information. Furthermore, during the data collection phase the researcher did not interact with the other chat members or respond to any private messages. Each chat room was accessed for a total of one hour, over two half-hour periods. The '18 plus' chat room was accessed from 2pm-2.30pm on the 16th of June, 2009 and from 8pm-8.30pm on the 9th of June, 2009. The '30- something' chat room was accessed from 1.30pm-2pm on the 16th of June, 2009 and from 7.30pm-8pm on the 9th of June, 2009. The '40 plus' chat room was accessed from 2pm-2.30pm on the 9th of June, 2009 and from 8pm-8.30pm on the 2nd of June, 2009. The '50 plus' chat room was accessed from 1.30pm-2pm on the 9th of June, 2009 and from 7.30pm-8pm on the 2nd of June, 2009. During these sessions, the investigator made continuous copies of screen shots, pasting them in to a Word document for future analysis. As the sex of the chatter was evident by the colour in which their name appeared (male names appeared in blue, while female names were in red, as determined by the user's selected gender), it was possible to ascertain the number of males and females making contributions to the main chat screen during each half-hour period. Information was also gathered from each chat member's profile page, including their age and whether or not they included a picture of themselves. This was achieved by typing the name of each chat member into the 'find a chatter' field at a later date; however some profiles were not accessible at this time, perhaps because they had been deleted. In total, 465 males and 238 females made contributions to the main chat screen. The overall recorded average age of chatters was 37.30 (standard deviation of 11.09). The youngest recorded chatter was 18, and the oldest was 68.

Data analysis

Contributions were analysed in terms of the number and types of emoticons used by the chat members. Emoticons that accompanied automated messages were excluded from the analysis, as the chatter has no control over the content (e.g. the automated 'signing off' message). 60 males and 54 females had used emoticons. In total, these individuals expressed 441 emoticons. The total number of emoticons expressed by a single individual varied considerably, and emoticon users expressed on average 3.86 emoticons. Emoticons were categorised by type using MSN's classification system (<http://messenger.msn.com/Resource/Emoticons.aspx>), as all emoticons used within

the chat sessions fell into a pre-existing category. Chatters used a total of ten different types of emoticons. These were: 'happy', 'sad', 'winking', 'cheeky', 'laughing', 'shocked', 'worried', 'hugging', 'angry' and 'serious'. Each time an emoticon was used by a chat member, the coder also categorised the intended recipient of the message. The recipient was either coded as 'male', 'female', 'many' or 'unable to determine'. This was determined by taking any previous interaction into account as well as any instances where the chatter directly referenced the name of another chat user in the message. A second blind coder coded a sub-sample of the data and agreement levels (Cohen's Kappa) were above 0.7 for all measures and therefore acceptable. The data were analysed using a series of two-way chi-square tests, independent samples t-tests and Analysis of Variance.

Results

In order to assess the prevalence of emoticon use between the sexes, the total number of male and female chatters using emoticons and male and female chatters not using emoticons was recorded (see table 1 below).

Table 1: Frequency of emoticon use by sex (with percentage scores in brackets)

	Non-emoticon users		Emoticon users	Total
Male	405 (85.19%)		60 (14.81%)	465
Female	185 (70.81%)		54 (29.19%)	238
Total	589 (80.65%)		114 (19.35%)	703

Chi-square analysis indicates a significant association across the categories (χ^2 (df = 1) = 11.096; $p < 0.001$). A higher percentage of female chatters (29.19%) used emoticons than male chatters (14.81%).

In order to assess the prevalence of emoticon use between the age groups, participants were categorised into four age categories: 18-29, 30-39, 40-49 and 50+ based on the recorded age on their profile page. The total number of chatters in each category who used emoticons and did not use emoticons was recorded (see table 2 below). Age data could not be accessed from all profiles, so the total sample is smaller than in the previous sex comparison.

Table 2: Frequency of emoticon use by age group (with percentage scores in brackets)

Age Group	Non-emoticon users	Emoticon users	Total
18-29	161 (80.75%)	31 (19.25%)	192
30-39	144 (81.94%)	26 (18.06%)	170
40-49	134 (74.63%)	34 (25.37%)	168
50+	76 (78.95%)	16 (21.05%)	92
Total	515 (79.22%)	107 (20.78%)	622

Chi-square analysis indicates a non-significant association across the categories (χ^2 (df = 3) = 1.674; $p = 0.643$). All age groups were equally as likely to use emoticons.

Further analyses considered whom the emoticons were being sent to and whether this differed as a function of the sex of the sender.

Table 3: Sex differences in emoticon recipients

Sex of sender	Directed to				Total
	Male	Female	Many	Unable to Determine	
Male	15	120	9	92	236
Female	135	33	10	27	205
Total	150	153	19	119	441

Chi-square analysis indicates a significant association between the categories (χ^2 (df = 3) = 179.736; $p < 0.001$). Males sent more emoticons to females and females sent more emoticons to males. When these analyses were broken down by age group, the same pattern of results was evident for all age groups, with males sending significantly more emoticons to female and females sending significantly more emoticons to males. However, in the youngest group (18-29), females sent a higher percentage of emoticons to other females (27.91%) compared to the other age groups (39-39 = 5.13%; 40-49 = 2.17%; 50+ = 17.64%).

An analysis of sex and age group differences in types of emoticons used was also conducted. To achieve this, the percentage of each type of emoticon (as an expression of the total number of emoticons used) was calculated for each individual who had used emoticons. Means tables have only been included for those types of emoticons revealing significant differences between the categories. Age group ('18-29', '30-39' and '40+') and sex (male and female) were entered into a 3x2 between subjects ANOVA. Only 3 age categories were used due to a smaller number of emoticon using chatters in the '50+' group.

Overall, there were no significant sex differences in the percentage of all types of emoticons used, meaning that men and women who used emoticons expressed each type of emoticon similarly. Results do however indicate a significant difference between the age groups in the use of cheeky emoticons ($F_{2, 101} = 6.521$; $p = 0.002$). Post hoc analyses (Bonferroni correction) reveal a significant difference ($p < 0.001$) between the '18-29' and '40+' groups. The '18-29' group used a significantly higher percentage of cheeky emoticons than the '40+' group (see table 4 below).

Table 4: Percentage frequency with which the cheeky emoticon was used by the sexes and all three age groups.

Age group	Sex	Mean Percentage score	S.D
18-29	Male	25.93	38.44
	Female	24.36	32.34
	Total	25.27	35.44
30-39	Male	18.20	35.92
	Female	10.00	26.89
	Total	14.24	31.59
40+	Male	0.77	2.627
	Female	4.00	20.00
	Total	2.49	14.65
Total	Male	13.76	30.43
	Female	10.71	26.23
	Total	12.27	28.38

A significant interaction between age group and sex was also found for the laughing emoticon ($F_{2, 101} = 4.213$; $p=0.017$). Females in the '18-29' and '40+' groups used the laughing emoticon more than the females in the '30-39' age group, whereas males in the '30-39' group used the laughing emoticon more than the other two groups (see table 5 below).

Table 5: Percentage frequency with which the laughing emoticon was used by the sexes and all three age groups.

Age group	Sex	Mean Percentage score	S.D
18-29	Male	2.78	11.79
	Female	30.11	32.49
	Total	14.24	26.25
30-39	Male	31.86	44.45
	Female	9.29	20.18
	Total	20.96	36.18
40+	Male	18.85	34.10
	Female	30.20	42.58
	Total	24.88	38.86
Total	Male	17.14	33.74
	Female	24.55	35.96
	Total	20.74	34.87

Finally, the inclusion or exclusion of a profile picture was considered as a potential influencing factor on emoticon use. The percentage of each type of emoticon (as an expression of the total number of emoticons used) was calculated. A series of independent samples t-tests were conducted comparing emoticon usage patterns between chatters with a picture and chatters without a picture (see table 6 below). Chatters with a picture on their profile were more likely to use hugging emoticons whilst chatters without a picture were more likely to use winking emoticons.

Table 6: Percentage frequency of emoticon use for chatters with 'picture' and chatters with 'no-picture'.

Emoticon type	Picture	No Picture	Statistical significance
Happy	22.92 (35.84)	25.24 (42.47)	$t(105) = -0.296$; $p > 0.05$, NS
Sad	5.61 (20.62)	5.71 (23.55)	$t(105) = -0.023$; $p > 0.05$, NS
Winking	11.56 (26.06)	24.29 (42.65)	$t(105) = -1.908$; $p < 0.05$
Cheeky	13.10 (28.14)	10.57 (29.19)	$t(105) = 0.431$; $p > 0.05$, NS

Laughing	22.34 (34.16)	17.42 (36.57)	$t(105) = 0.683; p > 0.05, \text{NS}$
Shocked	7.59 (20.37)	5.71 (20.19)	$t(105) = 0.449; p > 0.05, \text{NS}$
Worried	9.93 (21.58)	6.76 (21.52)	$t(105) = 0.714; p > 0.05, \text{NS}$
Hug	4.80 (16.45)	0.00 (0.00)	$t(105) = 1.724; p < 0.05$
Angry	0.93 (5.52)	2.86 (16.90)	$t(105) = -0.881; p > 0.05, \text{NS}$
Serious	1.20 (8.17)	1.43 (8.45)	$t(105) = -0.132; p > 0.05, \text{NS}$

Discussion

Summary and interpretation of findings

The study findings reveal that women are significantly more likely than men to use emoticons in chat room communications (29.19% of female chatters used emoticons compared with 14.81% of male chatters). This supports Witmer and Katzman (1997) and Lee (2003a) but contradicts Huffaker and Calvert's (2005) findings. To explain this discrepancy, it is possible that the type of online application influences patterns of emoticon use in the sexes. For example, in the Witmer and Katzman (1997) and Lee (2003a) studies, data were collected from newsgroups and Instant Messenger interactions respectively; however Huffaker and Calvert (2005) collected data from weblogs. We might expect more social interaction to take place within newsgroups, Instant Messenger services and chat rooms, whereas blogs are often personal and not necessarily directed at specific individuals. Indeed, a number of studies have suggested that blogs are primarily constructed in a diary format (e.g. see Fullwood, Sheehan and Nicholls, 2009) and that most blogs are written as monologues and therefore lack interactivity (Mazur and Kozarian, 2010). This supports the social function of emoticons for women; in other words women may be more likely to use emoticons than men during direct interactions with others. This finding also adds further support for the link between emotional expression in chat rooms and in offline interactions. Emotional patterns of expression in the sexes in chat rooms seem to reflect those observed in the offline world; in other words women are more emotionally expressive than men in both contexts (see Brody and Hall, 1993). The relatively low number of chatters using emoticons overall (19.35%) may not necessarily mean that emoticons are an unpopular form of expression. As the majority of chatters only made one or a few contributions to the main chat screen during the time period in which data were collected, this is unlikely to capture a representative view of how each individual uses emoticons. Indeed, emoticons may not be relevant in all types of communications, and so one might expect their use to increase as an individual makes more contributions.

The findings also suggest that age has little bearing on emoticon use, with all age groups being equally as likely to use emoticons in communication. This did not match the expectations of the study and contradicts Krohn's (2004) notion that different age groups are likely to appreciate emoticon usage differently. Perhaps the lack of difference here might have something to do with the diversity of age groups who used different chat rooms. Although the four chat rooms seemed to appeal to different age groups generally, there were no age restrictions in place, meaning that 'younger' chatters could chat in the 'older' chat rooms and vice-versa. This may imply that as well as being a convergence towards a feminine style of expression in mixed-sex settings, there is also a convergence towards a 'younger'-style of communication in mixed-age settings (if indeed, emoticons do actually reflect the communication styles of the young, as has been suggested). It is conceivable that chatters' communication strategies are influenced by other chatters and this would seem to support Communication Accommodation Theory (Giles, Coupland and Coupland, 1991). In other words, chat members may express similar levels of emoticons to other chatters in order to minimise social differences. It is also possible that the chat room is a unique 'genre' of online communication and this influences interaction style. Indeed, Herring (1996) noted that irrespective of the gender of the contributor in discussion groups, typically feminine styles of communication occurred in female-dominant groups and typically masculine styles of communication persisted in male-dominated groups. It is therefore likely that there are recognised conventions or etiquette that guides our online behaviours in specific environments, encouraging a particular style of communication. This notion is also borne out by Herring and Paolillo (2006), who found a similar effect when considering weblog contributions.

In consideration of those individuals who used emoticons, age and sex had little bearing on the types of emoticons that were expressed. Although 'younger' chatters used cheeky emoticons more than the 'older' chatters, all other types of emoticons were used equally by all age groups and the two sexes. Some examples of chat content accompanied by cheeky emoticons from the 18-29 group can be seen below. Chatter's names (in all examples given from this point)

have been changed to ensure anonymity.

Malechatter1: Haha Femalechatter1 have you been naughty? 😏

Femalechatter2: I'm full now thanks 😏 (in response to a sexually suggestive comment)

Malechatter3: Wha? Is the show starting already? 😏 goody goody (in response to a female chatter stating that she was "making all the guys jealous with her dancing")

Looking at the examples above, it would seem that the cheeky emoticon is often used in a flirtatious context. This finding may therefore support the notion that younger chat users are more likely to go online to pursue sexual and romantic relationships. Indeed, research suggests that 16% of 19-29 year olds in the United States use the Internet for dating or to meet new partners, whereas only 7% of 30-49 year olds do the same (Pew reports, 2008). The cheeky emoticon may also perhaps serve the function of ensuring that no offence is taken from a potentially risky comment. In other words, the inclusion of a cheeky emoticon may signal that the comment is intended in part as teasing. It may also be the case that 'older' chatters feel less inclined to use the cheeky emoticon because it reflects a 'younger' communication style. The findings also revealed an interaction with laughing emoticon use, in so far as the '18-29' and '40+' female chatters used it more frequently than '30-39' chatters. With the men, however, the '30-39' chatters used the laughing emoticon more frequently than the other age groups. In terms of the context in which these emoticons were used, it was difficult to identify any common themes, as they were employed in a variety of ways. As a tentative explanation, it is possible that these groups of individuals are the most concerned with building a rapport with other chatters, but this theory can only be substantiated with further investigation.

The fact that chatters of both sexes who used emoticons expressed them in a similar way is suggestive of a convergence towards a feminine style of interaction in the chat room context which supports Giles, Coupland and Coupland's (1991) Communication Accommodation Theory and implies that convergence also extends to emoticon use in online communication contexts. This convergence may be in part explained by the fact that men and women seem to be communicating more frequently with members of the opposite sex than with members of the same sex. Previous research has shown that men use emoticons more freely in between-sex communications than in within-sex communications (e.g. Wolf, 2000). The same pattern also seems to hold true when we consider the types of emoticons that men are likely to employ. One may have expected women to be more sophisticated emoticon users as they have been reported to be more emotionally expressive offline (e.g. Brody and Hall, 1993), but this does not seem to be the case. It may well be that men are mirroring the emotional style of women in the chat room as this expresses empathy and therefore makes them appear less threatening. The unique 'genre' of the chat room may also be encouraging a specific style of interaction due to the shared purpose and common goals of chatters.

Finally, it was found that chatters who included a picture of themselves in their profile were more likely to use hugging emoticons, whereas chatters who did not include a picture of themselves were more likely to use winking emoticons. Some examples of chat content accompanied by hugging and winking emoticons can be seen below.

Malechatter4: Hey anyone want to chat pm me 🤗 (where pm means 'Private Message')

Malechatter5: Femalechatter3 glad to hear that I'm great thanks 🤗 (in response to Femalechatter3 indicating that she "has been better recently" and asking how Malechatter5 was doing)

Malechatter6: Think it's their egos Femalechatter4 🤗 (in response to Femalechatter4 complaining about other men on the chat)

Malechatter7: Femalechatter5 ud get it 😏

Malechatter8: you can access anytime you want Femalechatter6 lol 😏

Malechatter9: Dirty fun I'm sure Femalechatter7 😏 lol

It would seem from the examples given above that the winking emoticon often accompanies comments that are suggestive or flirtatious in nature. Compared to the examples given earlier that accompanied the cheeky emoticon, the content of these messages appear more overtly suggestive. The winking emoticon may therefore be used more frequently by chat members who are less concerned with causing offence. This would seem to make sense in the context that unidentifiable chatters use them more frequently. It is likely that 'invisible' chatters feel more able to communicate in this fashion because they feel less inhibited (Suler, 2004). Conversely, the chatters who were identifiable by the inclusion of a picture may have used more hugging emoticons because they had different motivational reasons for using the service. Indeed, from the examples given above it would seem that the hugging emoticon is often used in a friendly way or to signal agreement. If we assume that unidentifiable individuals are more likely to use chat facilities to engage in more sexualised and flirtatious behaviours, it would seem reasonable to suggest that they would also be less likely to engage in comforting or interpersonal behaviours.

Limitations of the Study / Further Research

One major advantage associated with collecting data on emoticon use in chat rooms dedicated to specific age groups is that it allows for a clear view of how emoticons occur in 'general' chat. By using a naturalistic observational approach, a unique and objective insight is offered into how emoticons are used. However, due to the nature of data collection, it is possible to question the generalisability of this research. For example, we may find that more emoticons (and perhaps more adventurous ones) are used in more emotional/expressive chat rooms (e.g. ones which focus specifically on a heated issue) or even in support groups where we might expect people to be offering higher levels of emotional support. A further study may therefore investigate differences in emoticon usage between different chat genres or themes. Although the range of emoticons expressed by the sample in this study seems to be quite limited (a total of ten different types were used), it is difficult to know for sure how many in total can be used in this chat room context. Also, the study relies on the accurate profiles of chatters, who may have lied about their demographic data. The Internet is well known for its ability to conceal a fake identity. On the Internet a male can easily claim to be a female (or vice-versa) or of a different age. Unfortunately this could not be monitored in order to keep the integrity of a true observational method, and as such needs to be taken into account. However, although the media has tended to emphasise deceitful behaviour on the Internet, a study by Robert and Parks (1999) suggests that gender-switching may only be an experimental behaviour, and stresses that the level of occurrence of such deceit is low and used only for a limited time. Furthermore, Whitty and Carr (2006) cite a number of studies and conclude that gender-switching perhaps occurs less frequently than it has done previously. Although gender-switching has often been linked with Multi User Dungeons (for instance, see Lea and Spears, 1995) this may be due to the competitive nature of such applications and thus the authors of this paper believe that any occurrence within this study would be minimal.

The results of this study, and similar research as highlighted, are important for varying reasons. First, software and online application developers, and particularly those using CMC, will be able to use this data to enhance software in order to meet the requirements of their target audience. In light of the suggestion that chatters of all ages use emoticons similarly, those sites aimed specifically at older chatters may want to incorporate emoticons into their facilities. Second, looking at gender and age differences will provide additional literature to support research looking at the motivations of CMC use. Uses and gratifications research, which has been traditionally used to study the motivating factors of media use, has started to be applied to various forms of Internet usage (for example, see Orchard and Fullwood, 2010). Research on individual differences will aid further research into this area.

Although the results of this investigation allow an insight into emoticon use in chat room communications, there are some limitations that need to be addressed. For example, it was difficult to ascertain whether or not chatters had actually communicated with one another before. Literature on facial expressions in face-to-face interaction suggests that knowing your communication partner can influence how expressions are used and how they are perceived (see Wagner and Smith, 1991), so it is possible that this may hold true for online emoticons. A future investigation may wish to consider whether emoticon use is influenced by our prior knowledge of or relationship with another individual. Furthermore, data concerning how long the chat users had been using the chat facilities was not recorded. It is possible that emoticon use is influenced by confidence levels or experience of using chat facilities, and this may be an avenue for further exploration. Further investigation may also take a qualitative approach to chatter's motivations for using emoticons in communication, which should give a clearer insight into their intended purpose. Overall, findings support a notion of a general convergence towards female expression in emoticons in 'general' chat room contexts and Communication Accommodation Theory can be used to help explain this effect. Finally there appears to be links between emoticon use and 'real-life' facial expressions, and these links should be explored further to aid research towards chat room use, and more generally CMC, as a substitute for offline communication.

References

1. Argyle, M. 1994. *The psychology of interpersonal behaviour*. Penguin Books: London.
2. Baym, N.K. 1995. The emergence of community in computer-mediated communication. In *Cybersociety: Computer-mediated communication and community*, Edited by: Jones S.G. 138-163. Sage Publications: London.
3. Brody, L.R., and Hall, J.A. 1993. Gender and Emotion. In *Handbook of Emotions*, New York: Guilford press, 447-460.
4. Calvert, S.L., Mahler, B.A., Zehnder, S.M., Jenkins, A., and Lee, M.S. 2003. Gender differences in preadolescent children's online interactions: Symbolic modes of self-presentation and self-expression. *Applied Developmental Psychology*, 24(6), 627-644.
5. Crystal, D. 2001. *Language and the Internet*. Cambridge University Press: Cambridge.
6. Danet, B., and Herring, S.C. 2007. *The Multilingual Internet: Language, Culture, and Communication Online*. Oxford University Press: New York.
7. Derks, D., Bos, A.E.R., and von Grumbkow, J. 2007. Emoticons and social interaction on the internet: The importance of social context. *Computers in Human Behavior*, 23(1), 842-849.
8. Derks, D., Fischer, A.H., & Bos, A.E.R. 2008. The role of emotion in computer-mediated communication: A review.

- Computers in Human Behavior*, 24(3), 766-785.
9. Eglund, K.L., Spitzberg, B.H., and Zormeier, M.M. 1996. Flirtation and conversational competence in cross-sex platonic and romantic relationships. *Communication Reports*, 9(2), 105-117.
 10. Fullwood, C., & Martino, O.I. 2007. Emoticons and Impression Formation. *Applied Semiotics*, 19(8), 4-14.
 11. Fullwood, C., Sheehan, N., & Nicholls, W. 2009. Blog function revisited: A content analysis of MySpace blogs. *Cyberpsychology and Behavior*, 12, 685-689.
 12. Fullwood, C., Evans, L. and Morris, N. 2011. Linguistic androgyny on MySpace. *Journal of Language and Social Psychology*, 30(1), 114-124.
 13. Giles, H., Coupland, N., & Coupland, J. 1991. Accommodation theory: Communication, context and consequence. In *Contexts of accommodation: Studies in emotion and social interaction*, Edited by: Giles, H., Coupland, J., and Coupland, N., 1-68. Cambridge University Press: Cambridge.
 14. Hall, J. 1984. *Nonverbal Sex Differences: Communication Accuracy and Expressive Style*. Johns Hopkins University Press: Baltimore.
 15. Herring, S. C. 1996. Two variants of an electronic message schema. In *Computer-Mediated Communication: Linguistic, Social and Cross-Cultural Perspectives*, Edited by: Herring, S.C., 81-108. Amsterdam and New York: John Benjamins.
 16. Herring, S. C., and Paolillo, J. C. 2006. Gender and genre variation in weblogs. *Journal of Sociolinguistics*, 10(4), 439-459
 17. Huffaker, D.A., and Calvert, S.L. 2005. Gender, identity, and language use in teenage blogs. *Journal of Computer-Mediated Communication*, 10(2), article 1. <http://jcmc.indiana.edu/vol10/issue2/huffaker.html>
 18. Joinson, A.N. 2003. *Understanding the psychology of internet behaviour: Virtual worlds, real lives*. Palgrave Macmillan: Hampshire.
 19. Krohn, F.B. 2004. A generational approach to using emoticons as nonverbal communication. *Journal of Technical Writing and Communication*, 34(4), 321-328.
 20. Lea, M., and Spears, R. 1995. Love at first byte? Building personal relationships over computer networks. In *Understudied relationships: off the beaten track*, Edited by: Wood, J.T., and Duck, S.W., 197-233. Sage: Newbury Park, CA.
 21. Lee, C. 2003a. *The Mercury Project for Instant Messaging studies: How does internet messaging affect interaction between genders?* Retrieved on 6th November, 2007 at http://www.stanford.edu/class/pwr3-25/group2/pdfs/IM_Genders.pdf
 22. Lee, T.B. 2003b. *Emoticons Literacy*. Retrieved on 27th February, 2008 at <http://students.ed.uiuc.edu/byunglee/class/lis391/emoticons.htm>.
 23. Mazur, E., and Kozarian, L. 2010. Self-presentation and interaction in blogs of adolescents and young emerging adults. *Journal of Adolescent Research*, 25(1), 124- 144.
 24. Orchard, L.J. & Fullwood, C. 2010. Current perspectives on personality and Internet use. *Social Science Computer Review*, 28(2), 155-169.
 25. Pew Internet and American life project. 2008. *Usage over time*. Retrieved on 11th January, 2008 at <http://www.pewinternet.org/trends.asp>
 26. Punyanunt-Carter, N.M., and Hemby, C.O. 2006. College students' gender differences regarding e-mail. *College Student Journal*, 40(3), 651-653.
 27. Rezabek, L.L., and Cochenour, J.J. 1994. Emoticons: Visual Cues for Computer-Mediated Communication. In *Imagery and Visual Literacy: Selected Readings from the Annual Conference of the International Visual Literacy Association (26th)* (pp. 371 – 383). (ERIC Document Reproduction Service No. ED 380 096)
 28. Roberts, L.D., and Parks, M.R. 1999. The Social Geography of Gender-Switching in Virtual Environments on the Internet. *Information, Communication & Society*, 2(4), 521-540.
 29. Suler, J. 2004. The online disinhibition effect. *Cyberpsychology & Behavior*, 7(3), 321-326.
 30. Turkle, S. 1995. *Life on the screen*. Simon and Schuster: New York.
 31. Wagner, H.L., and Smith, J. 1991. Facial expression in the presence of friends and strangers. *Journal of Nonverbal Behavior*, 15(4), 201-214.
 32. Whitty, M., & Carr, A. 2006. *Cyberspace Romance: The Psychology of Online Relationships*. Palgrave MacMillan: Hampshire.
 33. Witmer, D.F., and Katzman, S. 1997. Online smiles: Does gender make a difference in the use of graphic accents. *Journal of Computer-Mediated Communication*, 2(4), 1083-6101.
 34. Wolf, A. 2000. Emotional expression online: Gender differences in emoticon use. *CyberPsychology and Behavior*, 3(5), 827-833.