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Research Article

# The impact of emoticons on women's friendships on Facebook

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**ABSTRACT**

This study investigated the use of emoticons in computer-mediated communication, focusing on their impact on female friendships in Facebook communication. While demographic factors such as age and gender impact emoticon usage, empirical evidence regarding their effects on female friendships remained scarce. The present study investigated the influence of emoticons on interpersonal relationships among female acquaintances. It adopted a quantitative research method with a sample of 495 actively engaged female expatriates from the United Arab Emirates on Facebook and analyzed the data with multivariate generalized linear model analysis. The results indicated a significant predictive influence of emoticons on friendship dimensions like closeness, safety, and security. The study also found a positive correlation between emoticons use and the overall quality of female friendships offering valuable insights about female friendships in the field of online communication.

**Keywords:** emoticons, female friendships on Facebook, computer-mediated communication, impact of emoticons

## INTRODUCTION

The use of emoticons in communications through emails, text messages, and social media has become increasingly common. Emoticons aim to mimic the sender's or recipient's facial expressions, guide non-verbal actions, and reduce the mechanical aspects of computer-mediated communication (CMC) (Elder, 2018). Literature shows that around six billion emoticons and stickers are sent and received on a single day through social media, making emojis the world's fastest growing form of communication. In addition, 92% of internet users put emoticons while texting to improve communication (Tang & Hew, 2018).

Emoticons' ability to express sentiments and emotions more profoundly than a mere written word has made these symbols popular on social networking sites (Hoduț et al., 2020). Since emoticons are capable of conveying specific semantic meanings, they facilitate engagement in virtual communication and interpretation of the messages (Na'aman et al., 2017). The contextual application of emoticons makes online communication effective and interactive. For instance, a study by Hirose et al. (2014) shows that emoticons can serve nonverbal functions such as expressing feelings, tone, intention, and non-literal meanings. Although, emoticons are not without their issues; one user's smiling emoticon may be another's grimace in different contexts. For instance, a smiling user may bring to mind a frown in cases of grief or distress (Wang et al., 2019). Furthermore, the literature has explored the issues of how emoticons usage affects social relations across different languages and cultures with regards to social norms and values within a particular society (Maryam et al., 2020; Park & El Mimouni, 2020). Stark and Crawford (2015) noted that emoticons in social media are often regarded as tools used to convey humor. Positive emotions elicit a quicker response from people than negative ones do (Fischer & Herbert, 2021). It means that the emotional tone of the emoticons–whether positive or negative–can slow down or speed up cognitive processes. Aldunate and González-Ibáez (2017) point out that the visual representation or structural characteristics of emoticons can

affect their efficacy and how they are perceived during communication. Aldunate and González-Ibáez (2017) claim that emojis are seen as friendlier than typo-graphic emoticons. However, it is difficult to determine the effect of various types of emoticons on friendship due to factors such as the relationship between the individuals and the communication context (Boutet et al., 2021). These findings show that the use of emoticons is deeply rooted in complex and multi-layered interpretations amongst people and organizations.

Emoticons enhance the importance and utility of social interactions on Facebook. According to Assad (2022), there is an important relationship between the number of times an emoticon is used and the social engagement on Facebook. Similarly, Sompotan (2019) found that Facebook users use emoticons to express a variety of feelings, ranging from joy, love, and sadness to frustration and embarrassment. Studies have shown that demographics, like age and gender, determine the type of emoticons in social media (Al-Rawi et al., 2020; Herring & Dainas, 2020; Pérez-Sabater, 2019). Different studies have been conducted on emoticon use in various situations, paying special attention to its use across genders (Hwang, 2014; Malekizadeh & Khoram, 2015). Extant literature argues that women generally employ emoticons much more often than men do in Facebook conversations (Assad, 2022; Oleszkiewicz et al., 2017; Shah & Tewari, 2021).

Although researchers extensively discussed the impact of emoticons on online communication and social media engagement (Kavanagh, 2016; Moffitt et al., 2020), there seems to be limited literature on the role of emoticons in the context of female friendships. Much of the existing research has concentrated on social media usage, online emotional expression, and online communication (Ali-Chand & Naidu, 2024; Prikhodko et al., 2020) but has not focused on the association between emoticons and female friendship quality on Facebook. Some studies indicate that emoticons improve social presence and emotional involvement (Huang et al., 2008; Riordan, 2017). However, there is a lack of empirical evidence on whether various types of emoticons change the nature and depth of female friendships. Furthermore, the connection between the use of emoticons in different contexts and the quality of friendship has not received adequate attention. While research shows that social media interaction is linked with relationships (Gesselman et al., 2019), how the regular use of emoticons affects female friendships is still unexplored. The role of social presence as a moderator in this relationship has not been explored, leaving a lack of understanding on whether greater social presence perception increases or decreases the impact of emoticon use on friendship quality. Additionally, age, marital status, and employment status will moderate the relationship between the frequent use of emoticons on Facebook and the quality of friendship.

Social presence theory is fundamental in explaining the role of social interactions in Facebook engagement (Calefato & Lanubile, 2010), as it posits that the media's ability to communicate the subjective experience of another person's presence relies upon the media's ability to convey verbal and visual cues. Previous researchers argue that the use of emoticons on Facebook and other social media platforms has increased (Cui et al., 2013; Hayes et al., 2020) because it is helpful in adding context to text messages and increasing social presence. In female friendships where emotion and intimacy are dominant, warm and empathic understanding may be facilitated through the use of emoticons. The appropriate use of emoticons decreases ambiguity, which fosters closeness and strengthens bonds. However, if chat emoticons are overused or used inappropriately, friendship quality may be diminished.

The primary objective of this study is to investigate the contextual utilization of emoticons on Facebook and their impact on female friendships. Thus, the present paper aims at addressing the following research questions:

1. Is the quality of female friendships associated with different types of emoticons used on Facebook?
2. What are the relationships between the uses of emoticons in different contexts, the consistent use of emoticons on Facebook and the quality of female friendships?
3. Does the frequent use of emoticons on Facebook impact the quality of female friendships?
4. Does social presence moderate the relationship between the frequent use of emoticons on Facebook and the quality of friendship between females?
5. Do the age, marital status, and employment status of females moderate the relationship between the frequent use of emoticons on Facebook and the quality of friendship with other females?

**Table 1.** Reliability test

| Variables | Cronbach's alpha | CR | Number of items |
|---|---|---|---|
| Safety and security | 0.609 | 0.761 | 5 |
| Closeness | 0.643 | 0.778 | 5 |
| Help | 0.522 | 0.808 | 2 |
| Satisfaction | 0.554 | 0.749 | 4 |
| FOU | 0.612 | 0.776 | 4 |
| Use of emoticons in different contexts | 0.625 | 0.768 | 5 |
| Consistent use of emoticons | 0.631 | 0.772 | 5 |
| Social presence | 0.673 | 0.781 | 7 |

## METHODOLOGY

The study used a quantitative research methodology to examine the research questions. The data for the analysis was collected using a survey-based questionnaire distributed among female expatriates residing in the United Arab Emirates (UAE). Female expatriates use social media to seek professional networking and emotional support during relocation abroad. Evidence suggests that social media facilitates the cross-cultural adaptation of female expatriates to an enormous extent by offering opportunities for digital networking, information sharing, and affective support that reduce the feeling of loneliness which leads to greater psychological stability (Duong et al., 2025; Mohd Yusuf et al., 2021).

The online survey was designed on Google Forms (a survey administration web application) and distributed among the target population using social media platforms (Facebook groups), WhatsApp groups, and emails. The survey measures the dimensions of using emoticons on Facebook, the types (online/off-line), the quality of friendships, and social presence. Moreover, the survey measures participants' demographic characteristics, including age, marital status, and employment status.

The use of emoticons is measured by frequency, consistency, and types of emoticons used frequently (Suresh, 2018; Zehra et al., 2022). The construct is also measured by items that show the uses of emoticons in different contexts, such as adding humor, sounding serious in chats, clarifying the message, expressing emotions, or enhancing the conversation. On the other hand, the quality of female friendships is measured using the items of the friendship quality scale (Thien et al., 2012) and the friendship quality on social network sites questionnaire (Verswijvel et al., 2018). The friendship types (off-line to online, online to off-line, and exclusively online) are also based on the measurement of Verswijvel et al. (2018).

Social presence is measured with the help of social presence scales identified in multiple studies, including the scale of social presence identified by Arbaugh et al. (2008), measures of social presence presented by Kreijns et al. (2022), and the social presence scale used by Lowenthal (2012). The above items are measured on a 5-point Likert scale that later helps form latent or composite variables, while the demographic characteristics are measured with the help of categorical questions. The study adopts a convenience sampling methodology, which considers the factors of proximity and ease of access. The questionnaire's first section contains the study's purpose and female participants' informed consent form that guarantees data confidentiality and participants' anonymity. They had the option to withdraw from study without providing any reason.

The researcher initially collected data from 265 female expatriates residing in the UAE who have been actively using Facebook and its messenger application. However, due to low internal consistency reliability scores, the researcher collected data from 230 more female respondents from the same research population and increased the sample size to 495. This helped improve Cronbach's alpha and composite reliability (CR) scores, as shown in **Table 1**. CR values are above 0.70, it shows consistency in data. Greater sample size also improved representativeness by reducing sampling error and enhancing generalizability. Moreover, the sample was diverse enough. To ensure that the expanded sample is representative of the target population, a paired t-test was performed to assess differences between early and late responses. The findings showed no significant difference between early and late responses, which verified that an expanded sample is still relevant to the entire population.

The factor analysis results confirm that all the items are loaded into their proposed constructs (latent variables), as shown in **Table 2**.

**Table 2.** Factor analysis

| Variables | FL |
|---|---|
| Safety and security | |
| Friends with whom I keep in touch on Facebook give me the correct information. | 0.725 |
| Friends with whom I keep in touch on Facebook never break their promises. | 0.561 |
| I trust my friends, with whom I keep in touch on Facebook, to keep my secrets safe. | 0.624 |
| I am confident that my friends do not lie to me. | 0.560 |
| I feel safe with my Facebook friends. | 0.644 |
| Closeness | |
| Most of the time, I am joking with my friends through Facebook chats and the comment section. | 0.602 |
| It is easy to understand my friend's mood through the Facebook chat feature. | 0.619 |
| It is easy to share and understand life experiences with my friends on Facebook. | 0.639 |
| My friends usually crack jokes with me on Facebook. | 0.687 |
| I know what is going on in the lives of my friends. | 0.662 |
| Help | |
| Most of the time, I receive helpful advice when I share my problems with friends over Facebook. | 0.823 |
| I trust my friends to correct me when I am wrong, even during a Facebook chat. | 0.823 |
| Satisfaction | |
| I feel like my friends care a lot about me. | 0.745 |
| I enjoy talking to my friends on Facebook. | 0.563 |
| I like to be in the company of my friends. | 0.635 |
| My friends make me feel special. | 0.665 |
| FOU | |
| I regularly use emoticons in my Facebook interactions with friends. | 0.725 |
| My usage of emoticons while commenting, sharing a post, writing a caption, or talking to a friend in chat is very frequent. | 0.595 |
| It is so easy for me to chat using emoticons. | 0.667 |
| My friends communicate their emotions using chat and comments on Facebook. | 0.734 |
| Use of emoticons in different contexts | |
| I often use emoticons to add humor to my conversations. | 0.703 |
| I often use emoticons in order not to sound serious in chats. | 0.631 |
| I mostly use emoticons to clarify the meaning of what I am saying. | 0.648 |
| I mostly use emoticons to express my emotions (happiness, sadness, excitement, etc.). | 0.548 |
| I use emoticons to enhance my conversation with someone over chat. | 0.624 |
| Consistent use of emoticons | |
| Using emoticons comes automatically to me. | 0.628 |
| My chats always have some kind of emoticon. | 0.629 |
| I do not have to think carefully before using emoticons. | 0.667 |
| I am fully aware of which emoticons go with which situations. | 0.570 |
| I feel comfortable using emoticons on Facebook. | 0.682 |
| Social presence | |
| Communication via Facebook is an excellent medium for social interaction. | 0.628 |
| Discussions on Facebook help me develop a sense of collaboration. | 0.500 |
| I feel comfortable conversing through Facebook chat. | 0.629 |
| I feel comfortable participating in discussions on Facebook, such as on posts. | 0.563 |
| I feel comfortable interacting with my friends on Facebook. | 0.556 |
| I feel that my friends on Facebook acknowledge my point of view. | 0.580 |
| I feel comfortable disagreeing with my friends on Facebook while still maintaining a sense of trust. | 0.610 |

Notes: FL: Factor loading; Extraction method: Principal component analysis.

Following the quality checks and data cleaning performed using MS Excel and SPSS, the study employed descriptive statistics to define the sample's demographic characteristics and explore friendship types. It performs correlation analysis to investigate noteworthy relationships with the friendship quality constructs.

The study used descriptive statistics to identify the sample's demographic characteristics and examine different types of friendships after doing quality checks and data cleaning using both MS Excel and SPSS. The demographic analysis revealed that the majority of the female expats who took part in the study were between the ages of 26 and 29 (37.2%), followed by females between the ages of 22 and 25 years old (30.7%). At the same time, the respondents aged 18 to 21 account for only 10.7% of the total sample size, as shown in **Table 3**.

**Table 3.** Demographic analysis

| Variable | Categories | Frequency (n) | Percentage (%) |
|---|---|---|---|
| Age | 18–21 | 53 | 10.7 |
| | 22–25 | 152 | 30.7 |
| | 26–29 | 184 | 37.2 |
| | 30–33 | 106 | 21.4 |
| | Total | 495 | 100 |
| Marital status | Single | 143 | 28.9 |
| | Married | 139 | 28.1 |
| | In a relationship | 120 | 24.2 |
| | Divorced | 63 | 12.7 |
| | Widowed | 30 | 6.1 |
| | Total | 495 | 100 |
| Employment status | Full-time employee | 154 | 31.1 |
| | Part-time employee | 161 | 32.5 |
| | Self-employed | 133 | 26.9 |
| | Unemployed | 47 | 9.5 |
| | Total | 495 | 100 |

The study also assessed employment and marital status as participants' demographic characteristics. According to the results, 28.9% are single, whereas 28.1% are married. Furthermore, the sample has a high proportion of respondents working in part-time (32.5%) and full-time (31.1%) positions.

Linear regression assumptions are also tested, which include normality, homoscedasticity, and multicollinearity. Normality, which assumes normal distribution, is tested using skewness and kurtosis. According to Kim (2013), for sample sizes greater than 300, an absolute skew value larger than 2 or an absolute kurtosis larger than 7 can be used as reference values for determining non-normality. In this study, the absolute skewness and kurtosis values associated with each outcome variable are less than the given thresholds, suggesting normal distribution. For testing homoscedasticity, the study applies Levene's test of equality of error variances and Box's test of equality of covariance. Levene's test reveals equality of variances for each outcome; however, the overall Box's test is significant, Box's M = 594.727, $p < 0.001$, suggesting that the assumption is violated. In this case the use of Pillai's Trace is suggested in multivariate generalized linear model (GLM) analysis, which is more robust to homoscedasticity assumption's violation. Lastly, the assumption of multicollinearity (high correlation between independent variables) is tested via VIF. The VIF score of the covariates is less than 2, confirming no multicollinearity.

After testing assumptions, the study used a correlation analysis to investigate significant relationships with the friendship quality constructs. It performed a multivariate GLM analysis to examine the effect of emoticons on Facebook on the quality of female friendship. 'Frequency of use' (FOU) represents emoticons in this analysis. The quality of female friendship is represented by four variables: safety and security, closeness, help, and satisfaction; therefore, a multivariate analysis is required to explain multiple outcomes. This analysis also enables performing moderating effects of social presence and demographics (age, marital status, and employment status). Following is the regression equation that includes the main predictor (FOU) and the interaction effects:

$$Y = \beta_0 + \beta_1(FOU) + \beta_2(age \times FOU) + \beta_3(FOU \times marital\ status) + \beta_4(employment \times FOU) + \beta_5(FOU \times nationality) + \beta_6(FOU \times SP) + \varepsilon$$

where $Y$ represents the dependent variables (safety and security, closeness, help, and satisfaction), $\beta$ is the coefficient of each independent variable, $\varepsilon$ is the error term, and $SP$ is social presence.

## RESULTS AND ANALYSIS

### Types of Friendship on Facebook

Most respondents stated that they had 'often' or 'always' indulged in friendships online after meeting with people in person first (72.1%). Only 7.1% said 'never' to having this kind of friendship (i.e., off-line to online friendships). The second friendship category relates to the transition from online to off-line interactions. 24% of the female respondents believe their Facebook friends only include people they first talk online and then

**Table 4.** Spearman's rho correlations

| | | Safety and security | Closeness | Help | Satisfaction |
|---|---|---|---|---|---|
| The smiling face with an open mouth and smiling eyes | Correlation coefficient | .350** | .349** | .315** | .357** |
| | Significance (2-tailed) | 0.000 | 0.000 | 0.000 | 0.000 |
| | N | 495 | 495 | 495 | 495 |
| The loudly crying face | Correlation coefficient | .363** | .310** | .227** | .359** |
| | Significance (2-tailed) | 0.000 | 0.000 | 0.000 | 0.000 |
| | N | 495 | 495 | 495 | 495 |
| The smiling face with smiling eyes | Correlation coefficient | .331** | .376** | .228** | .322** |
| | Significance (2-tailed) | 0.000 | 0.000 | 0.000 | 0.000 |
| | N | 495 | 495 | 495 | 495 |
| The winking face | Correlation coefficient | .255** | .296** | .230** | .301** |
| | Significance (2-tailed) | 0.000 | 0.000 | 0.000 | 0.000 |
| | N | 495 | 495 | 495 | 495 |
| The grinning face | Correlation coefficient | .360** | .412** | .308** | .368** |
| | Significance (2-tailed) | 0.000 | 0.000 | 0.000 | 0.000 |
| | N | 495 | 495 | 495 | 495 |
| The rolling-on-the-floor laughing face | Correlation coefficient | .308** | .299** | .324** | .279** |
| | Significance (2-tailed) | 0.000 | 0.000 | 0.000 | 0.000 |
| | N | 495 | 495 | 495 | 495 |
| The face throwing a kiss | Correlation coefficient | .345** | .370** | .313** | .353** |
| | Significance (2-tailed) | 0.000 | 0.000 | 0.000 | 0.000 |
| | N | 495 | 495 | 495 | 495 |
| The smiling face with heart-shaped eyes | Correlation coefficient | .313** | .367** | .188** | .323** |
| | Significance (2-tailed) | 0.000 | 0.000 | 0.000 | 0.000 |
| | N | 495 | 495 | 495 | 495 |
| The face with tears of joy | Correlation coefficient | .289** | .293** | .251** | .340** |
| | Significance (2-tailed) | 0.000 | 0.000 | 0.000 | 0.000 |
| | N | 495 | 495 | 495 | 495 |
| The heavy red heart | Correlation coefficient | .349** | .346** | .292** | .339** |
| | Significance (2-tailed) | 0.000 | 0.000 | 0.000 | 0.000 |
| | N | 495 | 495 | 495 | 495 |
| Thumbs up/down | Correlation coefficient | .329** | .373** | .262** | .319** |
| | Significance (2-tailed) | 0.000 | 0.000 | 0.000 | 0.000 |
| | N | 495 | 495 | 495 | 495 |
| Folded hands | Correlation coefficient | .273** | .262** | .296** | .258** |
| | Significance (2-tailed) | 0.000 | 0.000 | 0.000 | 0.000 |
| | N | 495 | 495 | 495 | 495 |

*Correlation is significant at the 0.05 level (2-tailed)
**Correlation is significant at the 0.01 level (2-tailed)

meet in person (online to off-line), and 33.5% said they often experience such online-to-off-line friendships. The third friendship category is defined as friends limited to only online chatting (i.e., exclusively online friendships). Most of the respondents reported they 'often' (35.8%) have such friendships on Facebook. Only 4.4% said 'never' and 7.9% reported they 'rarely' have such Facebook friends.

## Types of Emoticons Used and Quality of Friendships on Facebook

To address the first research question and measure whether the quality of female friendships is related to the use of various types of emoticons on Facebook, the study used Spearman's rho correlations. Based on the findings presented in **Table 4**, it is evident that there are statistically significant and positive correlations between each emoticon and the various components/dimensions of friendship quality: safety and security, closeness, help, and satisfaction. As shown in **Table 4**, it suggests that the use of each emoticon during conversations with friends on Facebook has a positive effect on the quality of female Facebook friendships.

The results show that 'safety and security' in Facebook friendships share a positive and relatively large association with the loud crying face ($r = 0.363$, $p < 0.01$), the grinning face ($r = 0.360$, $p < 0.01$), and the smiling face with open mouth and smiling eyes ($r = 0.350$, $p < 0.01$) compared to other types of emoticons. It implies that in Facebook friendships, when users feel safe and secure, they are more likely to show intense emotions, joy, or excitement openly, which fosters an emotionally rich and positive communication environment.

**Table 5.** Correlations between uses of emoticons and friendship quality

| | | Safety and security | Closeness | Help | Satisfaction |
|---|---|---|---|---|---|
| Uses of Emoticons in different contexts | Pearson correlation | .681** | .650** | .506** | .623** |
| | Significance (2-tailed) | 0.000 | 0.000 | 0.000 | 0.000 |
| | N | 495 | 495 | 495 | 495 |
| Consistent use of emoticons | Correlation coefficient | .677** | .682** | .503** | .643** |
| | Significance (2-tailed) | 0.000 | 0.000 | 0.000 | 0.000 |
| | N | 495 | 495 | 495 | 495 |

**Correlation is significant at the 0.01 level (2-tailed)

Similarly, the results reveal that a grinning face is significantly associated with 'closeness' with friends on Facebook, r = 0.412, p < 0.01. The grinning face is also significantly related to 'satisfaction', r = 0.368, p < 0.01. This suggests when female users feel content and emotionally connected with their friends, they are more likely to use grinning faces, reflecting positive interactions, warmth, and happiness. The folded hands emoticon has a positive but weak correlation with 'closeness,' r = 0.262, p < 0.01. In close friendships, this emoticon may express respect, gratitude, or a sense of connection. It means that females emotionally close to their friends may use folded hands emoticon to convey support, appreciation, or share values.

The 'help' dimension has a significant positive and moderate correlation with rolling on the floor laughing face, r = 0.324, p 0.01. Users providing or seeking help on Facebook are likely to interact with lightheartedness and humor. It suggests that humor is associated with improving enjoyable and supportive communication, making helping or help-seeking behaviors feel more engaging and relatable.

The second research question uses the Pearson correlation method. The relationship between the usage of emoticons in various settings and their frequent application in Facebook conversations is associated with factors that measure the quality of friendships. The results show significant, positive, and strong correlations between the variables. It means that the consistent use of emoticons is positively associated with the quality of female friendships on Facebook (**Table 5**).

## Emoticons Use, Friendship Quality, and Moderating Effects

The study performed a multivariate GLM analysis to examine the main research problem in the third, fourth, and fifth research questions, i.e., the effect of emoticons on Facebook on the quality of female friendship. FOU represents emoticons in this analysis. The quality of female friendship is represented by four variables: safety and security, closeness, help and satisfaction; therefore, a multivariate analysis is required to explain multiple outcomes. This analysis also enables performing moderating effects of social presence and demographics (age, marital status, and employment status).

The overall results, as shown by Pillai's Trace and other statistics, are statistically significant, F = 2.571, p < 0.05. This means that the use of emoticons significantly impacts the quality of female friendship (the four variables of friendship quality). Overall, as shown in **Table 6**, the moderating effect of social presence (interaction between FOU × social presence) is statistically significant with respect to Pillai's Trace and other statistics in predicting friendship quality, F = 51.233, p < 0.001. Age and marital status' moderating effects are significant by Roy's largest root statistics only. Employment's moderation effect is statistically insignificant.

**Table 6.** Multivariate tests (GLM)

| Effect | | Value | F | Hypothesis df | Error df | Significance |
|---|---|---|---|---|---|---|
| Intercept | Pillai's trace | 0.488 | 113.938[b] | 4.000 | 479.000 | 0.000 |
| | Wilks' lambda | 0.512 | 113.938[b] | 4.000 | 479.000 | 0.000 |
| | Hotelling's trace | 0.951 | 113.938[b] | 4.000 | 479.000 | 0.000 |
| | Roy's largest root | 0.951 | 113.938[b] | 4.000 | 479.000 | 0.000 |
| FOU | Pillai's trace | 0.021 | 2.571[b] | 4.000 | 479.000 | 0.037 |
| | Wilks' lambda | 0.979 | 2.571[b] | 4.000 | 479.000 | 0.037 |
| | Hotelling's trace | 0.021 | 2.571[b] | 4.000 | 479.000 | 0.037 |
| | Roy's largest root | 0.021 | 2.571[b] | 4.000 | 479.000 | 0.037 |
| Age × FOU | Pillai's trace | 0.031 | 1.242 | 12.000 | 1,443.000 | 0.248 |
| | Wilks' lambda | 0.969 | 1.244 | 12.000 | 1,267.606 | 0.247 |
| | Hotelling's trace | 0.031 | 1.246 | 12.000 | 1,433.000 | 0.245 |
| | Roy's largest root | 0.025 | 3.048[c] | 4.000 | 481.000 | 0.017 |

**Table 6 (Continued).**

| Effect | | Value | F | Hypothesis df | Error df | Significance |
|---|---|---|---|---|---|---|
| Marital status × FOU | Pillai's trace | 0.029 | 0.879 | 16.000 | 1,928.000 | 0.594 |
| | Wilks' lambda | 0.971 | 0.879 | 16.000 | 1,464.007 | 0.593 |
| | Hotelling's trace | 0.029 | 0.879 | 16.000 | 1,910.000 | 0.593 |
| | Roy's largest root | 0.022 | 2.620[c] | 4.000 | 482.000 | 0.034 |
| Employment × FOU | Pillai's trace | 0.015 | 0.611 | 12.000 | 1,443.000 | 0.834 |
| | Wilks' lambda | 0.985 | 0.610 | 12.000 | 1,267.606 | 0.835 |
| | Hotelling's trace | 0.015 | 0.609 | 12.000 | 1,433.000 | 0.836 |
| | Roy's largest root | 0.011 | 1.283[c] | 4.000 | 481.000 | 0.276 |
| FOU × SP | Pillai's trace | 0.300 | 51.233[b] | 4.000 | 479.000 | 0.000 |
| | Wilks' lambda | 0.700 | 51.233[b] | 4.000 | 479.000 | 0.000 |
| | Hotelling's trace | 0.428 | 51.233[b] | 4.000 | 479.000 | 0.000 |
| | Roy's largest root | 0.428 | 51.233[b] | 4.000 | 479.000 | 0.000 |

[a] Design: Intercept + FOU + age × FOU + marital status × FOU + employment × FOU + FOU × SP
[b] Exact statistic
[c] The statistic is an upper bound on F that yields a lower bound on the significance level
SP: Social presence

**Table 7.** Tests of between subjects effects

| Source | | Type of sum of squares | df | Mean square | F | Significance |
|---|---|---|---|---|---|---|
| Corrected model | Safety and security | 130.360[a] | 12 | 10.863 | 49.258 | 0.000 |
| | Closeness | 133.908[b] | 12 | 11.159 | 46.985 | 0.000 |
| | Help | 141.221[c] | 12 | 11.768 | 19.248 | 0.000 |
| | Satisfaction | 110.360[d] | 12 | 9.197 | 32.249 | 0.000 |
| Intercept | Safety and security | 67.235 | 1 | 67.235 | 304.865 | 0.000 |
| | Closeness | 59.953 | 1 | 59.953 | 252.435 | 0.000 |
| | Help | 51.389 | 1 | 51.389 | 84.048 | 0.000 |
| | Satisfaction | 62.346 | 1 | 62.346 | 218.622 | 0.000 |
| FOU | Safety and security | 1.680 | 1 | 1.680 | 7.617 | 0.006 |
| | Closeness | 0.858 | 1 | 0.858 | 3.612 | 0.058 |
| | Help | 0.112 | 1 | 0.112 | 0.183 | 0.669 |
| | Satisfaction | 0.025 | 1 | 0.025 | 0.088 | 0.767 |
| Age × FOU | Safety and security | 0.242 | 3 | 0.081 | 0.365 | 0.778 |
| | Closeness | 0.681 | 3 | 0.227 | 0.956 | 0.413 |
| | Help | 0.655 | 3 | 0.218 | 0.357 | 0.784 |
| | Satisfaction | 2.190 | 3 | 0.730 | 2.560 | 0.054 |
| Marital status × FOU | Safety and security | 0.414 | 4 | 0.104 | 0.470 | 0.758 |
| | Closeness | 0.872 | 4 | 0.218 | 0.918 | 0.453 |
| | Help | 3.459 | 4 | 0.865 | 1.414 | 0.228 |
| | Satisfaction | 0.326 | 4 | 0.081 | 0.286 | 0.887 |
| Employment × FOU | Safety and security | 0.412 | 3 | 0.137 | 0.622 | 0.601 |
| | Closeness | 0.475 | 3 | 0.158 | 0.667 | 0.573 |
| | Help | 0.423 | 3 | 0.141 | 0.231 | 0.875 |
| | Satisfaction | 0.341 | 3 | 0.114 | 0.399 | 0.754 |
| FOU × SP | Safety and security | 31.858 | 1 | 31.858 | 144.452 | 0.000 |
| | Closeness | 28.406 | 1 | 28.406 | 119.606 | 0.000 |
| | Help | 25.330 | 1 | 25.330 | 41.427 | 0.000 |
| | Satisfaction | 16.833 | 1 | 16.833 | 59.027 | 0.000 |

[a] R-squared = .551 (adjusted R-squared = .540)
[b] R-squared = .539 (adjusted R-squared = .528)
[c] R-squared = .324 (adjusted R-squared = .307)
[d] R-squared = .445 (adjusted R-squared = .432)
SP: Social presence

The tests of between-subject effects reveal that the FOU has a statistically significant impact on safety and security, $F = 7.617$, $p < 0.01$ and closeness, $F = 3.612$, $p < 0.1$ only. FOU × social presence significantly predicts all four outcomes, while age × FOU significantly explains satisfaction only, $F = 2.560$, $p < 0.1$.

**Table 7** shows the moderating effect of social presence is significant and positive on all dimensions of friendship quality. In other words, social presence increases FOU's effect on friendship quality. When female users perceive a strong sense of social presence, frequent use of emoticons on Facebook increases positive outcomes in their friendship. However, in the case of demographic variable moderations, only one significant

effect is observed out of the twelve relationships, i.e., the effect of age × FOU on satisfaction (dimensional level of friendship quality). Moreover, the coefficients' values reveal that the interactions of FOU with younger age groups have a significantly greater effect on satisfaction than the interactions with older groups. Younger females are more likely to be immersed in digital communications, such as Facebook, and tend to rely on emoticons to convey tone, express emotions, and build connections. This reflects a generational difference, which benefits younger users in enhancing satisfaction in online friendships via the frequent use of emoticons.

## DISCUSSION

The main question of the current study is whether the use of emoticons on Facebook impacts the quality of female friendships. The multivariate GLM analysis reveals a significant impact of emoticons on the quality of female friendships. More specifically, using emoticons significantly predicts two dimensions of friendship quality: closeness, safety and security. As discussed earlier, using emoticons positively influences conversations between friends (Boutet et al., 2021). Emotions' use is linked with greater closeness between friends (Liu, 2023). Sherman et al. (2013) also support this finding, i.e., using emoticons in digital environments can increase closeness between friends. This is because using emoticons improves communication, reduces ambiguity, and conveys non-literal meanings (Bai et al., 2019; Hirose et al., 2014). However, the findings of Quintes and Ullrich (2019) showed that emoticons lack the authenticity found in face-to-face interactions. This indicates that although these tools help to close gaps, there are still limits to what can be achieved without face-to-face conversations. The lack of immediate feedback as well as contextual details within text-based interactions diminishes the effectiveness of fostering satisfactory communication and exposes the limitations of online engagement. Furthermore, previous research offers limited evidence on the use of emoticons and their influence on safety and security perception. However, using emoticons enhances communication and relationships and contributes to safety perception. Previous research reveals that the use of emoticons has several positive effects, such as perceived information richness, enjoyment, and better personal interaction (Huang et al., 2008). The effects could lead to improved friendship quality and a more positive and friendly online environment, which in turn could create a better safety perception among friends. Thus, this research study finds a novel link between the use of emoticons and safety and security as a construct of friendship quality.

The study finds significant relationships between different types of emoticons used on Facebook and the quality of female friendships. It observes that the use of each emoticon on Facebook positively affects the quality of female friendships, irrespective of the emoticon valence (positive or negative emoticons). Brito et al. (2020) support this finding, where both positive and negative valence emoticons are significantly correlated with positive and negative emotional categories, such as affection, happiness, satisfaction, hatred, or depression. It implies a robust effect of different types of emoticons, which is also observed in the current study in the context of the dimensions of the quality of female friendship: safety and security, closeness, help, and satisfaction.

The current research also finds a significant and positive correlation between using emoticons in different contexts on Facebook and the quality of female friendships. These contexts include using emoticons in humorous conversations or serious chats, clarifying a message, expressing emotions, or enhancing conversations. According to Cramer et al. (2016), emoticon use adds contextual meaning to communication, improves the attractiveness of the message and enhances context appropriateness. For this reason, using emoticons in different contexts positively influences relationships, such as friendships. Moreover, the study also finds a significant and positive association between the consistent use of emoticons and the quality of female friendships. Previous literature reveals that the regular use of emoticons increases Facebook user engagement (Oleszkiewicz et al., 2017). Assad (2022) also finds a significant and positive correlation between the frequent or consistent use of emoticons and the level of social engagement in chatting with friends and family on Facebook. Higher engagement would consequently improve the friendship quality.

One of the essential findings of the current study is the significant moderating effect of social presence in the relationship between the use of emoticons and friendship quality. The moderating effect of social presence is statistically significant and positive. In other words, the interaction between emoticons' use and social presence significantly predicts friendship quality. Previous literature on social presence explains this

effect. According to Hayes et al. (2020), using emoticons on social media has increased social presence, resulting in a greater perception of satisfaction among those involved in communication (Calefato & Lanubile, 2010). The positive moderating effect of social presence suggests that emoticons serve as a type of communication, "digital immediacy," which enhances feelings of closeness in CMC. By visually displaying emotions, female psychological distance is minimized, thus creating warmth and connection. This points out the importance of online nonverbal communication and how minimalistic digital touches can bolster friendships. Emoticons help female users on Facebook to communicate and engage with one another in ways that matter, therefore, social media platforms should make use of these technologies to allow users to communicate with each other.

Moreover, a higher social presence helps better two-way information exchange and engagement (Cui et al., 2013). Although no direct evidence confirms or rejects the moderating effect of social presence in the link between the use of emoticons and friendship quality, emoticons have a positive impact on social presence (Hayes et al., 2020), which translates into greater engagement and better friendship quality. Thus, this paper contributes to the role of social presence as a moderating variable when studying the relationship between the use of emoticons and the quality of female friendships.

Among the moderating effects of demographic factors, only the effect of age × FOU on quality of friendship is found to be statistically significant. More specifically, age significantly moderates the relationship between emoticon use and the satisfaction dimension of friendship quality. As mentioned earlier, age-related factors play an essential role in the type, frequency, and consistency of emoticons used (Al-Rawi et al., 2020; Herring & Dainas, 2020; Pérez-Sabater, 2019). When studying emoticons' use, the moderating effect of age can be a significant factor. Previous literature has observed that younger individuals are likely to use emoticons more frequently than older people (Koch et al., 2022; Oleszkiewicz et al., 2017). It means the FOU of emoticons decreases with age. Since the FOU of emoticons is positively associated with friendship quality, the interaction between emoticon use and young age is more likely to improve friendship quality. The current study provides similar evidence where, with younger age groups, the impact of emoticons on friendship quality is statistically significant.

## CONCLUSION

The study investigates the impact of emoticons on the quality of female friendships on Facebook through multivariate GLM analysis. The research reveals a significant influence, indicating that the use of emoticons serves as a predictor for key dimensions of friendship quality, specifically closeness, safety and security. Additionally, the study uncovers meaningful connections between various types of emoticons on Facebook and the overall quality of female friendships, emphasizing the positive contribution of each emoticon, regardless of whether the emoticons convey positive or negative sentiments. Furthermore, the research identifies a positive correlation between emoticon use in different contexts on Facebook and the quality of female friendships.

The study also highlights the substantial moderating effect of social presence, demonstrating its positive influence on the relationship between emoticon usage and friendship quality. Finally, among the moderating effects of demographic factors, the interaction between age and frequency of emoticon use (FOU) emerges as statistically significant, particularly influencing the satisfaction dimension of friendship quality.

### Limitations, Recommendations, and Future Research

This research has numerous limitations. First, the study employed a convenience sampling technique, which suggests the findings may not be generalizable since the sample of women expatriates in the UAE may not be fully representative of the entire population. Second, the self-administered nature of the online survey of Facebook users creates social desirability bias. Participants may wish to report but not accurately depict their social interactions. Third, the study focuses on female expatriates since there may be emoticon interpersonal relationship differences in male users. Fourth, this design of the study is cross-sectional, which may restrict measuring evolving interactions in social media. Finally, although the analysis of multivariate GLM does offer a substantial amount of information, it does not capture the relationship among unobserved confounding variables.

Based on the significant effect of emoticons on the quality of female friendships, the use of emoticons is advisable in online communication, which can enhance understanding and emotional expressiveness in digital conversations. Similar to Facebook and other mainstream online social networks, new social media platforms and messaging apps may consider integrating various emoticon features that could help users better express emotions. Considering the age-moderating effects, there is a need to include emoticons relatable to adult females to enhance their digital communication experiences and relationships with others, such as a 'career woman' emoticon or a 'supermom' emoticon.

Future research could improve generalizability through stratified sampling, which involves subdividing the population into subgroups such as gender, age, marital status, and profession, and taking proportional samples from each group. This method guarantees minimal misrepresentation of the studied population, therefore enhancing the external validity of the study. TI neo lessen social desirability bias, Facebook behavioral analytics can be paired with observational data. Future research on the emoticon effects on male friendship quality or other demographic groups can be conducted. Moreover, longitudinal studies can be conducted to investigate how the relationship between emoticon use and female friendship evolves over some time. Other ideas for future research may include cross-cultural studies on the impact of emoticons on friendship quality, controlled experiments by manipulating emoticon usage, and qualitative analysis of textual conversations or in-depth interviews. These research avenues can improve the quality of communication in the digital age.

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**Data availability:** Data generated or analyzed during this study are available from the author on request.

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