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Meme-ingful Connections: Unleashing the Power of Memes, GIFs, and Emojis in Relationship-Oriented Online Communication

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Abstract

This study examines the influence of graphic icons in building and maintaining social connections in computer-mediated communication interactions. Through an online survey, participants (N = 395) were randomly assigned to reflect on conversations with either a close contact (strong tie) or an acquaintance (weak tie) and reported their use of graphic icons. We found that the use of graphic icons can be viewed as part of routine relational maintenance practices. More frequent use of memes, GIFs, and emojis was associated with greater self-disclosure breadth and depth, stronger intimacy, and better relationship maintenance. Social anxiety and tie strength moderated these relationships. The effects were stronger for less socially anxious individuals and in weak tie relationships, suggesting that graphic icons may serve different social functions depending on individual characteristics and relational contexts. These findings provide evidence that memes, GIFs, and emojis can serve as useful tools to improve social connection and relationship management in digital communication.

Keywords: memes; GIFs; emojis; relationship management; social anxiety; tie strength

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Introduction

Graphic icons have long been introduced in computer-mediated communication (CMC) to enrich text messaging and help users express their emotions and intentions (dos Reis et al., 2018; Konrad et al., 2020). Since its introduction in the early 1970s, new forms of graphic icons, such as emojis, GIFs, and memes, have emerged and become pervasive in online communication. Given their pervasiveness, scholars suggest that more research is needed to examine the use and effects of these newer graphic icons (Konrad et al., 2020). The Unicode Consortium, a non-profit organization dedicated to developing and maintaining standards of text and symbols across digital platforms, reports that 92% of the online population uses emojis in their communication (Daniel, 2022). In particular, 85% emojis users in the U.S. use them in text messages and instant messaging apps (Adobe Fonts Team, 2022). Given their widespread and frequent use, most prior studies have primarily examined emojis. A meta-analysis highlighted that most scholarly attention has focused on emojis, while there is a lack of understanding regarding newer types of graphic icons, such as GIFs and memes, despite their increasing use (Tang & Hew, 2019).

Scholars have begun to recognize the importance of studying memes and GIFs as they become ubiquitous languages in online communication for conveying meaning and emotional connection (Church et al., 2023;

Dominguez, 2023). A recent interview study found that while emojis are most favored by users due to their ease of use, GIFs and memes follow in online communication because of their visually engaging nature (Shandilya et al., 2022). Furthermore, individuals tend to utilize a variety of graphic icons, rather than relying on a single type when communicating online including in workplace settings (Shandilya et al., 2022). This tendency likely extends to personal communication and non-work contexts, where users are often motivated to incorporate a range of non-text symbols to facilitate social interactions and relationship maintenance (Hsieh & Tseng, 2017). Despite this, relatively few studies have examined the use of memes and GIFs in close relationships (Brody & Cullen, 2023; Dominguez, 2023), and their impact on relational outcomes remained underexplored. This gap is notable, given that graphic icons have been recognized as important tools for fostering connection in close relationships (Clark & Taraban, 1991). To address this gap, this study compares the use of multiple graphic icons across weak versus strong relationship ties. By examining memes and GIFs alongside emojis, our study offers a more comprehensive understanding of the social and relational functions of visual languages in the digital context.

Additionally, CMC studies have shown that different individuals may use CMC information and resources differently and receive different outcomes regarding communication and relational goals. In particular, scholars have examined the role of social anxiety in shaping relational outcomes such as closeness, disclosure, and relationship maintenance (e.g., High & Caplan, 2009; O'Day & Heimberg, 2021). CMC environment can offer more opportunities for socially anxious individuals to engage in interpersonal communication and increase self-disclosures that facilitate relationships (e.g., J.-L. Wang et al., 2011). Previous studies have also explored the potential benefits of using graphic icons to reduce social anxiety and support online communication (Akram et al., 2021). However, there is limited research on how the use of graphic icons during instant messaging conversations affect individuals who experience anxiety around social interactions. Taken together, drawing on research on graphic icons, tie strength, and social anxiety, this study investigates the use of emojis, memes, and GIFs in interpersonal communication and their potential impact on relational outcomes across varying tie strengths (i.e., strong vs. weak relationships) and among individuals with varying levels of social anxiety.

Literature Review

Graphic Icons in CMC

In interpersonal communication, individuals rely on both verbal and nonverbal cues to convey meaning and emotions. In face-to-face interactions, nonverbal behaviors such as facial expressions, gestures, and tone of voice play a crucial role in effective communication and relationship-building (Knapp et al., 2013). Early research suggested that CMC, which lacks traditional nonverbal cues, could hinder emotional expression and lead to miscommunication (Kiesler et al., 1984; Sproull & Kiesler, 1986). However, as digital communication has evolved, users have adapted by incorporating graphic icons, such as memes, GIFs, and emojis, to compensate for the lack of real-time nonverbal signals (Prada et al., 2018; Walther & Parks, 2002).

Graphic icons are widely used in digital communication and serve diverse communicative functions. Memes are pieces of media repurposed to convey cultural, social, or political messages, often through humor (Davison, 2012). GIFs are short, soundless animated clips commonly sourced from pop culture (Eppink, 2014). Emojis are small digital icons representing emotions, objects, or actions (Cramer et al., 2016). These icons function as paralinguistic cues, helping to convey tone, mood, and affect, much like gestures and facial expressions do in face-to-face communication (Dainas & Herring, 2021; Konrad et al., 2020).

Human communication is largely relationship-driven, meaning that messages are often designed to build, maintain, or strengthen interpersonal connections rather than simply to relay information (Mikkelson et al., 2019). Choi (2024) proposed that graphic icons are used as a sign to convey relational meanings - they are used as an important tool for managing impressions and presenting the self in social interactions in the digital environment. For instance, emojis are commonly used to soften messages, signal agreement, or express emotional tone (Riordan, 2017), while memes and GIFs often serve as social cues that reinforce shared cultural knowledge and group identity (Wagener, 2021). Additionally, in professional settings, graphic icons help to foster team cohesion and enhance emotional expression in virtual workspaces, particularly in remote collaboration environments where nonverbal cues are absent (Shandilya et al., 2022).

One significant function of graphic icons, particularly among younger users, is their ability to encode hidden meanings and reinforce in-group identity (Miltner, 2014; Miltner & Highfield, 2017). Memes, GIFs, and emojis are

often repurposed within peer groups to communicate inside jokes, cultural references, or coded messages that outsiders may not fully understand. This shared digital language fosters a sense of belonging, as individuals develop unique visual vocabularies that differentiate their communication within specific social groups (Brody & Cullen, 2023). Similarly, research suggests that emojis and GIFs are frequently used in romantic relationships and friendships to signal closeness, playfulness, and mutual understanding (Janssen et al., 2014; Kelly & Watts, 2015).

These findings suggest that graphic icons function as essential relational tools, shaping both social and professional digital interactions. By facilitating emotional expression, reinforcing group identity, and enhancing social bonding, they enable users to navigate interpersonal relationships in increasingly digital environments (Dainas & Herring, 2021; Niemelä-Nyrhinen & Seppänen, 2020).

Relational Outcomes Associated With Graphic Icons

Effective communication plays a key role in relationship development and maintenance, particularly through behaviors such as self-disclosure, intimacy, and relationship maintenance (Hays, 1984; Valkenburg & Peter, 2007). Graphic icons contribute to these relational processes by adding emotional expression, enhancing engagement, and reinforcing interpersonal bonds in digital communication.

Self-Disclosure. Self-disclosure refers to the deliberate and voluntary act of sharing personally relevant thoughts, feelings, and experiences with others (Derlega et al., 1993), characterized by two key dimensions: breadth and depth (Altman & Taylor, 1973). Breadth denotes the range of topics disclosed, including both professional and personal life events (Derlega et al., 1993), while depth pertains to the level of detail revealed about each topic (Jourard, 1971). Previous research has shown that online communication fosters a more relaxing environment for users to disclose private information (Nguyen et al., 2012). Thus, it plays a significant role in enhancing the breadth and depth of self-disclosure (Ruppel et al., 2017). Incorporating emoticons and emojis into text messages has been shown to have a positive impact, enhancing their expressiveness (dos Reis et al., 2018; Hsieh & Tseng, 2017). Tang and Hew (2019) suggested that the use of emoticons, emojis, and stickers is a prevalent method of conveying emotional self-disclosure in CMC. For instance, Zhang et al. (2021) found that emojis are employed to non-verbally disclose feelings of sadness when revealing mental health issues. Hence, we proposed that:

H1: The use frequency of graphic icons is positively related to self-disclosure (a) breadth and (b) depth of existing offline relationships.

Intimacy. Intimacy, which encompasses emotions of closeness and emotional bonding, holds significant importance in human relationships (Fisher & Stricker, 1982). Communication applications facilitate the expression of intimacy through deliberate acts of communication (Park & Lee, 2019). One effective method is the utilization of graphic icons, enabling the conveyance of intimacy in online contexts (Utz, 2000). GIFs, emojis, or memes can serve as phatic communication tools that reflect the level of intimacy shared between individuals (Niemelä-Nyrhinen & Seppänen, 2020). According to Wiseman and Gould (2018), users will repurpose emojis to convey secret codes with intimate friends or romantic partners. Increased usage of emoticons has been associated with higher levels of perceived intimacy in online communications (Janssen et al., 2014). Kelly and Watts (2015) suggested that adopting emojis fosters feelings of closeness, asserting that what may initially seem trivial could develop into something of relational significance through the co-creation of unique meanings. Moreover, the frequency of emoji use has been shown to correlate with the level of intimacy in a relationship (Gesselman et al., 2019). Therefore, we hypothesize:

H2: The use frequency of graphic icons is positively related to the perceived intimacy of existing offline relationships.

Relationship Maintenance. An essential function of mundane relational communication behaviors is relational maintenance (Dainton & Stafford, 1993), which remains true even as relationships develop online. Online messaging platforms have opened new opportunities for mundane relational interactions and connection (McEwan & Horn, 2016). Shandilya et al. (2022) found that teams formed on virtual workspaces selectively and increasingly use emojis, GIFs, and memes to establish interpersonal bonds. Utz (2000) examined online game players' use of emoticons (i.e., icons that express feelings and emotions) in CMC chats to socialize and make friends, demonstrating that emoticons helped covey emotional tone and relational intent in the absence of non-verbal cues. Based on the survey data, emoticon use increased over time and was positively correlated with the development of online friendships, measured by items such as having friends in the game to discuss private topics, rather than being just casual acquaintances. While maintaining an offline relationship in the online space may

differ from one that originated online, arguably, relationships initiated online are often more adept at utilizing digital tools for communication. Nevertheless, in both contexts, the functions of graphic icons contribute to relationship enhancement, which is also a key component of maintaining existing relationships (e.g., Ogolsky et al., 2017).

As newer forms, memes, GIFs, and emojis can be used to supplement text communication, to reinforce effective interaction while strengthening communication (Boutet et al., 2021; Hsieh & Tseng, 2017). Studies have emphasized their significant role in expressing emotions and creating friendly impressions to maintain positive relations with others (Riordan, 2017; Sugiyama, 2015). For example, individuals frequently use memes and emojis as humorous tools to signal shared interests and maintain interpersonal relationships (e.g., Brody & Cullen, 2023). Behaviors such as sharing a funny meme to initiate conversations or using a hug emoji to show emotional support can contribute to sustain positive relationships. Nexø and Strandell (2020) observed that the use of emojis could facilitate maintaining connections with potential partners after their first date. Specifically, the study suggested that when people use emojis in a synchronized or mutual way during instant messaging, it motivates continuous interactions. Thus, we propose that:

H3: The use frequency of graphic icons is positively related to relationship maintenance of existing offline relationships.

The Moderating Role of Social Anxiety

Social anxiety can be described as "anxiety arising from the anticipation or occurrence of personal assessment in actual or perceived social situations" (Schlenker & Leary, 1982, p. 642). There are variations in the level of anxiety individuals experience in social settings. As a personal characteristic, social anxiety frequently leads to adverse interpersonal outcomes and hinders the development of relationships (Heerey & Kring, 2007). Prior research showed that CMC could reduce the undesirable interpersonal outcomes caused by social anxiety (High & Caplan, 2009). Individuals with high social anxiety tend to show a preference for CMC. Social anxious individuals value the sense of control that internet communication offers, perceiving it as encompassing a wider, more profound, and mutually responsive interaction (Peter & Valkenburg, 2006). And by engaging in online communication, individuals can compensate for limited social interactions in real life (Weidman et al., 2012). Relatedly, social anxiety was associated with a greater preference for text messaging (Reid & Reid, 2007). Some scholars also found that preference for social media among socially anxious individuals may not necessarily lead to positive social and relational outcomes (O'Day & Heimberg, 2021). For example, individuals with psychosocial issues, such as social anxiety, may be more inclined to use social media as a maladaptive coping mechanism to manage social discomfort. However, this preference can result in problematic behaviors, such as excessive time spent online, which may reduce face-to-face interactions and negatively impact real-life performance (O'Day & Heimberg, 2021).

Studies found that the correlation between social media usage and friendship quality was positive and significant only among adolescents with low levels of social anxiety (Van Schalkwyk et al., 2017). Evidence also indicated that the private form of online communication was more critical for socially anxious individuals to engage in relationship-enhancing activities such as self-disclosure. The privacy and trust afforded by privacy forms of online communication (e.g., sharing memes in private chats) could increase levels of self-disclosure, especially for those with greater social anxiety (Green et al., 2016). Similarly, online communication via instant messaging software had significant and positive impacts on self-disclosure, especially for adolescents with higher social anxiety (J.-L. Wang et al., 2011).

To date, very little attention has been paid to the effects of using memes, GIFs, and emojis during digital messaging on relational outcomes for individuals with different levels of social anxiety. But evidence suggested that social anxiety could limit people's ability to disclose and express emotions, and highly anxious people reported reduced intimacy and quality of their relationships (Sparrevohn & Rapee, 2009). Memes, GIFs, and emojis could serve as a humanized tool for anxious individuals to more easily disclose and express emotions, which in turn could impact their relationship development and outcome (Tang & Hew, 2019). As such, we are interested in examining whether these graphic icons have special significance for individuals with social anxiety in relationship-oriented interactions. Therefore, our first research question is:

RQ1: How does the social anxiety level moderate the relationship between the use frequency of graphic icons and (a) self-disclosure breadth, (b) self-disclosure depth, (c) intimacy, and (d) relationship maintenance of existing offline relationships?

The Moderating Role of Tie Strength

The concept of tie strength was introduced by Granovetter (1973) to capture the intimacy of interpersonal relationships, which is indicated by the amount of time, emotional intensity, and reciprocal services. Social ties are often categorized into strong (e.g., friends and family) and weak ties (e.g., strangers and acquaintances; Brown & Reingen, 1987). Tie strength shapes how we communicate with others in a mediated environment and the effectiveness of such communication (Haythornthwaite, 2005). Whereas people are less motivated to communicate with weak ties due to the lack of trust, they are more encouraged to exchange information frequently via various media to maintain close ties (Levin & Cross, 2004). Empirical evidence revealed that the frequency of a single medium is also positively related to tie strength (e.g., Ledbetter et al., 2016).

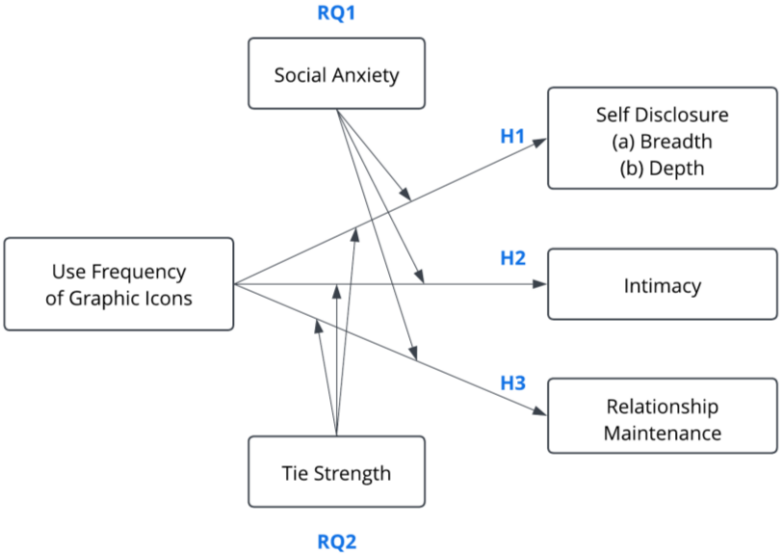
In the context of the current study, instant messaging is typically used to interact with close friends and families (Vauclair et al., 2023) and thus serves as an effective tool for people to manage close ties (Brody & Cullen, 2023; Cui, 2016). Similarly, graphic icons, especially the newer types, were often more frequently used in strong ties (Kelly & Watts, 2015; Konrad et al., 2020). Despite this, it is unclear how the use of graphic icons shapes the relational outcomes based on the tie strength. In other words, this study seeks to understand if the use of graphic icons brings the same relational benefits to strong versus weak ties. Although few studies directly examined this question, prior literature did provide evidence on the relationships among tie strength, media/graphic icon use, and relational outcomes.

Specifically, tie strength is a key factor that determines the closeness and breadth of social relationships (Kang et al., 2021). Also, the use of graphic icons was found to influence perceptions of relationship intimacy and satisfaction (S. S. Wang, 2016). Evidence revealed that tie strength did moderate the relationship between message use and communication effectiveness (Shen et al., 2016). Vauclair et al. (2023) found that the positive association between instant messaging and relationship satisfaction was contingent upon tie strength. Importantly, Haythornthwaite (2005) suggested that compared to strong ties, weak ties are more affected by changes in media use. As such, it is likely that using graphic icons would be more effective in improving relational outcomes with weak ties compared to strong ties. However, due to the lack of direct empirical evidence, we pose the following research question:

RQ2: How does the tie strength moderate the relationship between the use frequency of graphic icons and (a) self-disclosure breadth, (b) self-disclosure depth, (c) intimacy, and (d) relationship maintenance of existing offline relationships?

Taken together, the hypotheses and research questions mentioned above form our conceptual model (See Figure 1). The model proposes that graphic icon use frequency predicts the four outcome variables, and the effect may be moderated by social anxiety and tie strength.

Figure 1. *Conceptual Model.*



Methods

Participants

To address the proposed hypotheses and research questions, we conducted an online survey in October 2023 and recruited participants via Amazon's Mechanical Turk platform. To qualify for this study, participants needed to have experience with using emojis, memes, and GIFs on instant messaging apps. Participants also need to be residents of the U.S. and have a Human Intelligence Task approval rate of 95%. The study sample included 395 participants ranging in age from 18 to 75 years (M = 39.16, SD = 11.65), allowing us to capture diverse generational perspectives on digital communication. The sample achieved a relatively balanced gender distribution, with 59.2% identifying as female. Most participants were White/Caucasian (73.7%) and 53.7% of the participants reported having a bachelor's degree or higher.

Procedure

Participants were invited to complete a 10-minute Qualtrics-based study accessed through CloudResearch. After providing informed consent, participants were presented with definitions and examples of memes, emojis, and GIFs to ensure consistent understanding across the sample. They then completed a screening question confirming their previous use of these graphic icons in online chats. Using random assignment, participants were prompted to consider either 1) a strong tie situation: thinking of a person with whom they have a strong/close relationship and recently communicated via instant messaging or 2) a weak tie situation: thinking of an individual who is not particularly close and only occasionally communicated via instant messaging. Participants were instructed to only enter the nickname for their chosen individual, which was automatically inserted into subsequent survey questions to maintain consistent reference throughout the study. After this random assignment, participants completed measures assessing their social media use, frequency of memes/emoji/GIFs use, self-disclosure, intimacy, relationship maintenance, and social anxiety. Lastly, participants provided demographic information and were thanked for their participation. Participants received $1 compensation upon completion. The study was reviewed and approved by the university's Institutional Review Board.

Measures

Use Frequency of Graphic Icon

The measure of this variable was borrowed from Gesselman et al. (2019). Participants rated the frequency of using memes, GIFs, and emojis respectively with the named individual via instant messaging on a 5-point Likert-type scale. Response options were (1) *I never use them*, (2) *I hardly use them*, (3) *I use them regularly, but not in every message*, (4) *I use at least one in every message*, and (5) *I use more than one in every message* (Use of memes: Cronbach's α = .90, M = 2.30, SD = 0.86; Use of GIFs: Cronbach's α = .87, M = 2.50, SD = 0.89; Use of emojis: Cronbach's α = .89, M = 3.28, SD = 0.97).

Self-Disclosure

Both dimensions of self-disclosure were measured on a 5-point Likert scale ranging from strongly disagree to strongly agree. To assess self-disclosure breadth, six items were adopted from Parks and Floyd (1996) such as *I can talk to [name of identified individual] about anything* (Cronbach's α = .86, M = 3.49, SD = 0.81). The depth of self-disclosure was measured with six items adapted from Wheeless (1978) including *I can share my honest and deepest feelings with [name of identified individual]* (Cronbach's α = .87, M = 3.21, SD = 0.95).

Relationship Maintenance

The Friendship Maintenance Scale (Oswald et al., 2004) was adopted to assess participants' behaviors in maintaining their relationships with the named individual. Participants were asked to rate how often they and the named individual engaged in 13 kinds of different behaviors such as *Try to make each other laugh*, and *Try to be*

upbeat and cheerful when together. Participants responded on a 5-point Likert-type scale ranging from (1) *Never* to (5) *Always* (Cronbach's α = .91, *M* = 3.12, *SD* = 0.80).

Intimacy

Intimacy was measured with 6 items from Furman and Buhrmester's (1985) Network of Relationships Inventory. Participants were instructed to think of [name of identified individual] and answer the questionnaire based on their experiences with this person at the time of the survey. Sample items include *How often do you tell your friend everything that you are going through?* Participants responded on a 5-point Likert-type scale ranging from (1) *Never or hardly at all* to (5) *Always or extremely much* (Cronbach's α = .87, *M* = 3.02, *SD* = 0.81).

Social Anxiety

The scale was adopted from Mattick and Clarke (1998) to measure participants' anxiety toward social interactions with other people. Participants rated 21 statements on a 5-point Likert-type scale ranging from (1) *Not at all characteristic or true of me* to (5) *Extremely characteristic or true of me*. Sample items include *I feel tense if I am alone with just one other person*, *I worry about expressing myself in case I appear awkward*, and *When mixing socially, I am uncomfortable* (Cronbach's α = .83, *M* = 2.58, *SD* = 0.97).

Results

Before testing the research question and hypotheses, we conduct preliminary analysis to examine whether the use patterns of different graphic icons varied by tie strength (strong tie vs. weak tie). All analyses were performed with SPSS.

We first conducted a 2 (Tie Strength: Strong vs. Weak) × 3 (Graphic Icon Type: Meme, GIF, Emoji) mixed ANOVA. Results revealed a significant main effect of graphic icon type, $F(2,786) = 210.084$, $p < .001$, $\eta^2_p = 0.348$, indicating that participants used certain types of graphic icons more frequently than others. The mean usage frequencies for each type of graphic icon are reported separately in Table 1, along with their means across the strong and weak tie conditions. Descriptive statistics showed that emojis were used most frequently (*M* = 3.28, *SD* = 0.86), followed by GIFs (*M* = 2.50, *SD* = 0.89) and memes (*M* = 2.30, *SD* = 0.86). There was also a significant main effect of tie strength, $F(1,393) = 13.478$, $p < .001$, $\eta^2_p = 0.033$, with participants reporting higher overall use of graphic icons in strong tie relationships compared to weak tie relationships. However, there was no significant interaction between graphic icon type and tie strength, $F(2,786) = 1.747$, $p = .175$, indicating that the pattern of use across different graphic icons remained consistent regardless of tie strength. Therefore, we averaged the reported usage of these three types of graphic icons (*M* = 2.69, *SD* = 0.70) to create an index of overall graphic icon use frequency for subsequent regression analyses.

Table 1. *Mean (SD) Usage Frequencies of Graphic Icons by Tie Strength.*

Graphic Icon Type	Strong Tie Mean (*SD*)	Weak Tie Mean (*SD*)	Total Mean (*SD*)
Meme	2.48 (0.86)	2.12 (0.83)	2.30 (0.86)
Emoji	3.36 (0.99)	3.19 (0.96)	3.28 (0.97)
GIF	3.36 (0.99)	2.37 (0.86)	2.50 (0.89)

Further preliminary analyses using t-tests confirmed that individuals used memes, GIFs, and emojis more frequently in strong tie relationships than in weak tie relationships (see Table 2). Participants assigned to the strong tie condition also reported significantly higher perceived intimacy, self-disclosure breadth and depth, and relationship maintenance compared to those assigned to the weak tie condition. Additionally, a preliminary multiple linear regression analysis was conducted to examine social anxiety as a predictor of graphic icon use, while controlling for age, gender, race/ethnicity, education, and social media use. Results showed that higher social anxiety levels were associated with more frequent use of memes, GIFs, and emojis (β = .12, $p < .01$). A correlation table of all variables of interest is also provided in Table 3.

Table 2. *Differences Between Participants Across Tie Strength Conditions on Key Variables.*

	Strong tie condition (n = 200)	Weak tie condition (n = 195)	$t(df)$	Difference	Cohen's d	p-value
Overall graphic icons use frequency	2.81 (0.693)	2.56 (0.692)	3.671 (393)	0.26	0.38	< .001
Self-disclosure breadth	4.30 (0.76)	3.68 (0.75)	8.221 (393)	0.62	0.83	< .001
Self-disclosure depth	3.54 (0.87)	2.88 (0.91)	7.388 (393)	0.66	0.78	< .001
Intimacy	4.96 (1.52)	3.65 (1.47)	8.860 (393)	1.33	0.89	< .001
Relationship maintenance	4.07 (0.71)	3.56 (0.79)	6.697 (393)	0.51	0.68	< .001

Table 3. *Zero-Order Correlations Among Measured Variables.*

	1	2	3	4	5
1. Overall graphic icons use					
2. Self-disclosure breadth	−.078				
3. Self-disclosure depth	.354***	.485***			
4. Intimacy	.192**	.471***	.489***		
5. Relationship maintenance	.152*	.567**	.515***	.538***	
6. Social anxiety	.119	−.036	.024	−.035	−.043

Note. * $p < .05$, ** $p < .01$, *** $p < .001$.

To test our hypotheses, we conducted four separate hierarchical regression analyses, each predicting a distinct outcome variable: self-disclosure breadth, self-disclosure depth, intimacy, and relationship maintenance. In each model, we entered age, gender, race/ethnicity, education, social media use, and tie strength condition (strong vs. weak tie) in Step 1. In Step 2, overall graphic icon use was added to assess its unique contribution to each outcome variable beyond the control variables. The results of these regression analyses are presented in Table 4 (full results see Appendix). Our findings showed that participants who used graphic icons more frequently reported greater breadth and depth of self-disclosure, stronger feelings of intimacy, and better relationship maintenance, supporting H1, H2, and H3.

Table 4. *Unstandardized Coefficients B and p-Values From Regressions.*

	Self-disclosure breadth		Self-disclosure depth		Intimacy		Relationship maintenance	
	B	*p*	*B*	*p*	*B*	*p*	*B*	*p*
Control variables								
Age	0.006	.067	−0.004	.291	0.004	.556	0.006	.067
Gender	0.100	.055	−0.099	.085	−0.098	.337	0.105	.041
Race/ethnicity	0.004	.878	−0.027	.340	−0.005	.916	−0.030	.268
Education	−0.095	.025	0.025	.585	−0.075	.363	−0.039	.350
Social media use	−0.056	.216	0.015	.756	−0.019	.828	−0.027	.548
Condition (strong vs. weak tie)	−0.633	< .001	−0.512	< .001	−1.198	< .001	−0.467	< .001
R^2	.210		.171		.180		.149	
Independent variables								
Overall graphic icons use	0.123	.032	0.526	< .001	0.609	< .001	0.262	< .001
R^2	.468		.538		.494		.436	

Note. Coefficients represent Step 2 of hierarchical regressions, after overall graphic icon use was entered.

To address RQ1, the SPSS PROCESS Macro (Model 1, with 5,000 bootstrapped samples) was employed to examine the moderating effects of social anxiety on the each of the four outcome variables. In each model, graphic icons use was entered as the predictor, social anxiety as moderator, with tie strength condition (strong vs. weak ties) as the control variable.

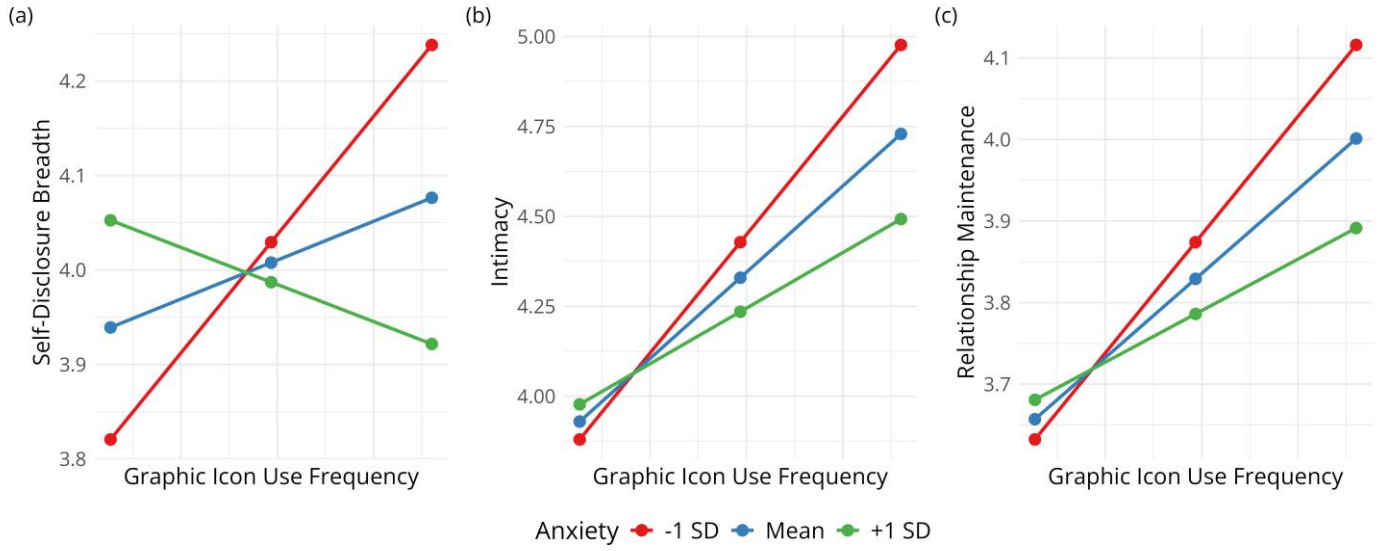
The results showed that social anxiety significantly moderated the relationship between graphic icons use and self-disclosure breadth (see Figure 2a), $B = -0.183$, $SE = .053$, $p < .001$. The Johnson-Neyman technique revealed that social anxiety weakened the positive relationship between graphic icons use and self-disclosure breadth when social anxiety levels were below 2.55.

However, social anxiety did not significantly moderate the association between graphic icons use and self-disclosure depth, $B = -0.062$, $SE = -.058$, $p = .289$.

Social anxiety marginally significantly moderated the association between graphic icons use and intimacy (see Figure 2b), $B = -0.194$, $SE = .104$, $p = .051$. The Johnson-Neyman technique showed that the positive relation between graphic icons use and intimacy was weakened when social anxiety was less than 3.89.

Social anxiety marginally significantly moderated the association between graphic icons use and relationship maintenance (see Figure 2c), $B = -0.091$, $SE = .052$, $p = .054$. The Johnson-Neyman technique showed that the positive relation between graphic icons use and relationship maintenance was weakened when social anxiety was less than 3.68.

Figure 2. *Interaction of Graphic Icons Use and Social Anxiety on (a) Self-Disclosure Breadth, (b) Intimacy, and (c) Friendship Maintenance.*



To address RQ2, we tested the moderating effect of tie strength using the SPSS PROCESS Macro (Model 1, with 5,000 bootstrapped samples). Separate models were estimated for each outcome variable, with graphic use entered as the focal predictor, tie strength as the moderator, and social anxiety as the control variable.

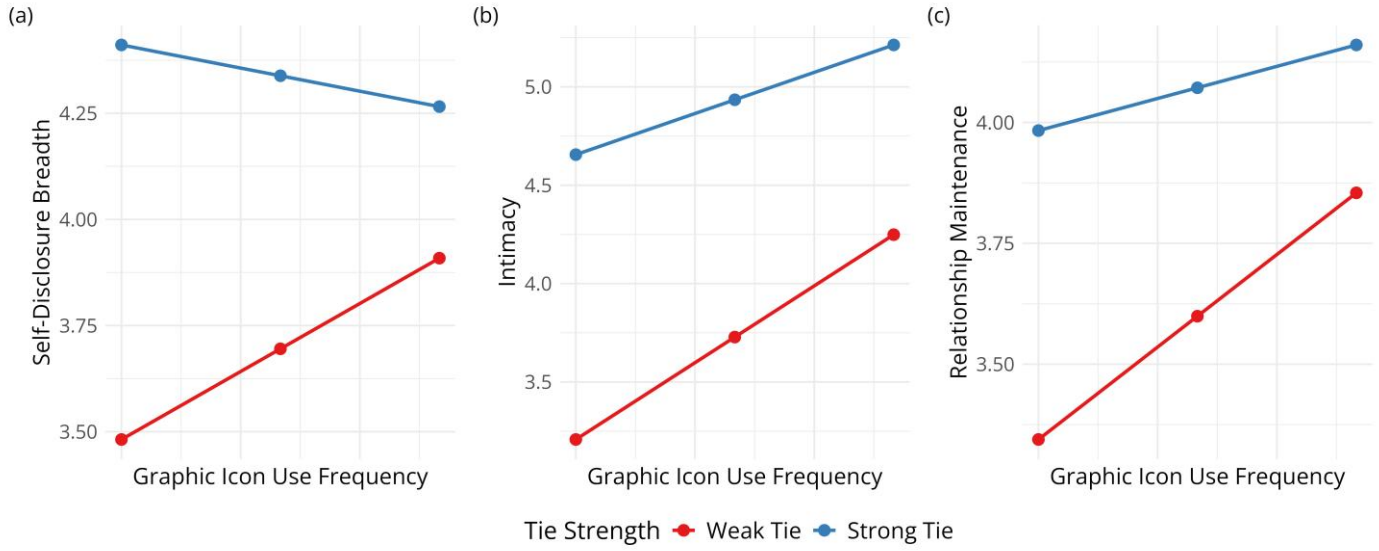
Tie strength was found to moderate the effect of graphic icons use on self-disclosure breadth (see Figure 3a), $B = -0.429$, $SE = .106$, $p < .001$. Specifically, the positive effect of graphic icon use on self-disclosure breadth was stronger in weak tie relations; effect = 0.320, $SE = .077$, 95% CI = [.168, .472].

However, tie strength did not significantly moderate the association between graphic icons use and self-disclosure depth, $B = -0.154$, $SE = .118$, $p = .195$.

Tie strength also moderated the effect of graphic icons use on intimacy (see Figure 3b), $B = -0.362$, $SE = .211$, $p = .046$). The positive effect of graphic icon use on intimacy was stronger in weak tie condition; effect = .787, $SE = .153$, 95% CI = [.479, 1.082], and weaker in strong tie condition; effect = .418, $SE = .155$, 95% CI = [.113, .723].

Additionally, tie strength moderated the effect of graphic icons use on relationship maintenance (see Figure 3c), $B = -0.249$, $SE = .105$, $p = .018$. The positive effect of graphic icon use on relationship maintenance was stronger in weak tie condition; effect = .382, $SE = .076$, 95% CI = [.231, .533], and weaker in strong tie condition; effect = .133, $SE = .078$, 95% CI = [.01, .285].

Figure 3. *Interaction of Graphic Icons Use and Tie Strength on (a) Self-Disclosure Breadth, (b) Self-Disclosure Depth, and (c) Friendship Maintenance.*



Discussion

Memes, GIFs, and emojis are effective hieroglyphics in the digital era. Users are actively developing their own appropriate syntax for using these graphic icons in CMC. Given that relational management is a primary motivation for using messaging apps (Ledbetter & Mazer, 2014), it is important to examine how the use of these graphic icons relates to interpersonal relationship-building. Our investigation expands on existing research by examining the direct effects of graphic icon use on relational outcomes and the moderating roles of social anxiety and tie strength.

Among all three types of graphic icons, emojis were used more frequently than memes and GIFs (see Table 1). This may be due to the widespread availability of emoji keyboards on mobile devices and emoji rendering on social media platforms. While people enjoy using GIFs and memes, they often find the process of searching for them cumbersome (Church et al., 2023). We also found that graphic icon use was generally higher in strong tie relationships. This finding aligns with Church et al. (2023), who found that close friends develop shared symbolic meanings for digital cues. People may use graphic icons more frequently with close friends because they expect them to recognize the joke, reference, or intended meaning behind the icons without additional explanation. This familiarity makes graphic icons a convenient and efficient way to communicate within established relationships.

Our findings support our hypotheses, demonstrating that more frequent use of graphic icons is associated with greater self-disclosure breadth and depth, stronger intimacy, and better relationship maintenance. This aligns with Social Information Processing Theory (Walther, 1992), which argues that individuals adapt digital communication to build and maintain relational connections. Dominguez (2023) also emphasizes that CMC users construct messages with relational intent, reinforcing our finding that graphic icons are not merely decorative but play a functional role in sustaining relationships. Although graphic icons may appear as superficial digital content, they help compensate for the lack of nonverbal cues in digital conversations. They facilitate self-disclosure, contribute to intimacy-building, and support relationship maintenance in CMC. This suggests that graphic icons function as continuity markers in digital interactions, keeping conversations active and reinforcing social bonds.

We found that social anxiety moderated the relationship between graphic icon use and relational outcomes (RQ1). However, individuals with lower social anxiety experienced stronger relational benefits from graphic icon use than their more socially anxious counterparts. This finding supports the rich-get-richer hypothesis (Cheng et al., 2019), which suggests that individuals with higher social competence are better able to use CMC tools for relational enhancement. Those with lower social anxiety may possess greater communication skills, making them more effective at using graphic icons to cultivate intimacy, maintain friendships, and engage in meaningful self-disclosure. Our findings also suggest that socially anxious individuals use graphic icons frequently but do not necessarily experience stronger relational benefits from them. One possible explanation is that graphic icons provide a low-risk way to engage in social interactions without requiring deep emotional investment. Prior

research indicates that graphic icons reduce social pressure in mobile communication (Zhou et al., 2017), making them appealing for socially anxious individuals. However, graphic icons may function as a conversational buffer rather than a bonding tool, allowing socially anxious individuals to participate in interactions without deepening them.

This explanation is further supported by our finding that social anxiety moderated self-disclosure breadth but not depth. Socially anxious individuals felt more comfortable using graphic icons to engage in a variety of topics, but these interactions did not lead to deeper, more intimate disclosures. That is, while individuals may share a greater number of topics, they may not reveal significantly more personal details about each. Together, these findings suggest that while graphic icons help socially anxious individuals maintain social participation while also enabling them to keep conversations at a surface level, they may not serve as strong facilitators of deeper, more meaningful self-disclosure.

Our study also examined tie strength as a moderator (RQ2). We found that although graphic icons were used more frequently in strong ties, their relational benefits (e.g., self-disclosure, intimacy, relationship maintenance) was stronger in weak ties. This suggests that graphic icons serve different purposes depending on relational closeness. In weak tie relationships, graphic icons may play a more instrumental role in fostering early-stage connections. Their use can help reduce social distance and facilitate interaction without requiring deep emotional investment. This supports the idea that memes, GIFs, and emojis act as lightweight social tools, making it easier to navigate casual relationships and maintain engagement with acquaintances or less intimate partners. Their ability to enable effortless yet meaningful interactions highlight their value in bridging relational gaps and sustaining weaker social ties.

These findings can be better understood through the communication interdependence perspective (Caughlin & Sharabi, 2013). This framework emphasizes that mediated and non-mediated (face-to-face) interactions are interdependent in shaping relational outcomes. Rather than existing in isolation, digital communication and in-person interactions complement each other in the development and maintenance of relationships. In the context of this study, the use of memes, GIFs, and emojis in CMC may reinforce relational closeness by serving as continuations of in-person interactions, allowing individuals to maintain relational engagement even in the absence of face-to-face communication. This perspective suggests that graphic icons are not simply digital substitutes for nonverbal cues but rather tools that work in tandem with offline interactions to strengthen relationships. The integration of mediated and non-mediated communication, rather than reliance on one over the other, is what predicts stronger relational ties.

This study has several limitations. First, relying on self-report data might not accurately capture respondents' actual usage of graphic icons due to potential issues such as memory loss and estimation error. Secondly, while we examined overall frequency of use, different types of graphic icons may serve distinct communicative functions or be preferred in specific relationship contexts or demographic groups. Future research should examine the potentially unique functions and contexts of different types of graphic icons. More granular analysis of how and why people choose specific types of graphic icons could provide valuable insights for understanding their role in relationship maintenance. Finally, due to the cross-sectional design, causal relationships between graphic icon use and relational outcomes cannot be determined. Longitudinal studies could provide deeper insights into how these digital cues influence relationships over time.

Conclusion

This study highlights the role of graphic icons—memes, GIFs, and emojis—in shaping relational communication in digital interactions. Our findings support the idea that frequent use of graphic icons is associated with greater self-disclosure breadth and depth, stronger intimacy, and better relationship maintenance, reinforcing their function as relational tools rather than mere decorative elements in CMC.

However, the relational benefits of graphic icons vary based on individual and contextual factors. Social anxiety moderated their effectiveness, with less socially anxious individuals experiencing stronger relational benefits. While socially anxious individuals used graphic icons frequently, their interactions tended to remain at the level of broad topic engagement rather than deeper emotional disclosure. This suggests that graphic icons may serve as both social facilitators and conversational buffers, helping socially anxious individuals stay engaged while allowing them to maintain emotional distance.

Tie strength also played a moderating role, with graphic icons used more frequently in strong tie relationships but providing greater relational benefits in weak ties. This suggests that graphic icons serve different functions depending on relational closeness. In strong ties, graphic icons may reinforce shared understanding and relational routines, whereas in weak ties, they help initiate and maintain social connections with minimal effort. Their ability to facilitate effortless yet meaningful interactions underscore their role in bridging relational gaps and sustaining weaker social ties.

Overall, these findings emphasize the importance of graphic icons as relational tools in digital communication, showing that their use extends beyond simple visual embellishments to actively shaping interpersonal relationships in meaningful ways.

Conflict of Interest

The authors have no conflicts of interest to declare.

Use of AI Services

The authors declare they have used AI service, specifically Google Gemini, for grammar correction and minor style refinements. They carefully reviewed all suggestions from these services to ensure the original meaning and factual accuracy were preserved.

Authors' Contribution

Rachel X. Peng: conceptualization, methodology, formal analysis, data curation, writing—original draft, writing—review & editing, project administration. **Jin Chen:** conceptualization, methodology, writing—original draft, writing—review & editing.

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Institutional Review Board Statement

All respondents gave their informed consent for inclusion before they participated in the study. The study was approved by the Pennsylvania State University's Institutional Review Board.

Data Availability Statement

The data will be made available upon request.

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Appendix

Full Results for Regressions

The following tables present full results from four separate hierarchical regression analyses predicting self-disclosure breadth, self-disclosure depth, intimacy, and relationship maintenance. For each model, Step 1 included control variables. Step 2 added overall graphic icon use. Tables report unstandardized coefficients (*B*), standard errors (*SE*), standardized beta coefficients (β), and exact *p*-values.

Table A1. *Regression Predicting Self-Disclosure Breadth.*

	B	*SE*	β	*p*
Control variables				
Age	0.006	.003	.088	.067
Gender	0.100	.052	.090	.055
Race/ethnicity	0.004	.026	.007	.878
Education	−0.095	.042	−.105	.025
Social media use	−0.056	.045	−.062	.216
Condition (strong vs. weak tie)	−0.633	.077	−.389	< .001
R^2			.210	
Independent variables				
Overall graphic icons use	0.123	.057	.106	.032
R^2			.468	

Table A2. *Regression Predicting Self-Disclosure Depth.*

	B	*SE*	β	*p*
Control variables				
Age	−0.004	.004	−.048	.291
Gender	−0.099	.057	−.076	.085
Race/ethnicity	−0.027	.029	−.043	.340
Education	0.025	.047	.024	.585
Social media use	0.015	.050	.015	.756
Condition (strong vs. weak tie)	−0.512	.085	−.270	< .001
R^2			.171	
Independent variables				
Overall graphic icons use	0.526	.062	.391	< .001
R^2			.538	

Table A3. *Regression Predicting Intimacy.*

	B	*SE*	β	*p*
Control variables				
Age	0.004	.007	.027	.556
Gender	−0.098	.101	−.044	.337
Race/ethnicity	−0.005	.051	−.005	.916
Education	−0.075	.083	−.041	.363
Social media use	−0.019	.089	−.010	.828
Condition (strong vs. weak tie)	−1.198	.150	−.367	< .001
R^2			180	
Independent variables				
Overall graphic icons use	.609	.111	.262	< .001
R^2			.494	

Table A4. *Regression Predicting Relationship Maintenance.*

	B	*SE*	β	*p*
Control variables				
Age	0.006	.003	.088	.067
Gender	0.105	.051	.097	.041
Race/ethnicity	−0.030	.026	−.055	.248
Education	−0.039	.042	−.044	.350
Social media use	−0.027	.044	−.030	.548
Condition (strong vs. weak tie)	−0.467	.076	−.294	< .001
R^2			.149	
Independent variables				
Overall graphic icons use	0.262	.056	.233	< .001
R^2			.436	

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