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Investigating the use of social media in intimate social relationships

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ABSTRACT

Research Question: Is social media activity related to layers of intimacy in social relationships? **Study design:** Mixed methods, survey on social relationships with 30 participants who identified up to 20 best/close friends and their use of social media. The same 30 participants were interviewed to gather details of how they communicated with close and best friends, and how they used social media/CMC to maintain their social relationships. **Analysis:** communication frequency, content and rationale were classified according to the intimacy of relationships between the ego and recipients as best or close friends. **Results:** Communication with best friends was either face to face or by conversational media (phone, text) in both normal use and emergencies. Emotional support and intimate topics dominated these exchanges. Communication with close friends used broadcast social media (Facebook), text and phone. Face to Face (FtF), phone and text were preferred by the majority of participants for social relationship maintenance. **Implications:** Dyadic (person to person) communication face to face and via social media, phone and text are vital to provide social and emotional support in intimate social relationships. Social media in particular Facebook broadcast functions play a role in supporting awareness of both intimate and less intimate social relationships.

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Social relationship maintenance; social media; social brain hypothesis; dyadic v. broadcast communication

1. Introduction

Several studies have reported that people use social media to seek and obtain social support (Ellison, Steinfeld, and Lampe 2011; Wright and Bell 2003), although on line communication via social media reinforces rather than supplants real-world relationships (Wellman et al. 2001; Haythornthwaite 2002; Kraut et al. 2002; Ellison, Steinfeld, and Lampe 2007; Burke and Kraut 2014). Some studies have suggested that intensity of social media use may be related to degree of intimacy in relationships and the nature social support afforded by social media (Ellison, Steinfeld, and Lampe 2007, 2011; Lampe, Ellison, and Steinfeld 2006; Hsu, Wang, and Yi-Ting 2011). For example, Oh, Ozkaya, and LaRose (2014) reported that an increased number of Facebook friends improved positive affect and social satisfaction among college students. In contrast Pollet, Roberts, and Dunbar (2011) found that the use of social media did not enhance emotional closeness to friends or lead to larger offline social networks. While the connection between social media use and social relationships has been established, how media are used to communicate to maintain social relationships has received less attention.

Real-world (offline) social networks and Facebook networks show a high degree of overlap (Ellison, Steinfeld, and Lampe 2007; Subrahmanyam et al. 2008). While the association between social media use, provision of social support and emotional closeness in relationships have been established, it is less clear whether these relationships are linear or differentiated according to layers of intimacy, as posited in psychological theories of friendship (Hays 1984; Oswald, Clark, and Kelly 2004). Dunbar's Social Brain Hypothesis (SBH) (Dunbar 1998, 2020) asserts that we may naturally form only a small number of very close friendships i.e. best friends (~5), with more close friends (~12–15) and about 150 in our familiar social group of friends and acquaintances (Hill and Dunbar 2003). When we refer to layers of intimacy, we use Dunbar's definition of the support group (best friends) and sympathy group (close friends). Dunbar's SBH distinguishes between more intense relationships in the support group, defined as best friends whom one would first seek help in times of crisis; and the sympathy group, defined as close friends who are contacted at least monthly (Dunbar and Spoor 1995; Dunbar 1998) and whose death would leave one personally devastated (Buys and Larson 1979). Kin and respondent's spouse

may be included in the support and sympathy groups. Functional differences between intimacy layers were reported by Binder, Roberts, and Sutcliffe (2012), such that socialising needs were more strongly satisfied by the sympathy (close friends) group, whereas emotional needs were more strongly met by the support (best friends) group. Roberts et al. (2009) found a negative relationship between social network size and mean emotional closeness between ego and others in their network, suggesting that time and cognitive constraints may result in a trade-off between the number of relationships in the network and their emotional intensity.

If SBH layers imply different communication needs, i.e. intimacy vs. frequency of communication, the question arises about affordances of CMC (computer-mediated communication) and social media for social support. Media richness theory (Daft and Lengel 1986; Daft, Lengel, and Trevino 1987; Dennis and Kinney 1998) suggests that interactive communication via phone or texting should provide better social support by affording a personal focus, social presence, rapid feedback and use of natural language, and this might be enhanced with video (viz. Skype). When interacting with strong ties, people often choose richer media, affording more social cues and synchronicity to improve emotion and affection expression (Baym, Zhang, and Lin 2004; Goodman-Deane et al. 2016; e.g. phone calls). In contrast, other media that are less capable of fulfilling these goals (e.g. e-mail) are used for weak ties (Yang, Brown, and Braun 2014). Liu and Yang (2016) studied five communication channels and found that phone calls and texting were used among closer friends, whereas IM, SNSs and online gaming were used in less close relationships. In a meta review of 124 studies, Liu et al. (2019) found that dyadic, interactive communication by phone and texting improved wellbeing, whereas social media, Instant messaging and gaming decreased wellbeing. Furthermore, interactive use of social media corresponded with increased wellbeing, whereas passive use corresponded with decreased wellbeing.

A complementary view from social presence theory (Short, Williams, and Christie 1976) focuses directly on social relationships with criteria for enhancing trust, familiarity, immediacy and intimacy that might be enhanced by social media that support relationships over time (Lowenthal 2010). Several functional affordances have been proposed for social media; for example, that generation of social capital is facilitated by reinforcing existing relationships and forming new ones (Ellison, Steinfield, and Lampe 2007, 2011; Lampe, Ellison, and Steinfield 2006). Use of Facebook

may increase wellbeing and reduce loneliness (Huang 2010; Lee, Noh, and Koo 2013; Song et al. 2014), although the evidence for a positive impact on loneliness is mixed. The affordances of email, chat, texting and social media platforms in supporting social relationships have been demonstrated (Phua, Jin, and Kim 2017; Jang, Bucy, and Cho 2018), although their role in relationships of differing intensity has received less attention. Social media activity can affect total social network size, and the number of Facebook contacts influences the size of the sympathy group (Sutcliffe, Binder, and Dunbar 2018).

We investigated the general research question ‘Is social media activity related to layers in intimacy in social relationships?’ based on Dunbar’s Social Brain Hypothesis.

In the following sections of this paper we first review related work in social relationships and social media; then the study design and methods are described. This is followed by results of questionnaires and interviews reporting the participants’ social relationships, their social media experience and how it supports their social life. The paper concludes with a discussion on the findings.

2. Related work

Relationship intensity in social networks has featured prominently in studies by Dunbar and colleagues (Dunbar 2003; Hill and Dunbar 2003; Roberts et al. 2009). Large-scale surveys have demonstrated that strong ties (close friends) experience more Internet communication and social support than weak ties (Granovetter 1983) in both North American (Boase et al. 2006) and Slovenian Internet users (Hlebec, Manfreda, and Vehovar 2006).

While maintaining established relationships within an extended social network is generally considered to be more important than forming new relationships (boyd and Ellison 2007; Ellison, Steinfield, and Lampe 2007; Donath and boyd 2004), discovering new social connections as well as maintaining relationships are important motivations for using Facebook (Joinson 2008) that afford ‘social searching’ and ‘social browsing’ (Lampe, Ellison, and Steinfield 2006). Baym, Zhang, and Lin (2004) investigated the effect of distance on relationship maintenance by CMC, showing that students preferred face-to-face interaction with local relationships, while maintaining their distance relationships through the Internet and the telephone. Although the students used the Internet for close relationships, more intimate exchanges were carried out face to face or through telephone calls.

Individuals often use social media to seek and obtain social support (Ellison, Steinfield, and Lampe 2011; Wright and Bell 2003; Zhang and Leung 2015); however, the nature of support afforded by social media may vary according to the intensity of relationships. Rozzell et al. (2014) in a Facebook 'likes' study, found that social support from weak ties was more prevalent in overall frequency, although responses from strong ties were perceived to be more supportive. Similarly, strong ties were perceived as providing more emotional and informational support than weak ties, in a study of SNS use (Kremer et al. 2014). The importance of strong ties in providing social support via social media has also been noted by Rains and Keating (2011) and Wright and Miller (2010).

In contrast, Donath and boyd (2004) proposed that forming and maintaining weak relationships is a prime motivator for social media communication, and this claim has been supported in some studies (e.g. Steinfield, Ellison, and Lampe 2008; Wright and Miller 2010). As many users have hundreds of Facebook 'friends' (Tong et al. 2008) not surprisingly weak ties (Granovetter 1983) dominate in overall volume of contacts. Facebook is used to obtain new and diverse information or perspectives, a function associated with weak ties (Ellison, Steinfield, and Lampe 2011; Smock et al. 2011). Weak tie connections in Facebook tend to provide bridging social capital, rather than bonding social capital that is likely to provide social and emotional support (Ellison, Steinfield, and Lampe 2007).

Evidence for the importance of strong ties as sources of social support is generally more prevalent than for weak ties, and several studies have concluded that strong ties are the prime providers of support in social networks (Rains and Keating 2011; Wright and Miller 2010; Albrecht and Goldsmith 2003). Blight, Jagiello, and Ruppel (2015) found that close friends provided more than twice (68%) the volume of emotional and social support than weak ties (32%). Social support from close friends has been associated with reduced loneliness (Lee, Noh, and Koo 2013) and improving social satisfaction (Trepte, Dienlin, and Reinecke 2015). Although the role of social media in social relationship maintenance has been established, few studies have investigated how social support and CMC/social media are related in close, intimate relationships.

As boyd (2010) pointed out Social media, in particular Facebook, provided a variety of affordances for social communication via broadcast features, such as profiles and status updates, and more directed communication via private messaging and IM/chat. Ethnographic

studies of social media has noted that different platforms (Facebook, Instagram, Whats App) are combined in social communication to support differing types of relationships (Taipale 2019). In communication between diaspora/migrant communities, people still rely on directed media which afford more co-presence (i.e. phone, Skype, Text) for intimate communication, and use different communication media as separate channels to maintain relationships with family and friends, often to resolve privacy issues and cultural concerns (Alinejad 2019). While intimate communication still relies on older established media (phone, text), the broadcast co-presence affordances for Facebook can lead to behavioural adaptations in sharing potentially sensitive information with kin. (Alinejad 2019). Lu and Hampton (2017) found that private messaging and status updates were associated with higher perceived social support in a survey of social relationships and social media use, although qualities of the social network (best friends and diversity) were stronger predictors of social support. In a study of senior users of Facebook use, expressed in the gratifications framework, Jung and Sundar (2018) found that status updates and postings support activity and community gratifications whereas comment threads supported interaction. From survey studies, intensity of Facebook usage (persistence) is associated with increased loneliness although more Facebook friends is associated with increased happiness (Phu and Gow 2019), while higher interest in content and FB enabled communications practices, measured as tendency to respond to content, increase both bonding and bridging social capital (Su and Chan 2017), although these surveys did not differentiate between use of FB affordances. In conclusion, the effectiveness of Facebook use in supporting maintenance of intimate social relationship has been established in several studies; however, how the affordances or design features by Facebook and other social media mediate more general social support is less well understood.

3. Study design & methods

The focus of our study was investigating the effect of social media activity attributable to supporting SBH social network layers; in particular, to social communication related to the function of the innermost two layers (strong ties), the support group which provides emotional support, and the sympathy group which provides friendship and social support. A second motivation was to investigate the affordances of social media in providing social support in relation to intimate relationships.

This led to the following hypotheses:

- (1) Communication with the support group for emotional support will be mediated primarily face to face (FtF), supplemented by voice/phone communication.
- (2) Communication with the sympathy group for social support will be mediated by a mix of CMC, social media and FtF communication.
- (3) Dyadic, interactive media (phone, text) and FtF will be the preferred means of relationship maintenance for both groups.
- (4) The broadcast functions of social media (status updates, profiles) will supplement relationship maintenance.

The distinction between social and emotional support in H1 & 2 was drawn from the SBH questions which identified relationships at differing levels of intimacy in the support group (emotional and social support) and sympathy group (social support).

A mixed methods empirical study was conducted using questionnaires and interviews. First, we collected data to confirm the basic tenets of the SBH by asking participants to identify up to 20 best and close friends and rate them for emotional closeness. The questionnaire study captured quantitative data on participants' social relationships, emotional closeness, modes of communication and their social media activity. Then interviews collected quantitative data on social media use, offline and online interaction with friends, as well as qualitative data probing their use of, and experience with Facebook and other social media.

Respondents were recruited to produce a sample who used social media/CMC frequently, balanced by gender and occupation (in employment/in education at undergraduate level), or who at least had good awareness of social media even if they were not frequent users. Forty-two people responded to the request to take part in the study, which was sent out via email and Facebook, leading to 30 questionnaires completed in person, by 15 men (age mean 32.47, range 19–55) and 15 women (age mean 35.8, range 20–49). The sample was balanced by occupation with ten employed and five students for both genders. Twelve respondents were married and five had children. All 30 respondents also participated in a subsequent structured interview. The respondents were not known personally to any of the research team, although eight were employed in the same higher education institution as the second author. No incentives were offered apart from copies of papers arising from the research. The study design was

approved by the University of Manchester ethics committee.

3.1. Questionnaire design

After providing background information, participants were asked to list up to 20 people in their social network of close/best relationships, identifying them by initials; their gender, whether friend or kin; location (local, in UK, abroad); then to rate their emotional closeness from 1 to 10 (10 being the closest); years known; contact frequency and the preferred communication mode/technologies used to maintain that relationship. They were then asked to classify each friend as either best or close, following the support and sympathy group definitions used in previous studies (Dunbar and Spoons 1995; Buys and Larson 1979), Binder, Roberts, and Sutcliffe (2012), with cues that elicited the support group ('the number of people from whom you would seek advice, support or help in times of severe emotional or financial crisis'); or the sympathy group ('the number of people whose death you would find personally devastating'). A separate section of the questionnaire, relating only to each participant, captured data on the origin of their nominated friends (school, college/university/work), the number of friends on Facebook or not, and their own frequency of use and usage intensity for Facebook and other social media. The questionnaire took between 15 and 25 minutes to complete, depending on how many friends were listed by participants.

3.2. Structured interview design

The semi-structured approach was chosen to elicit information on how participants communicated with best and close friends, the frequency and rationale for social media use, how offline (face to face/phone) and online technology/social media supported their social relationships and any problems encountered with social media use. The interview schedule included 12 questions divided into two sections:

- (i) Relationships (6 questions): Identity of best friends; frequency and typical topics of communication with best friends; modality (phone/social media/FtF); location (local/distant UK/abroad); communication with best friends in reaction to an emergency (life threatening accident) and reaction if best friends were in danger; and social support from close and best friends after experiencing a bad day or mild depression.

- (ii) Social media/technology use (6 questions): Use of Facebook (FB) or other social media (SM) accounts duration, login frequency; preferred and most frequently used CMC/social media for relationship maintenance, topics in exchanges with best and close friends; FB (other SM) use with acquaintances: chat, photo sharing, arranging events, viewing updates, other; making new friends/contacts. Participants listed the CMC/SM technologies they used and then ranked them for frequency of use and preference.

The questions which elicited respondents' experiences which were used in the excerpt analysis included:

How would you react if (BF) had a life threatening accident, how would you try and find out about it or communicate with them, what method would you use?

What if something catastrophic social or political happened in the country where your family or friends were living? How would you communicate with them? Or how would you support them?

If you've had a bad day do you contact friends, if so how and do they help?

What is your main method for keeping abreast of what's happening with your family, your best friends and close friends?

How do you maintain those {BF, CF} relationships? How do you keep them going?

What type of technology do you mainly use to maintain your relationships?

What's your preferred method of communicating and maintaining relationships?

What do you do on Facebook to maintain your social relationships?

What is your best (worst) experience using Facebook?

What is the best (worst) feature/ function on Facebook?

Responses to first three questions were categorised for either emotional or social support using the following definitions:

Emotional support: explicit reference to sympathy, empathy and support for the other person's emotions (fear, anger, depression, etc) and/or communication in traumatic situations.

Social support: empathy related support for the other person, discussion of problems, listening, helping, and advice.

Interviews were audio recorded and conducted either in the University or at the participant's home and lasted

between 35 and 60 minutes, depending on the verbosity of replies and follow-up questions.

3.3. Data analysis

Quantitative data from the questionnaires was analysed using SPSS. The 30 participants identified a total of 407 friends who were assigned an emotional closeness score for their relationship. Quantitative data analysis produced descriptive statistics, then t tests and ANOVAs were applied to explore intergroup differences (gender, age, friend-proximity, support/sympathy group) in emotional closeness, years known and total of friends dependent variables. Inter-variable relationships were investigated with regressions to predict emotional closeness.

Qualitative data from the interview audio recordings were transcribed verbatim. A hypothesis-directed coding analysis was adopted driven by the interview structure. Questions with formatted answers were graded on scales, as follows: the frequency of Facebook/social media use were coded on a 0–5 scale mapping to the schema: never/hardly ever, monthly, weekly, 2–3 per week, daily; and for intensity of use: view only, view + few updates, frequent updates, extensive updates + organise events, extensive and advanced use (groups, etc.). Intensity of use of other CMC tools was also graded on a similar scale, yielding four quantitative measures on frequency and intensity of use for Facebook and other CMC. Answers to open format questions soliciting participants' experiences and attitudes were coded for content using six categories: emotional support, empathy and social support, gossip, social news & information, planning/organizing activities and general advice. An initial sample of the interview transcripts were marked up for analysis by the third author. The first author independently marked up the same sample, then the transcripts were reviewed to discuss and reconcile any differences in interpretation between the first and third author. A further sample of transcripts was then analysed by both researchers to ensure consistency of interpretation was >90% agreement. The qualitative analysis was then completed by the third author.

4. Results

4.1. Descriptive statistics

The mean number of friends (support and sympathy group) reported was 13.5, of whom 19.7% were kin. No differences in the overall number of friends by gender or occupation were apparent, although there was a homophily effect, with males reporting more male

than female friends ($t = 4.64$, $df = 28$, $p < .0001$) while females reported more female friends ($t = -4.49$, $df = 28$, $p < .0001$).

Participants reported a mean of 5.36 best friends (support group) and 12.3 close friends (sympathy group) with corresponding emotional closeness of 8.91 (SD 0.88); and 5.78 (SD 1.17). This difference was significant ($t(405) = 29.13$, $p < .0001$). The emotional closeness overall mean was 7.01 (SD 1.87). Gender of the participants or their friends did not influence emotional closeness. The participants had known their friends for a mean of 12.29 years. The average duration for all friendships but not emotional closeness was correlated with age ($r = 0.61$, $p < .01$). No gender differences were apparent. The support group had been known for longer than the sympathy group, (means 16.1, 10.1 years, $t(405) = 5.57$, $p < .001$).

Total friends reported and the number of Facebook Friends were correlated ($r = .486$, $p < .01$). Four participants did not use Facebook and hence had no Facebook Friends. Of the remaining 26 participants, 63.7% of their nominated friends were also on Facebook. The mean emotional closeness of friends who were on FB was 7.11 (SD 1.97) while the others (real-world but not FB friends) was marginally lower at 6.95 (SD 1.61), but the difference was not significant. Most participants used either Facebook or phone/face-to-face contact to keep in touch with friends (Table 1); however, there were no significant differences in preferred technology or location.

There were no significant differences for emotional closeness according to preferred mode of communication or location.

4.2. Relationship intensity

Analysis of Variance was conducted on the number of friends, emotional closeness and relationship duration as dependent variables, with gender, location of friends, social group (support/sympathy) and kin/non-kin as independent variables.

Participants were closer to best friends ($F(1,405) = 205.98$, $p < .0001$) in the support group, however, there were no significant kin/friend differences, see Table 2 for means. When the emotional closeness for the

Table 1. Preferred mode of contact by location of friends (N participants' first choice) excluding other minor CMC technology preferences (N = 27).

Number of Friends	Local	Distant	Abroad	Total
Facebook	129	78	41	248 (66.3%)
Phone/FTF	56	45	31	132 (34.7%)
	185	123	72	380

Table 2. Mean Emotional Closeness for support and sympathy group, comparing kin/friends and Facebook membership.

	Support group	Sympathy group
Kin	9.39	5.58
Friends	8.42	6.0
Total EC	8.91	5.79
On Facebook	9.48	5.93
No FB	8.35	5.66

support or sympathy group was analysed by Facebook membership or not, support group members were, not surprisingly, closer than the sympathy group ($F(1,405) = 128.5$, $p < .0001$) and Friends who were on Facebook were marginally closer than others ($F(2,405) = 4.27$, $p < .05$), although there was no interaction.

Emotional closeness predicted the size of the sympathy group (regression tests with age and gender control variables, $r^2 = .241$, $\beta = -.527$, $p < .01$), but not the support group. When location and kin/friend variables were added with emotional closeness as predictors for group size, neither variable had a significant influence on either group.

Differences were apparent for relationship duration (years known) by social group and location ($F(2,406) = 33.84$, $p < .0001$; $F(2,406) = 12.53$, $p < .0001$, with no interaction, with post hoc tests differentiating between: $\text{abroad} < \text{distant}$, $p < .001$, $\text{abroad} > \text{local}$, $p < .01$. As expected participants were closer to their best friends (support group) than to close friends (sympathy group) ($F(2,406) = 734.93$, $p < .0001$), although there was no difference by location, see Table 3 for means.

4.3. Communication with best and close friends.

In the interviews, participants were asked to identify best friends whom they would rely on for emotional support in a crisis, and then to identify other close friends, as well as describing social interaction and how they communicated with them.

Fewer support group (best friends) relationships were reported in the interviews than in the questionnaires, probably reflecting the different prompts: classification by emotional/social cues in the questionnaires, versus rank order of intimacy in the interviews. Participants cited an average of 3.5 best friends (means for males 3.6, females 3.3) who they relied on

Table 3. Years known and emotional closeness (*in italics*) comparing the support and sympathy group and location.

	Local	Distant	Abroad
Support group	14 <i>8.90</i>	17.5 <i>8.79</i>	19.5 <i>9.04</i>
Sympathy group	7 <i>5.82</i>	12 <i>5.52</i>	13 <i>6.03</i>

more generally for emotional and social support. Twenty-three participants relied on a single best friend for emotional support with a strong homophily preference (21/23 same gender); five relied on close kin and two on their spouse. The majority of these best friends were local (68.5%) and they communicated with them daily or weekly (96%), while for distant friends (31.5%) most communication was weekly or monthly (90%). Most participants (87%) maintained relationships with best friends who had move abroad. One male participant was unusual in reporting only distant relationships which had been formed through social media contacts.

When asked about how they communicated with all their friends (support + sympathy group), the most common means of communication was phone followed by texting, FtF and Facebook, with email last; see Table 4. The frequency rank order was consistent with participants' preferred modalities, although FtF was preferred over FB and email. The large proportion of distant relationships may have skewed preferences in favour of phone/texting. Phone (and Skype) was preferred because the immediacy and flexibility of voice dialogue for more intimate personal conversations and social support. Conversation content reflected emotional-personal support by best friends, as illustrated in the following excerpts, which have been categorised as (E = emotional support, S = social support or ES = mixed socio-emotional support):

P13: "Well, in fact that friend has had a brain tumour ... she didn't tell me for ages; she didn't tell anyone. ... Yeah, so she can hardly talk about it, to be honest, because it probably will end her life one day. But yeah, we just talk on the phone and occasionally text" E

P9: "Yeah I tell him a lot of the problems and he does vice versa as well, and we talk out the ... what the

possible solutions are, how ... just how badly we're both getting on at the moment." ES

P23: "I think we discuss ... more intimate stuff with her than I would with my friends necessarily but ... , I think most of the time she relies on me." E

P11: "if we're having difficulties at work or if we're having man problems or if we're having arguments with our families and stuff like that we will talk to each other and, we'll spend many hours on the phone. We'll spend many hours on the phone dissecting things and talking about things and putting the world to right." S

P14: "So yeah, I'd have to ring them. If it was that important, I'd ring. I wouldn't text it or type it. I wouldn't want intimate details in an email anyway, to be honest." N/A

P20: "And there's been issues where our youngest was ill and in hospital and we had to phone them at a whim and say, 'We've got a problem. We're struggling to cope,'" E

Explicit references to emotion were infrequent, and most responses to these questions were either social or mixed support. Communications in case of an emergency with a best friend were nearly all by phone (87%) or FtF (63%) with most participants citing both and explaining choice would depend on proximity, with FtF being prioritised if possible, illustrated as follows:

P10: "I would probably try and hit the phone because that's just second nature to me. But if that wasn't working, I don't know what I would do, try to get a hold of other people I guess.

P11 "My first instinct would be to call them and speak to them, I wouldn't use a social networking site, definitely not, I would call them,"

P4: "The mobile phone would be the first thing I try because obviously he wouldn't be on his MSN because I, I doubt he'd have his laptop on him in the middle of a tsunami

Texting was preferred by a minority, however email was infrequent (three participants) and only one individual cited Facebook.

P8: "well I texted him and went, 'reply to me immediately and tell me you're alright,' kind of, like, I ... but you know, I mean, the poor guy, he was clearly bombarded with text messages from everybody he knew, I mean as far as I could see that was how most people communicated with him"

The majority (26/30) of participants reported that dyadic communication (FtF, Phone, Text) was the most important means of maintaining social

Table 4. Number of participants reporting the more frequently used modalities for communicating normally with best and close friends (top left), modalities for communicating with BFs in an emergency (top right) and weighted preferences (1st to 3rd choice) for communications modalities used with best and close friends (bottom left).

	Normal communication BF +					Best Friends- emergency				
	CF									
	FtF	Ph	Txt	Em	FB	FtF	Ph	Txt	Em	FB
Males	8	18	8	4	9	9	14	4	1	1
Females	5	15	9	9	4	10	12	2	0	0
Total	13	33	17	13	13	19	26	6	1	1
Modality preferences										
	FtF	Ph	Txt	Em	FB					
Males	9	20	14	8	6					
Females	13	35	19	6	4					
Total	22	55	33	14	10					

Preferences were weighted 3-2-1 by choice order giving a theoretical maximum score of 90 total first choices for any one modality.

relationships. The following excerpts illustrate participants' media preferences and the more common topics in social communication- gossip, planning and coordinating activities and news of friends and family. Facebook was used for information provision rather than conversational communication.

P25: "I suppose close friends and family, phone and email, mainly. I suppose phone, email, SMS. ... I don't think, for me, Facebook doesn't really come into it. Not for organising my social life."

P1: "I use the phone more for close friends and family and then the others are more web based or media, you know emails and Facebook and stuff like that"

P5: "Close friends and best friends, Facebook is now pretty much a base for organising stuff, not always though, you know, it's like the, calling people up on the mobile phone is still key to our communication ... Facebook's, while it might have a chat feature and while it might have various other things, it's not live enough"

P7: "But with Facebook I can comment on their status or if I see something that's, I think they would be interested in I'd post it and share it with them"

Frequency of Facebook use was positively correlated with intensity of use but negatively correlated with FtF and CMC frequency and intensity; see Table 5.

Age was also positively correlated with phone/FtF frequency (0.437, $p < .05$), and negatively correlated with FB frequency (-0.37 , $p < .05$) and CMC intensity (-0.428 $p < .05$). There were no gender effects on these variables, although occupation showed a marginal difference on FB intensity (means employed 3.05, students 4.20, $t = -0.0218$, $df = 28$, $p < .05$) which probably reflects the younger students in the sample (mean age 28.8 students, 36.8 employed). FB frequency of use was not predicted by age, gender, or distant friends; however, FtF frequency was predicted by age ($r^2 = .283$, $\beta = .378$, $p < .05$), but not by gender or distant friends; other CMC use was weakly predicted by age and gender but not by kin or distant friends ($r^2 = .469$, $\beta = -3.15$, $p < .05$, $\beta = -3.99$, $p < .05$). Total FB friends was predicted by FB intensity and age but not by frequency ($r^2 = .658$,

$\beta = .635$, $p < .01$, $\beta = -.313$ $p < .05$). Total FB friends was not related to the size of the support or sympathy group. There was no relationship between FB usage or intensity with either size of the support group or the sympathy groups (regressions).

4.4. Communication with other friends

Twenty-six of the 30 participants had Facebook accounts and profiles. Non-Facebook users either had a strong dislike of social media (2) or a strong preference for face-to-face/phone communication (3). As well as using Facebook, communication with weak ties was by LinkedIn, Blogs, chat rooms (IM) or email and texting. There were no gender differences in the number of FB friends, although males had a higher mean and there was a large range in both genders from 5 to 320 friends. For active users, their FB friends beyond the number reported as best/close friends in the questionnaire were counted as acquaintances.

Of the active users with profiles (26/30), nearly all commented on friends' updates, updated their status, although update frequency varied considerable from daily to rarely (see Table 6). The most common communication pattern was keeping up with friends (18/26 active users) and all these users maintained relationships with distant friends. Social updating with school (2) and college/university friends (6) was less common, as was keeping up with family/kin (six users); two individuals used Facebook only to communicate with kin. 82% of active users shared photos with all their friends, although two females did not, citing privacy reasons. Most users (90%) commented on friends' photos including one user who had a fake profile for clandestine monitoring of kin.

Information sharing to support social relationships via Facebook was evident from users' reference to status updates and keeping track of friends and kin as well as photosharing, illustrated in the following excerpts:

P19: "because I think I've got about 300 friends, Facebook for me is more a means of using it, or even any internet net working site is keeping in touch with friends that aren't close, if you want, call them acquaintances or business partners, or networking, basically, just to keep, in case I need something"

P28: "especially my son who has the little ones more, he's on Facebook because he puts photographs of them, that's why I joined Facebook, because I have no interest in it, ... and the reason why I went on Facebook was to get photographs of the kids"

P6: "I do find out a bit of news through, through Facebook but it's quite trivial things more than the serious stuff. Somebody's started a new evening class and

Table 5. Correlations between FtF, FB, other social media for frequency and intensity of use.

	FB Freq	FB Intensity	CMC Freq	CMC Intensity	FTF Freq
FB Freq		0.742 *	0.561**	0.435*	-0.442*
FB Intensity			0.607*	0.577**	-0.638**
CMC Freq				0.854**	-0.712**
CMC Intensity					-0.637**
FTF Freq					

* = $p < .05$, ** = $p < .01$.

Table 6. Facebook activities (number of participants) by gender.

	Profile	Status updates	Comment on update	Comment on photos	Share photos with all	FB Friends Mean (SD)
Male	14	10	14	14	13	132.4 (93.5)
Female	11	9	9	12	9	95.8 (77.8)
Total	26	19	23	26	22	114.2 (86.4)
% active users	100%	70%	76%	100%	73%	

something or someone's bought themselves a new coffee machine or they've put their holiday photos on and stuff like that which isn't really gossip is it's just general what's happening in your life"

P24: "because of the Facebook I guess, they, like I know what **** who lives in Northern Ireland, I know what her partner *** doing, 'cause I get quite a lot of feeds from him or different kind of links to **** in Nottingham through friends saying, 'ooh, saw you doing this,'

Six users had low levels of activity with few FB friends and made little use of social media for information sharing or social updating. However, the other twenty users did share information and had frequent social interaction with friends and acquaintances, although FB use for maintaining weak ties was mixed. Six participants explicitly maintained contact with weak ties, one for people met on journeys abroad, one for contacts through poetry groups, one for work-related contacts, with the other three citing keeping up with old friends for school or university. When specific groups of weak ties were mentioned (e.g. hobbies or games), conversational communication was used (chat/instant messaging), otherwise, information sharing via Facebook was reported. Two non-FB participants maintained weak ties through LinkedIn and a blog, e.g.

P20: "And I still use LinkedIn but it's not for social networking with friends; it's primarily for making business contacts. I need somebody that has X, Y, Z skills, I can usually find it via somebody that I've already trusted and connected to in LinkedIn."

P23: "... which is basically a fantasy football league chat room ... it's got a little chat room where people ... little, post little messages and things, and there's quite a lot of banter on that, as I say I use that much more than Facebook."

5. Discussion

The social relationships reported by our participants conformed well with the predictions of SBH (Dunbar 1998; Hill and Dunbar 2003), with the support group mean of 5.4 and less intimate sympathy group mean 12.3 with clear differences in emotional closeness between the groups and agreement with best/close friends reported in other studies (Hays 1984, 1989) and large-scale surveys (Dunbar 2016). Local friends

were less emotionally close in both groups, but this might have been a consequence of many close kin abroad among our student respondents. All participants cited members of their support group as contacts for help in a crisis; however, there may be a subset of more salient individuals, ~3–4 whom people initially focus on for emotional support. In contrast, interaction with the sympathy group was more socially oriented. This agrees with the proposition that the prime function of the support group is to provide emotional support while the sympathy group role offers social support (Dunbar and Spoons 1995; Dunbar 1998; Blight, Jagiello, and Ruppel 2015; Carr, Wohn, and Hayes 2016). While we found differences in emotional closeness between the support and sympathy groups, the contrast between the content of communication between the groups in emotional/ social support was less clear. This is not surprising since intimate relationships are the product of prolonged interaction rather than snap shot memories of communication exchanges captured in interviews.

Hypothesis 1 (dyadic communication in the support group) was supported since nearly all individuals communicated with their support group either face to face or by phone if they were distant. This conforms with the view that physical contact or dialogue is necessary to maintain the most intense social relationships (Roberts et al. 2009; Rozzell et al., 2014). It is also consistent with Pea et al. (2012) who noted wellbeing was correlated with frequent FtF and phone communication. However, our participants maintained many distant relationships and frequency of communication with these friends was not frequent, indicating that weekly/monthly communication may suffice to maintain strong ties, in contrast to Roberts and Dunbar's (2011) report that close relationships may wane without frequent dyadic communication. Our findings are consistent with differing types and functions of social media support distant relationships, by maintaining co-presence via photosharing and status information (Madianou 2018; Taipale 2019) although intimacy is primarily supported by interactive media (i.e. phone and texting) (Alinejad 2019). The use of private messaging among strong ties on Facebook in promoting emotional support (Lu and Hampton 2017) also supports the importance of interactive communication.

Communication with close friends in the sympathy group involved a mixture of FtF meeting, phone, email and a variety of social media, supporting Hypothesis 2 that less intense (close friend) relationships can be maintained by a mixture of communication modalities. This is consistent with previous observations that social media supplements, rather than supplants, offline relationships (Dunbar 2016; Ellison, Steinfield, and Lampe 2011; Roberts et al. 2009). The size of the support and sympathy group was not related to social media activity, although activity was related to the overall number of Facebook friends. In our previous findings (Sutcliffe, Binder, and Dunbar 2018), social media activity weakly influenced the total offline social network size but not the number of FB friends.

Hypothesis 3 (interactive media was preferred for relationship maintenance) was supported by use of the phone, and chat/instant messaging with some texting. This implies that social media are less important for relationship maintenance, even though correlations between social media and real friends is a consistent observation. (Ellison, Steinfield, and Lampe 2007, 2011; Burke and Kraut 2016). The preference for phone (voice) and FtF communication for more intimate communication conforms with media richness theory criteria of personal communication with rapid feedback promoting social presence (Daft, Lengel, and Trevino 1987). This agrees with findings on the importance of dyadic communication in the maintenance of distant relationships (Merolla 2012) and reports of students' communication preferences for FtF with local and distant friends by phone (Baym, Zhang, and Lin 2004).

Hypothesis 4 (supplementary role of broadcast social media in relationship maintenance) was supported by participants' use of status updates and photosharing to provide informational support to both support and sympathy groups, while conversational media was preferred for relationship maintenance. Communication with weak ties used a mix of conversational social media (e.g. chat, texting) as well as Facebook, in agreement with other studies (Wright and Miller 2010; Wright, Rains, and Banas 2010; Phua, Jin, and Kim 2017). Although broadcast social media were not used frequently in emotive intimate communication, Facebook was used by the majority of our participants which may indicate a supplementary role in maintaining social presence for relationships over time (Short, Williams, and Christie 1976; Lowenthal 2010). Social support for intimate relationships may therefore involve both social media (presence) support combined with the intimacy and immediacy provided by interactive dyadic media. The preference for less interactive media (email,

Facebook) supporting communication with less intimate relationships (i.e. weak ties) agrees with previous studies (Rozzell et al. 2014; Phua, Jin, and Kim 2017; Su and Chan 2017). While Lu and Hampton (2017) noted that asynchronous use of Facebook by status updates supported social awareness, they also found that more active updating promoted social support among strong ties. Phu and Gow's (2019) findings that persistent (i.e. high activity) Facebook use is associated with increased loneliness, although more Facebook friends being associated with increased happiness points to the impact of affordances rather than overall use of social media.

The majority of our participants used Facebook, consistent with previous reports that social media complement rather than supplement off line relationships (Ellison, Steinfield, and Lampe 2007; Burke and Kraut 2014, 2016). However, we found no influence of Facebook friends or frequency/intensity of Facebook use on the number of real-world best or close friends, although the number of Facebook friends was predicted by the intensity of Facebook use. Facebook was primarily used as a social information repository and medium for photo sharing, while active social communication was mediated by email, texting, chat/IM or FtF and phone. Users' positive and negative FB experiences coupled with comments on design features corroborates conclusions that Facebook's role is primarily in supporting social communication with existing friends (Donath and boyd 2004; Ellison, Steinfield, and Lampe 2007).

The small sample constraint of our mixed methods study inevitably limits the generality of our findings, although we did have a sample of participants with a range of ages, employment and varied socio-economic backgrounds. The structured interview approach provided more quantifiable information compared to ethnographic approaches adopted in some social media studies (Snelson 2016; Alinejad 2019) that have explored user experiences and motivations in more depth. Our study was cross-sectional, so it reports a particular data point in the history of Facebook and social media where use has evolved considerably since then. However, some of our findings on the partitioning of use between conversational media for social interaction and information platforms for social surveillance appear to be consistent with the evolution of dialogue-oriented social media products, such as Instagram and WhatsApp in contrast to Facebook as a platform. For example, Twitter promotes bridging social capital among College students, while Facebook is associated with bonding social capital (i.e. social relationship maintenance) Shane-Simpson et al. (2018). Phua, Jin,

and Kim (2017) also found that Twitter, followed by Instagram, Facebook and then Snapchat, were more effective in developing bridging social capital, while the order for bonding social capital was Snapchat, then Facebook, Instagram and Twitter. The prevalence of interactive media in developing social capital is supported by Liu et al.'s (2019) review which concluded that wellbeing tended to be supported primarily by interactive media (phone and text and to a lesser extent by IM). Our focus on different relationships intimacy and social media provide an informative lens through which to analyse other social media debates on social capital, affordances and support. However further longitudinal studies are necessary to chart the evolving pattern of social media use.

Disclosure statement

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