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Published in:
International Journal of Communication

International Journal of Communication 16(2022), 2126–2145 1932–8036/20220005

Network Shocks and Social Support Among Spanish, Dutch, and Italian WhatsApp Users During the First Wave of the COVID-19 Crisis: An Exploratory Analysis of Digital Social Resilience

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This research investigates how people across Europe used WhatsApp to cope with social isolation during the first wave of the COVID-19 pandemic. We conducted 30 semi-structured interviews (10 per country) with young adults (ages 25–49 years) from the urban areas of Barcelona (Spain), Groningen (the Netherlands), and Milan (Italy). Our results reveal that the pandemic shock "turtled up" WhatsApp communications, with individuals falling back on families and close friends (strong ties), from whom they obtained emotional and informational support to cope with the anxieties and fears of the pandemic, thereby increasing their resilience to the crisis. Despite the centrality of strong ties, our data also show that it was the persistence of, above all, humorous communication exchanges with acquaintances (weak ties) that helped individuals feel accompanied during the crisis. Furthermore, we found evidence of the emergence of communication with latent ties (e.g., former partners) as an added source of social support.

Keywords: COVID-19, network shock, social ties, social support, digital social resilience, WhatsApp

"WhatsApp saved my life. It's been always the first option, the fastest, and the safest to connect with my family and friends." (Penélope, 35, female, Spain)

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Date submitted: 2021-07-14

[1] The authors would like to thank Silke Wester for her assistance during data collection. The authors would also like to thank the members of the research group Communication Networks & Social Change (Internet Interdisciplinary Institute, Spain) for their feedback on a preliminary version of the manuscript.
[2] This research was supported by the Groningen Research Institute for the Study of Culture (ICOG).

This is how Penélope, a 35-year-old single businesswoman from Barcelona, expressed how she thinks she benefited from her use of WhatsApp during the deadliest months (February–April 2020) of the COVID-19 pandemic in Europe (Villani, McKee, Cascini, Ricciardi, & Boccia, 2020). Despite the hyperbole—it was surely the work done by the medical services that *saved* people's lives—Penélope's perception of the role that WhatsApp played in connecting her with her loved ones was largely shared by most of the Spanish, Dutch, and Italians we interviewed in this research.

In spring 2020, when the coronavirus swept across Europe and governments adopted unprecedented measures limiting social contact, WhatsApp became, for most people, their main space for social interactions. By late March, usage of WhatsApp around the world had grown by 40% (to 1.6 billion users), and in Spain, where the lockdown was particularly strict, it had risen by 76% (Davies, 2020).

In moments when people face unexpected threats, such as the COVID-19 pandemic, individuals' mental and physical conditions can deteriorate rapidly, partially because of the lack of social contact (Northcott, Hirani, & Hilari, 2018). When the well-being of individuals sharply declines, social resilience can be significantly compromised. Social media can provide valuable means to compensate for the less-frequent offline interaction and its negative social, economic, and health consequences (Marzouki, Aldossari, & Veltri, 2021). Indeed, previous research has shown the positive role social media can play in coordinating responses to crisis situations, for instance, in providing reassurance and support to distressed individuals (Taylor, Wells, Howell, & Raphael, 2012). However, little is known about how people's use of social media during the current pandemic affected their resilience to the crisis.

People's massive use of WhatsApp to stay in contact with their loved ones, receive information about the virus, or carry on with their jobs makes this platform a unique reservoir of data about their (computer-mediated) sociality during the pandemic. The analysis of this data is key for understanding how individuals adapt their communications to a crisis situation, knowledge that is, in turn, fundamental for designing and implementing social distancing policies, fighting the spread of disinformation, and assisting patients online.

The research presented here investigates how, during the COVID-19 crisis, people across Europe used WhatsApp to mobilize social capital to provide or receive social support, thus increasing their social resilience in the face of the pandemic. By examining this, we can draw lessons on how to enhance social resilience—the capacity of individuals, organizations, communities, and networks to mobilize their social capital to absorb, cope with, and adapt to diverse disruptive events and external threats (Keck & Sakdapolrak, 2013)—in the digital age. The research belongs to a larger project that studies the genres and modes of communication used the most by WhatsApp users during the pandemic (Costa, Esteve-Del-Valle, & Hagedoorn, 2022) and the visual communication aspects of their WhatsApp exchanges. The study was led by an international team of researchers from Spain, the Netherlands, and Italy who conducted 30 semi-structured interviews (10 in each country) with adults (25–49 years of age) from the urban areas of Barcelona (Spain), Groningen (the Netherlands), and Milan (Italy). The research locations and age cohort were selected based on the researchers' expert knowledge of the populations (Battaglia, 2008), and the researchers are extremely grateful to all the interviewees, who participated pro bono in this research during an exceptional, and for some of them extremely difficult, time.

The main contributions of this study are as follows. First, to the best of our knowledge, none of the existing literature in the field (Aharony & Gazit, 2016; Chan, 2018; Matassi, Boczkowski, & Mitchelstein, 2019; Sandstrom & Dunn, 2014) has employed a social network approach (Wellman & Berkowitz, 1988) to study how individuals' interactions on WhatsApp during the COVID-19 crisis affected the social support at their disposal to cope with the pandemic. Second, most of the social network research conducted on WhatsApp has employed quantitative research methods that, while revealing key aspects of users' communications on the platform (e.g., changes in the sizes of individuals' WhatsApp networks; see Romero, Uzzi, & Kleinberg, 2016), have not provided an understanding of the reasons and motivations that underlie individuals' use of WhatsApp, especially during crisis situations. Third, by better understanding how individuals used WhatsApp during an epidemiological outbreak, we can draw some novel insights about how to increase social resilience. For instance, communication policies that take into account the brokerage position of social media in today's information flows can be implemented to counter individuals' vulnerability to digital threats, including the spread of conspiracy theories and disinformation.

WhatsApp

WhatsApp is a freeware, cross-platform instant messaging application owned by Facebook, Inc. It runs on mobile phones and desktop computers equipped with Internet connection and allows users to send text and voice messages, to make voice and video calls, and to share images, documents, user locations, and other media.

Besides these functions, WhatsApp has other characteristics that make the platform unique. The "group chat" function facilitates sending and receiving one-to-many messages to preconfigured "communities," for example, of family, friends, or work colleagues (Aharony & Gazit, 2016). Although the user might not be the recipient of the message, they still receive the message and can take part in the group discussion, thus creating a "sense of belonging to the group even though one may not be an active participant" (Chan, 2018, p. 255). Furthermore, WhatsApp allows users to check when their contacts are available and typing and to follow the success of delivered (one "tick" mark) and received and read messages (two "tick" marks).

The capacity of WhatsApp to transmit different types of content (text, video, photo, etc.), together with its diverse, and at times overlapping, communication purposes (e.g., to speak with friends, family members, and colleagues), makes this platform an ideal computer-mediated space for communicative interactions to occur, especially in a context of severe mobility restrictions.

Following the release of WhatsApp in 2009, its usage has increased from 200 million users in 2013 to 2 billion users in 2020 (Singh, 2020), making it the third most popular social medium after Facebook (2.4 billion users) and YouTube (2 billion users). WhatsApp users send approximately 65 billion messages and make 55 million video calls every day (Prabhakaran, 2020).

In addition, according to the results of a survey of more than 25,000 WhatsApp users in 30 countries conducted from March 14–24, 2020, WhatsApp is the platform that experienced the greatest increase in the number of users during the pandemic, with an overall jump of 40% (Kantar, 2020). Even more important for this research is that a study conducted by eMarketer reported that Spain, the

Netherlands, and Italy topped the list of WhatsApp users in Europe, with 83.1%, 85.1%, and 83% of smartphone users, respectively, accessing WhatsApp at least once per month in 2018 and 84.3%, 85.6%, and 85.3%, respectively, doing so in 2019 (eMarketer, 2020).

Theoretical Foundations

External Shocks and Social Networks

Despite the exponential growth in the study of social networks, research has generally not devoted attention to the analysis of how individuals' online social networks respond to external shocks (Romero et al., 2016), by which we mean "events that are extreme relative to average events or unexpected" (Romero et al., 2016, p. 1). However, studying the link between external shocks and the changes in online social networks is crucial for understanding how individuals adapt their communications to crisis situations, including epidemiological outbreaks (Oh et al., 2021). Moreover, understanding how individuals adapt their online communication networks to external critical events is a precondition for designing informed (communication) policies to increase (digital) social resilience.

Current research frameworks suggest there are two contrasting responses of social networks to external shocks. Networks can open up structurally, with actors seeking acquaintances who are more likely to provide novel information (Burt, 1992). In this regard, experiments have shown that people facing threatening job changes disproportionately turned to their weak ties (e.g., acquaintances) to broaden their information options and access new job information (Granovetter, 1973). Conversely, external shocks can also be associated with networks "turtling up"—that is, falling back on the network insiders—with actors relying on trusted sources of information, that is strong ties (e.g., family members or close friends) and highly clustered relationships (Coleman, 1988; Granovetter, 1985), which promotes trustworthiness but narrows social cognition (Granovetter, 1973).

Our study aims to shed more light on these two contrasting responses of social networks to external shocks. To this end, we turn our attention next to the concept of tie strength, which underpins both research frameworks.

Tie Strength, Social Support, and Online Social Networks

An individual's network consists of a set of relationships that they have with other individuals, which together make up what Bourdieu defined as social capital, that is, "the sum of resources, actual or virtual, that accrue to an individual or a group by virtue or forming a durable network of more or less institutionalized relationships of mutual acquaintances and recognition" (Bourdieu & Wacquant, 1992, p. 119). The accumulation and maintenance of social capital is key for an individual's well-being. Previous research has demonstrated a positive relation among the intensity of social media use, perceived social capital, and well-being (Ellison, Steinfield, & Lampe, 2007; Manago & Vaughn, 2015). Social media make it easier to maintain contacts with both strong ties, such as close friends and relatives, and weak ties, such as acquaintances. Further, social media allow for the creation of new connections. But when can a tie be considered strong or weak? In his groundbreaking article "The Strength of Weak Ties," Granovetter (1973)

argued that the relation of two (or more) nodes could be explained by the strength of their ties, which he defined as "a (probably linear) combination of the amount of time, the emotional intensity, the intimacy (mutual confiding), and the reciprocal services which characterize the tie" (p. 1361). For decades, researchers have used this definition to examine the interaction between social ties and media usage (Valenzuela, Park, & Kee, 2009; Wellman, Haase, Witte, & Hampton, 2001). For instance, Haythornthwaite's (2005) study of the impact of communication media and the Internet on connectivity revealed that the stronger the tie between pairs, the more media these pairs use to communicate.

There is a large amount of research that explains the characteristics of strong and weak ties. Strong ties are formed with the close friends and overlapping social circles (Haythornthwaite, 2002; Krämer, Rösner, Eimler, Winter, & Neubaum, 2014) with whom we share the most intimacy and enjoy more and higher emotional and instrumental exchanges, frequent interaction, reciprocity, and time commitment (Granovetter, 1973; Wellman & Wortley, 1990). These interactions offer emotional support and enhance access to help, when necessary. Indeed, the support provided by strong ties can improve people's mental health (Kalpidou, Costin, & Morris, 2011) and help them withstand crisis situations (Nelson, 1989). In contrast, weak ties travel in different social circles and are more likely to have different experiences and access to different information, resources, and contacts. This makes weak ties a key factor in exposure to new information (Granovetter, 1973) and in facilitating the flows of information among different groups of people. In fact, according to previous research, information shared through weak ties spreads further and across much more social distance (Bakshy, Rosenn, Marlow, & Adamic, 2012).

Despite the long-standing acceptance of this dichotomized conceptualization of ties and their respective functions in a network by the community of social network researchers, some colleagues have recently criticized the theoretical underpinning and provided alternatives to extend it. Haythornthwaite (2005) and Teten and Allen (2005) have suggested including latent ties, that is, "established relationships [in a network] that are currently inactive" (Mariotti & Delbridge, 2012, p. 512), as a new form of social connection between people, and Gilbert and Karahalios (2009) proposed expanding Granovetter's (1973) conceptualization of the strength of the ties (based on the dimensions of time, emotional intensity, intimacy, and reciprocal services) by distinguishing seven dimensions among them: intensity, intimacy, duration, reciprocity, structure, *emotional support*, and social distance.

Moreover, social network researchers have critically examined the assumption that strong ties mainly provide emotional support whereas weak ties provide informational support. Sandstrom and Dunn (2014) suggested that interactions with weak ties in offline contexts are related to social and emotional support and concluded that

> The more peripheral members of our social network shape our day-to-day happiness. So, chat with the coffee barista, work colleague, yoga classmate, and dog owner—these interactions may contribute meaningfully to our happiness, above and beyond the contribution of interactions with our close friends and family. (p. 920)

In this line, Rozzell and colleagues (2014) demonstrated that, on social media, non-close individuals provide the same amount of support as close individuals.

Conversely, researchers have also voiced criticism of the primacy of weak ties. Using quantitative and qualitative data from the second East York study, Wellman and Wortley (1990) revealed that "strong ties provided broader support than weaker active ties, significantly more emotional aid, minor services, and companionship" (p. 566). Furthermore, Kalpidou and colleagues' (2011) study of first-year students' use of Facebook showed that the number of Facebook friends (weak ties) was negatively associated with social and emotional support. In this same line, the results of a survey conducted by Krämer and colleagues (2014) to explore the relative importance of weak and strong ties on Facebook revealed that "users perceive strong ties as more important than weak ties and ascribe both emotional and informational support more to strong than to weak ties" (p. 804).

To sum up, the present study aims to clarify the relationship between social ties and social support in online social networks through the study of people's WhatsApp communications and to gain knowledge about how this social support affected individuals' resilience to the pandemic. It is to this latter aspect that we now turn our attention.

Digital Social Resilience

The role of media, in particular of digital networks, in affecting resilience has been overlooked and remains underaddressed (Craig et al., 2015) despite the attention that topics such as online disinformation and polarization are receiving from mainstream media. Definitions of digital social resilience are in short supply, in part because of the association of digital social resilience with the technical capabilities of states and companies to withstand cyberthreats (e.g., malware or ransomware) to their national interests (e.g., Estonia in 2007 or the UK referendum in 2015) and corporate interests (e.g., Adult Friend Finder in 2016 or Canva in 2019). Furthermore, the literature on digital social resilience is nascent and fragmented. The most voluminous stream of research in the field explores citizens' use of social media during natural and human disasters. This work has revealed that, during disasters, social media provide access to relevant and timely information from official and nonofficial sources, facilitate the diffusion of information, and trigger connectivity with loved ones and the community (Bird, Ling, & Haynes, 2012; Yang et al., 2014). This connectivity, in turn, provides reassurance, support, and assistance to potentially distressed individuals and populations (Liu & Tong, 2020).

In this study, we adhere to Tomkova's (2020) conceptualization of digital social resilience, which she defines as "Individuals', groups', or organizations' ability to maintain, change, adapt to, or recover their social capital mobilization, sustenance of social cohesion, and collective efficacy, collective identity—using ICT and the online space to do so" p. 414). Indeed, following Trepte and Scharkow's (2016) reasoning on the relation between social capital and social support, social capital is understood as a resource mobilized by individuals to obtain social support. Last, we conceive digital social resilience as a dynamic and transformative process, which implies that individuals and communities are continuously evaluating potential threats and adapting to them.

Data

This research draws from the responses of 30 interviewees living in the urban areas of Barcelona, Milan, and Groningen who were selected through a nonrepresentative purposive sampling (Battaglia, 2008). Two academics and a trained media studies master's student conducted 30 semi-structured, in-depth interviews that lasted 50–90 minutes. The interviews were carried out between April and June of 2020. They took place via Google Meet, Skype, or Zoom and were conducted in Catalan, Spanish, Dutch, and Italian. The interview guide (available at: https://osf.io/gpbdv/?view_only=e33bf968597440f4bf4b9b6b203c3e4d) was first tested on two participants and subsequently refined following discussions among the team members. All the original quotes in this research article were translated freely to English by the authors. Before the start of the interviews, interviewees were informed about the purpose of the study, their voluntary role in participating in the research, and the confidentiality of their responses. Interviewees were asked questions about their technology and social media use, their WhatsApp use before and during the pandemic, and the social support they received and gave via WhatsApp during the pandemic. With the permission of the participants, all interviews were recorded and transcribed verbatim. Pseudonyms reflecting the participants' nationalities and gender are used to protect confidentiality.

Participants

The complete sociodemographic characteristics of the interviewees (gender, age, marital status, living arrangements, employment status, level of studies, and type of work) are available at: https://osf.io/gpbdv/?view_only=e33bf968597440f4bf4b9b6b203c3e4d. There is an equal gender split among the interviewees in Milan and Barcelona, while in Groningen, the ratio is 60% female and 40% male. The average age of the interviewees is quite similar, 37.2 and 37.4 years for the Spanish and Italian interviewees, respectively, and slightly lower, 35.2 years, for the Dutch interviewees. In Barcelona, most of the interviewees are single or divorced (70%), whereas most have partners or are married in Milan (80%) and Groningen (70%). In terms of living arrangements, 40% of the interviewees in Barcelona live with their children, while this is the case for 30% of the participants in Groningen and in Milan. As to job characteristics, most of the interviewees have full-time jobs (100% in Barcelona, 90% in Milan, and 90% in Groningen), covering various employments, including a pastor in training (Groningen) and the CEO of a start-up (Barcelona). Finally, with respect to the interviewees' levels of education, most hold master's degrees (40% in Barcelona, 60% in Milan, and 40% in Groningen) or bachelor's degrees (40% in Barcelona, 30% in Milan, and 40% in Groningen), while one interviewee in each country holds a PhD and one Spanish interviewee has a high school degree.

Thematic Analysis

To understand how people adapted their WhatsApp communications to the COVID-19 crisis, we draw on our in-depth interviews and manually highlight illustrative quotes and contextual factors. We carried out a thematic analysis (see Guest, MacQueen, & Namey, 2012) to stay close to the data and group findings into clusters. During the process of thematic analysis, meetings with the team members were frequent, with extensive taking of minutes, and the coding scheme was adjusted and refined when necessary. Interviewees' responses were coded around (a) the individuals they interacted with on WhatsApp (strong, weak, or latent ties) during the pandemic and (b) the type of social support (emotional aid, informational aid, and

companionship; see Wellman & Wortley, 1990) they provided and received through their WhatsApp communication exchanges. The excerpts were organized by research questions and manually annotated together with the interviewees' sociodemographic information (gender, age, marital status, living arrangements, employment status, type of work, and education level).

Results

Network Shocks

In February–March 2020, amid exponential growth in the numbers of deaths and reported infections and in a mounting climate of social anxiety and despair, Spain, the Netherlands, and Italy adopted national lockdowns and social distancing measures (among a multitude of other policy responses; see International Labor Organization, 2021). These unprecedented measures had enormous impacts on people's social lives. As Penélope put it:

> It's been 52 days without touching anyone, there is a lack of talking, of skin. In the Mediterranean culture we do a lot of touching, as you know, and . . . it is very difficult to explain, I need skin, hugging, kissing . . . during the last months the only person I spoke face-to-face with has been the cashier. (Penélope, 36, female, Spain)

Penélope's words reveal the struggles of a single businesswoman dealing with the drastic reduction in social contact. To her, the pandemic, which jeopardized constituent elements of Mediterranean culture, that is, face-to-face communications and key nonverbal communication means such as touching, kissing, and hugging, torpedoed southern Europeans' way of life. Thus, in search of relief from her distressing lack of physical contact, Penélope told us she replaced it with the digital. However, when she mentioned "the digital," she mainly meant hectically increasing the number of hours spent on WhatsApp. This increase is, in fact, common to almost all the participants we interviewed for this research. For instance, when asked about his use of WhatsApp during the pandemic, Luigi, a chef from Milan, responded: "I used WhatsApp 60% of my day. It was always with me whatever I did" (Luigi, 43, male, Italy).

In a similar yet more dramatic vein, Carla, a single woman living alone in Milan, said: "I had pain in my hands because of WhatsApp. Seriously, I am not joking. Eventually I also put WhatsApp on my computer because I could not write on my phone anymore. It was too much" (Carla, 40, female, Italy).

In comparison with other Web applications that were adopted by most of the participants during the pandemic, either for video communication purposes (e.g., Zoom or Google Meet) or for having fun (Houseparty), all the participants in this research already had WhatsApp before the pandemic, thus the novelty regarding this platform was fundamentally the use they made of it, that is, as the main channel for their daily communications. In Dutch woman Anouk's words: "WhatsApp in general is the main medium for checking in, and is about asking how people are doing" (Anouk, 34, female, the Netherlands).

Further, for some participants, particularly those who were more vulnerable during the COVID-19 pandemic (e.g., suffering the loss of a family member), WhatsApp even became essential to their

psychological well-being: "I could spend time with the phone in my hands waiting for someone to text me, I was freaking out" (Antonella, 38, female, Italy).

In sum, during this disruptive moment in peoples' lives, which radically altered their ordinary communication practices, WhatsApp seems to have benefited from individuals' move to the digital. In the next section, we seek to explore to what ends.

The Strength of Strong Ties

In the context of increasing fear and anxiety, with social life disrupted by drastic public health actions (e.g., lockdowns) and individuals' social networks suffering a severe shock, people found in WhatsApp a space where their "social life" could continue happening. But how did people alter their communication practices on WhatsApp in response to such an unexpected shock? Were they more selective with regard to the people they spoke with? Or did they speak with WhatsApp contacts with whom they wouldn't otherwise have spoken?

In general, most of the participants we interviewed for this research were more selective vis-à-vis the WhatsApp contacts they communicated with. This behavior is, because of its consequences on individuals' resilience to the pandemic, one of the main findings of our study. The rising number of deaths and the fear about what could happen can potentially explain this selective behavior. As Juan said: "When you feel that there is fear, people start asking: How are you? How is it going with the lockdown? I mean people from your inner circle" (Juan, 36, male, Spain).

But who are the people in Juan's "inner circle"? Or, in other words, with whom did people communicate more often during the pandemic? Our data provide a straightforward answer: their loved ones. As Matthijs said when asked about his use of WhatsApp during the pandemic:

> I actually had more contact with my girlfriend, she is a doctor so she was working at the hospital every day, so it was like how are things there, what happens, you know . . . and for the rest I really think with my good friends, and I called with family and with my brother, with whom I did a lot of chatting because he had moved abroad. (Matthijs, 27, male, the Netherlands)

Maddalena, an Italian schoolteacher, explains this shift in her daily communications on WhatsApp when talking about her kinship with her nephew: "The relationship with my 6-year-old nephew has changed significantly. Every morning he sends me an audio-file on WhatsApp with him reading a story. He would have never done so if there was not a lockdown" (Maddalena, 41, female, Italy).

The interviewees' answers reveal shifts in their WhatsApp communications toward the people who are the closest to them, that is, their family members and friends: their inner circles. But why did our participants adopt such communication behavior? Our data point to two causes: their need for emotional support and their need for informational support. In a context of death anxiety, where human life is under threat and individuals see their survival in jeopardy, people search for emotional support to overcome the obstacles and changing circumstances of such a strenuous time, and they turn to their close ones as a first

source of this support. Carmen's reflection on the important role the WhatsApp group she had with her best girlfriends ("BFs") played for her when she struggled with solo home-schooling her three children, describes this transition very well:

> The group of my lifelong girlfriends was a group of moral support. Sometimes I lost my nerves and I needed to explain this. When I tried to share that with the group of the mamas from the school they said: Oh, this is normal, do not stress, relax, we are taking it very easy. Then I wrote to the group of girlfriends and asked: Listen, today this happened to me, is this normal or I am losing my mind and I need to search for psychological aid? And my girlfriends answered: No, this is normal, we are all in the same situation, that's all. (Carmen, 36, female, Spain)

In addition to seeking emotional support, people also offered it to their loved ones via WhatsApp. As Marisol explains when asked about her conversations with family members:

> With the family was, how are you, talk about my little niece, when we could see again, in general, love, warmth and tenderness. Also, because my father passed away at the beginning of the year, so to support my mother. (Marisol, 38, female, Spain)

Similarly, Luigi explained how during the lockdown in Italy WhatsApp was also used as a means to provide emotional sustainment:

> During the lockdown the communication has changed. It became sweeter. And we became less asshole than usual. Some of us started to have friends who were seriously ill or died, and you cannot stay close to them, you cannot go to hospital. It is terrible. We tried to share text and material that would not start conflicts, but that would be like a hug or a cuddle. (Luigi, 43, male, Italy)

Besides their search for emotional support, interviewees' search for information to help them withstand the pandemic emerges as the second driver of their WhatsApp communications with family members and close friends. In that regard, Ines' response illustrates the leading role of family and close friends in sharing pandemic-related information:

> People shared with me a lot of information about the virus, for instance from Oriol Mitjà [Catalan epidemiologist]. All via WhatsApp. And I received this information from the close friends' group, the happy team [WhatsApp group with her girlfriends] and from Guillem's [her husband] family. (Ines, 37, female, Spain)

Not only did our participants receive information about the pandemic from their families and close friends, but they also shared similar information with them. As Juan put it: "I received updates about the COVID, for instance, about the phases, the measures, news, videos, articles talking about it. And I shared that information with the groups that I was more active; family groups and friends" (Juan, 38, male, Spain).

But why did people choose WhatsApp over thousands of other communication channels to share this information related to the pandemic? Several of our participants point to the immediacy of the messages sent via WhatsApp as one of the main reasons for using this platform. As Michiel explains when asked about the use of WhatsApp during the pandemic:

> WhatsApp is very accessible, and pre-corona it was also one of the important ways to briefly check how someone is doing or to share a photo, what you are doing . . . of course you have your smartphone always with you. (Michiel, 37, male, the Netherlands)

Furthermore, our participants also point to the direct access to content—provided by people whom they believe to be relevant sources of information—as another motive for using WhatsApp. Gaia's response captures this selective exposure vis-à-vis pandemic-related information on the platform very well:

> I received many links to information from *experts* that we directly knew. For example, we have a friend who is a nuclear physicist, who knows a physicist who makes tables and graphs on COVID infections for universities. And he was sharing links to his publications. These are the kinds of information I received and shared the most. I really appreciated it. Not information from newspapers, but one step above. (Gaia, 43, female, Italy; emphasis added)

Despite the positive role WhatsApp played in receiving and sending information important for withstanding the pandemic, some of the participants also expressed concerns about the amount of disinformation spread on the platform during the crisis. Jorge's response is an example of the worries several participants expressed about the spread of disinformation:

> The quantity of disinformation is one of the things I was more shocked about, everyone knew someone who was an epidemiological expert, they read about "X, Y, or Z" on a scientific journal, and it was very confusing. I really noticed the quantity of disinformation circulating via WhatsApp. (Jorge, 29, male, Spain)

In sum, it seems clear that, during the pandemic, individuals focused their WhatsApp communications on those with whom they were closer in a non-pandemic context, that is, their families and close friends. But does this mean that they stopped communicating with their acquaintances? We answer this question in the following section.

The Persistence of Weak Ties

During the pandemic, in addition to texting with family members and close friends, the participants continued being somewhat active in the WhatsApp groups they had with their acquaintances. The intensity of the activity in these groups, however, differed among the three regions we studied. In Barcelona, conversations with acquaintances dropped significantly. For instance, when asked about the groups she communicated with, Beatriz pointed to a sharp decline in the activity of the group she had with secondary school colleagues: "I also have the group with the [secondary school] but I need to tell you that this group is currently super dead" (Beatriz, 43, female, Spain).

Despite this abrupt decrease, sporadic contact with acquaintances persisted. Marisol, for example, told us that during the pandemic she had very enriching discussions with a group of former coworkers. When asked by the interviewer to elaborate on the reasons why she found the conversations in this group so enriching, she responded:

> I have my group of "female herd" where we speak of topics, more or less intellectual, but it is more mixed up. But with this group we have focused more on political discussions, talks about intellectual aspects: Elon Musk, Bill Gates, Obama. For instance, in this group there are long discussions about the fear to change, North-South inequalities, the plan to develop 5G in Barcelona . . . people really think a lot before posting in the group. (Marisol, 38, female, Spain)

Unlike in Barcelona, conversations with acquaintances occurred more often in Milan, perhaps because of the large size of the WhatsApp networks of most of the Italians we interviewed, which include many groups with strong ties and weak ties. Furthermore, these conversations appeared to happen in various acquaintance groups, from Maddalena's community-based farming group to Giovanni's hiking group. Curiously enough, Giovanni told us that the activity in his hiking group actually increased during the pandemic, notably when the group members had to interpret the impact of the social distancing measures on hiking activities.

Another remarkable aspect of the conversations in these groups is the type of content that was exchanged. Unlike the intellectual conversations Marisol had with her former co-workers, conversations in the Italian acquaintance groups were far more humorous. As Antonella said, when narrating the interactions she had with the colleagues of a karate group: "We were sharing memes, videos, and stupid content all the time" (Antonella, 38, female, Italy).

As for Groningen, the participants' responses reveal a decrease in contact with acquaintances, but this was not as abrupt as the one reported in Barcelona. Indeed, similar to what happened in Milan, these contacts covered a plurality of WhatsApp groups. Jennifer pointed to an increase in the WhatsApp messages sent to colleagues and clients, while Lisa shared with us the joy that invaded the group she had with the mothers from her child's school when they all saw the news that kids were allowed to go back to school:

> After that, we sent each other a champagne cork! At last! We did not share the article itself, because everybody already saw it, but our response was, yes! I don't have to be a primary school teacher anymore and know a lot about history, etc. (Lisa, 49, female, The Netherlands)

Be as it may, it is clear that interactions with weak ties persisted despite participants' main focus of communication being on their family members and close friends. However, in comparison with the WhatsApp messages interviewees exchanged with their family members and close friends, which above all aimed at providing emotional and informational support, their conversations with weak ties revolved around the organization of activities with people sharing similar interests, which provided companionship support, that is, a type of support that, according to Wellman and Wortley, includes "discussing ideas, doing things together, and participating together in an organization" (Wellman & Wortley, 1990, p. 563).

The Emergence of Latent Ties

Several of our participants told us that during the pandemic they were contacted by former girlfriends and boyfriends. For example, after many years of silence, an ex-girlfriend of Carlo's contacted him via WhatsApp, and he called her back to know how she was coping with the situation. Similarly, Giovanni explained to us that during the pandemic he started chatting with an ex-girlfriend whom he had not been in touch with anymore. Thus, it seems as if WhatsApp had provided a space for past relationships to come alive during the pandemic. In Marisol's words: "[During the pandemic] the past has come back through WhatsApp, via messages" (Marisol, 38, female, Spain).

Besides receiving messages from former partners, our participants also engaged in conversations with some of their dormant WhatsApp contacts, primarily with extended family members and friends living abroad. Ignacio, for instance, when asked if he had been in touch with people with whom otherwise he wouldn't have been in contact with during the pandemic, answered: "I have part of my family who live in other places in Spain and often I do not have a lot of contact with them, but because of the crisis I sent them more messages" (Ignacio, 38, male, Spain).

Likewise, Antonella told us that the pandemic offered her an opportunity to speak with friends with whom, because of her daily time constrains, she normally couldn't speak:

> The lockdown gave me the opportunity to talk with people I didn't talk to for a long time. I talked to friends living in South Africa and France. I was curious to know what kind of situation they had there. (Antonella, 38, female, Italy)

Not only did some of the participants describe having used WhatsApp to contact friends living abroad, but they also revealed having had "valuable" exchanges with them. As Tom put it:

> And it is odd that [with] certain close friends who moved, so the contact [I had with them] was less [than before they moved], that for some reason or other, those were the people with whom during the Corona crisis I got more intensive contact with, actually very valuable, special to see. (Tom, 41, male, the Netherlands)

In comparison with the companionship support participants sought in their exchanges with weak ties, the reasons motivating their interactions with latent ties seem to be more in line with those for their communication with strong ties: Some participants wanted to know how their extended family members and faraway friends were doing during the pandemic and to support them whenever necessary (emotional support), while others wanted to gain knowledge about the pandemic situation in other countries to better understand the effects of COVID-19 (informational support).

In the following, we elaborate on the reasons behind participants' use of WhatsApp to cope with the pandemic and reflect on the potential consequences this use can have for (digital) social resilience.

Discussion

The COVID-19 pandemic has led to a crisis that includes high social costs and an abrupt economic recession. Public health actions such as lockdowns and social distancing measures made people feel isolated and lonely and increased their stress and anxiety. Indeed, fear about what could happen overwhelmed them with strong emotions.

In this context, our research shows the centrality of WhatsApp communication in everyday (pandemic) life in Barcelona, Groningen, and Milan. The platform was naturalized as the space where interactions, notably with family members and friends, occurred the most. This central role can be partly explained by WhatsApp's multimodality, that is, its capacity to transmit different types of content (texts, photos, videos, and voices), and versatility, that is, its use for various communication purposes (personal, professional, etc.). Taken together, these characteristics, as noted by Matassi and colleagues (2019), make WhatsApp a "space of encounter, meaning-making, and coordination where entrance barriers are low and exit costs are high" (p. 2195). In addition, WhatsApp's ability to resemble offline communication more than any other platform (Chan, 2018) makes this space a passage point for people's daily communications. As Pedro put it: "In WhatsApp is where I feel truer to myself. It is where I have all my egos" (Pedro, 37, male, Spain).

With regard to the consequences of the pandemic on people's WhatsApp communications, our research reveals that the crisis shock "turtled up" WhatsApp communications, with participants relying more on their family members and close friends. Figure 1 aims to conceptualize the change in participants' WhatsApp communication after the pandemic shock:

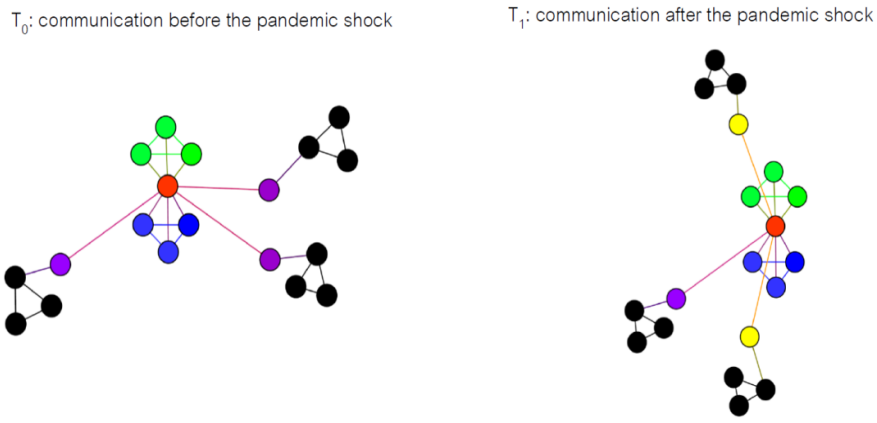

Figure 1. Changes on the participant's WhatsApp communication after the pandemic shock. The nodes of the network represent the individual's contacts on WhatsApp. The ties represent the communications with these contacts. The nodes' colors are equivalent to different types of contacts: red (participant), blue (family members—strong ties), green (close friends—strong ties), violet (acquaintances—weak ties), yellow (extended family members and friends living abroad—emergent ties), and black (weak ties contacts and emerging ties contacts).

As shown in the figure, our participants have concentrated their communications on their inner social circle, that is, their family members and close friends (strong ties: blue and green nodes, respectively), reduced their interactions with acquaintances (weak ties: violet nodes), and contacted extended family members and faraway friends (latent ties: yellow nodes). But why did our participants concentrate their communication exchanges on their family members and close friends? Previous research has shown that strong ties are more likely to use private channels than weak ties (Haythornthwaite, 2005). Furthermore, close ties were found to be key in providing emotional support (Wellman & Wortley, 1990, p. 566) and for reducing loneliness, anxiety, and mortality (Marangoni & Ickes, 1989), thus making them fundamental for individuals' well-being, notably in crisis situations (Romero et al., 2016). In this line, our participants declared on multiple occasions that the emotional support they received from families and close friends via WhatsApp messages was key for them in coping with their pandemic fears, anxieties, and stresses, increasing their resilience to the crisis. Far from being a new phenomenon, the effects of an individual's use of computer-mediated communication on their well-being has largely been studied by communication scientists. Early research into mobile communication, for instance, offered evidence that the social uses of mobile phones decreased loneliness (Reid & Reid, 2007), and a recent work examining WhatsApp showed a positive relationship among the use of this platform, friendship satisfaction, and social support (Chan, 2018).

Interestingly enough, our study not only shows that strong ties provide emotional support, but it also reveals that family members and close friends were sources of informational support during the pandemic. This finding adds to the criticism voiced by previous studies of the primacy of weak ties with regard to the provision of informational support and corroborates the results of Krämer and colleagues' (2014) study, which revealed the importance of strong ties in providing both emotional and informational support. Simply put, these results show the fundamental roles family members and close friends (the inner circle) played in the mobilization of social support during the pandemic.

Despite the centrality of strong ties, our research also provides evidence for the persistence of communication exchanges with weak ties. Message exchanges with hiking mates or school mothers resisted the blows of the lockdowns and social distancing measures, albeit with different intensity among the participants of the three regions. The sharing of seemingly meaningless and purposeless photos, memes, videos, texts, or voice messages (also known as phatic communication; see Malinowski, Ogden, & Richards, 1949) with acquaintances helped our participants feel accompanied during the crisis (Wellman & Wortley, 1990). Indeed, the use of humor during the current crisis seems to have aided our participants in coping with the stress of the pandemic and to have relieved anxiety. In a similar vein, research into coronavirus communities and user activity on Reddit has revealed an increase in user activity on humor-related subreddits during the first month of the pandemic, thus suggesting that users seek out humor to relieve stress and anxiety (Zhang, Keegan, Lv, & Tan, 2021).

Moreover, the current study points to the emergence of latent ties (e.g., former partners or extended family members) as added sources of social support. Be it a matter of love or a matter of care, for some of our participants, the past came back through WhatsApp in the form of messages. Indeed, these messages have been, in general, positively evaluated by our participants, who appreciated any sign of affection in such a difficult time. Future research should, however, study in depth how the computer-mediated interactions with latent ties may help individuals coping with crisis situations.

Last, the rearrangements of individuals' communications on WhatsApp may have important consequences for their engagement with information. The focus on family members and close friends may increase their trust vis-à-vis the information exchanged but expose them to more redundant information. In parallel, cutting off communication with acquaintances may reduce exposure to novel information (Granovetter, 1973). Taken together, these changes can make individuals more vulnerable to several digital threats, such as the spread of disinformation or conspiracy theories. However, participants' vulnerability vis-à-vis these digital threats may be tempered by the information they receive from the latent ties. Future research should, nonetheless, empirically examine the effects of these rearrangements on people's engagement with information.

Some limitations of this research need to be addressed. First, our results are inevitably bound to the social and technological contexts of three (Western) urban areas: Barcelona, Groningen, and Milan. Thus, studies in other areas are needed to assess our findings. Second, the use of a cross-platform approach is needed to better understand people's mediated responses to the pandemic. Third, more ambitious research designs that expand the time frame of our study, increase the number and age cohort of participants, and analyze the content of the WhatsApp messages could increase our knowledge of individuals' use of WhatsApp in crisis situations.

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