Rumor and Gossip in the Online World: Social Influence Processes as Challenges to Wellbeing and Digital Wellbeing

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Abstract: In the last decade, the society transformed massively due to the swift immersion into the digital world. The growing portfolio of mobile applications, virtual reality devices, augmented reality software, messaging and VoIP services, social media platforms, with the support of artificial intelligence, analytics and high-performance computing infrastructure, engaged billions of citizens into a matrix of both learning opportunities and digital challenges and risks. Many studies focused on underlining the benefits of the new technologies in terms of an increased access to information and a stronger connection with peers. This paper approaches current challenges to wellbeing generated by people's exposure to social influence in the digital world, with focus on gossip and rumors transmitted online. Such processes induce a significant negative impact for the involved audiences not only in the face-to-face interactions, but also in exchanges mediated by social media sites (SNS) and instant messaging platforms. The study pleads for strategies to attain digital wellbeing in order to eliminate education and information gaps, consolidate skills and create a culture of trust and support between users/citizens and the expanding technology.

Keywords: Wellbeing, Digital wellbeing, New technologies, Online rumors, Online gossip.

INTRODUCTION

The general concept of wellbeing faced many challenges over time in significant theoretical attempts of defining it. We generally understand these days wellbeing as the state of happiness, good health, social integration and professional enrichment. Oxford English Dictionary defines wellbeing simply as the state of being comfortable, healthy or happy. More than 50 years ago, Norman M. Bradburn focused on explaining the wellbeing through constructs such as positive affect and negative affect and positioned happiness – seen as an "adjustment to one's environment" – as a central pillar of his theory (Bradburn, 1969). Happiness, or the psychological state of wellbeing, is therefore defined as the balance between the two mentioned affects. Philosophical perspectives reviewed wellbeing theories

based on the Hedonic dimension (achieving a balance of pleasure over pain) and Eudaimonic dimension (related to the ethics and practice of a good life) of happiness, underlining wellbeing's narrowing role in terms of resources for engagement (Tesar & Peters, 2019). It is relevant to mention that, as a core pillar of the wellbeing decades studies, happiness has also been correlated by other researchers with the broader notion of social competence, especially through the assertiveness component (Argyle & Lu, 1990).

Criticizing Bradburn's idealization of happiness as outcome variable, other studies came with a wider perspective that detailed specific wellbeing dimensions such as self-acceptance, positive relationships with others, autonomy, environmental mastery, purpose in life and personal growth (Ryff, 1989). The multidimensional model of psychological wellbeing has been further theoretically reviewed by Carol Ryff and Corey Keyes in a new research that confirmed the superiority of the six factors model based on confirmatory factor analyses (Ryff & Keyes, 1995). Starting from Dan Brock's three main philosophical approaches defining quality of life in terms of normative ideals, satisfaction of preferences and experience of individuals (Brock, 1989), new studies drove the wellbeing research towards the concepts of pleasant and unpleasant moods and emotions and life satisfaction (Diener & Suh, 1997). Another classical approach explaining wellbeing is the dynamic equilibrium theory, developed by Bruce Headey and Alex Wearing. The authors concluded that "people arrive at an equilibrium state in which their present life is viewed as being almost as satisfying as the best life they could aspire to, the life they feel they deserve and the best previous period of their life. Their present life is regarded as considerably better than the worst previous period of their life and then the life of the average person in the country" (Headey & Wearing, 1992, p. 8).

A more recent study aiming at structuring the key theories and efforts made in order to review the wellbeing field explained that past theoretical approaches were focused mainly on dimensions of the phenomenon, rather than the definition. The authors proposed a new interpretation of the concept, as "the balance point between an individual's resource pool (Psychological, Social, Physical) and the challenges faced (Psychological, Social, Physical)" (Dodge et al., 2012, p. 230).

DIGITAL WELL BEING

Human evolution is interfering nowadays with the ICT development, radically affecting our relationships with others and with the entire world. We therefore agree with and place this study's approach into Luciano Floridi's paradigm stating that while in the prehistory phase there were no ICT, in the history phase social and individual wellbeing relate to the ICT, and in the hyperhistory phase social and individual wellbeing will heavily depend on the ICT (Floridi, 2014). The evolution in the current technological environment requires adequate skills and capabilities, at such level that ICTs (and subsequently the expertise to successfully manage them) are already seen fundamental to the individual wellbeing and the citizens welfare (Thorseth, 2014).

As a result, traditional wellbeing shifts currently to a technological level concept: digital wellbeing, defined by some authors as the capabilities and skills needed in order to successfully master the new technologies. The findings of the data governance report issued by the British Academy and the Royal Society in 2017 placed at the top of principles guiding the development of system architectures the promotion of human flourishing. In a comprehensive evaluation, Jisc (a provider of digital solutions for UK education and research) structured a comprehensive digital capabilities framework composed of six main areas: 1. ICT digital proficiency; 2. information, data and media literacies (critical use); 3. digital creation, problem solving and innovation (creative production);

4. digital communication, collaboration and participation (participation); 5. digital learning and development (development); and 6. digital identity and wellbeing (self-actualizing) (Figure 1).
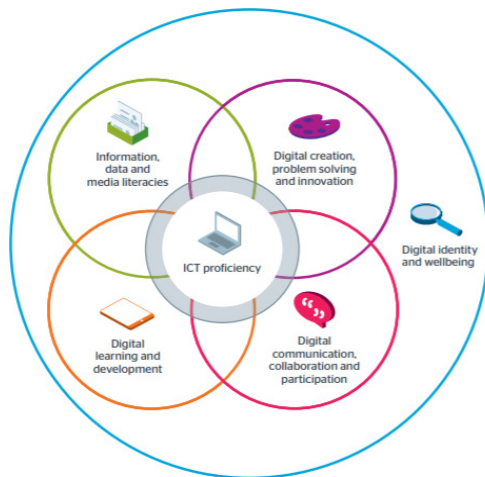
Fig. 1: *Digital capabilities framework (Jisc, 2015)*

In this approach, digital wellbeing is considered to be "the capacity to look after personal health, safety, relationships and work-life balance in digital settings; to use digital tools in pursuit of personal goals (e.g. health and fitness) and to participate in social and community activities; to act safely and responsibly in digital environments; to negotiate and resolve conflict; to manage digital workload, overload and distraction; to act with concern for the human and natural environment when using digital tools. An understanding of the benefits and risks of digital participation in relation to health and wellbeing outcomes" (Jisc, 2015, p. 3). It is therefore a complete 360 degrees vision, starting from the inner core with the individual perspective and integrating in the wider circles the social and environmental variables. It is a far more comprehensive approach compared to the studies that focus only on the smartphone apps designed to break the device addiction in order to achieve digital wellbeing (Roffarello & De Russis, 2019).

The new technologies permeated our societies more and more powerful with each available innovation. Wearable devices, public online services, smart applications, mobile Internet and social media platforms shaped the communication with unprecedented speed and impact. The user placed in the middle of this technological flow is faced with opportunities to connect and inform, and, in the same time, with challenges and risks associated with massive amounts of overcommunication. Important tech companies like Google launched organized initiatives to assess online behaviors and protect users from excessive notifications and aggressive pushes from equipment's operation systems and apps. However, we foresee constant challenges, as system engineers from software companies are motivated financially and professionally to create apps that trigger repeated reactions from the users.

The overwhelming visual input, excessive multi-tasking and overconsumption of news are not solved with the people's development of digital skills, and they begin to represent a risk for the online users. Digital wellbeing becomes a state where individual digital skills are not enough: community must also be involved through norms and values in order to ensure its members comfort and satisfaction (Gui, Fasoli, & Carradore, 2017). The finding is important because tech supporters advocated previously the direction of skill development as the main strategy to facilitate digital immersion. Gui and his colleagues proposed an additional dimension of the digital wellbeing to the six main categories previously selected by other researches (Iordache, Mariën, & Baelden, 2017): the ability to manage side effects derived from the immense quantity of information.

As the avalanche of stimuli, notifications and data overwhelm the user's capacity to deal with such massive amounts of information, some tech giants already structure different philosophies when developing applications. Google is such a case. With its 2018 Digital Wellbeing initiative, the company aims to help humans shape a better relationship with

technology by setting the main values to guide people through a matrix of algorithms and apps. It is taking back control over machines, as the digital is not something magic, like a black box, but a result of the modern society that is metaphorically "pressing us for time", through machine-mediated communication (Wajcman, 2015).

A different view approaches the online platforms as producers of societal structures, by shaping an environment of services, information and people around each user: The Big 5 of Tech (Apple, Amazon, Alphabet-Google, Microsoft, Facebook) exert influence on how societies are organized through the platform ecosystem (van Dijck, Poell, & Waal, 2018). Those authors organize Big 5 applications in four key domains: News, Education, Health & Fitness and Urban Transport. Predictive algorithms and advertising policies built by platform owners set content trends and bring key topics in front of the news feed. As more and more people use social media for news purpose (e.g. in 2016, half of the population in US and Europe), individuals, institutions and private organizations disrupt the original scope and influence algorithms and features to spread rumors, conspiracies and disinformation. In the last decade, a significant shift happened, as tech companies switched from hardware business to services model. Big 5 opened their business for software-based models, engaging users in participative environments and boosting online education, for example. Millions of people currently pass exams in massive open online courses organized on education platforms synchronized with Big 5. Opportunities for learning are at unprecedented levels, and people can decide for free, open courses or paid, recognized certificates.

Digital wellbeing aims at strengthening education through integration of online technologies in the process of teaching and learning. A strong education is a key pillar for a healthy digital wellbeing. Recent studies on children indicate that digital wellbeing implies forms of education and support in the use of Internet that are more complex than just providing hardware equipment and making users aware of online perils like inappropriate content or misinformation (Nansen et al., 2011). As education stands as main solution, we agree with the views underlining that digital coping skills (DCS) are required in order for users to manage the digital overabundance and side effects derived from their digital involvement (Büchi, Festic, & Latzer, 2019). We already see a good progress with the advancements of the researches that are able to make predictions for the satisfaction with life (a general wellbeing indicator) of the Facebook users, based on the assessment of the language people use on social media (Schwartz et al., 2016).

In a recent Erasmus project – Digital Wellbeing Educators (DWE) – designed to develop the digital literacy of educators in HE sectors to successfully address online education and increase the digital skills of the European students, participating partners identified nine key challenges to digital wellbeing, as follows:

1. Distractibility / Finding balance (cyber loafing); 2. Haven for misconduct (cyberbullying, cybersecurity); 3. Alienated relationships; 4. Overconsumption of devices and technologies; 5. Psychological implications (24/7 availability stress, lack of empathy, lack of confidence in using technologies); 6. Physical implications; 7. Unethical attention seeking (addictive design of technology); 8. Echo chambers, stereotypes and fake news; 9. Democracy challenges (promoting social inequalities, radicalization, identity management) (Royo et al., 2019). The findings are important as they confirm that the digital dimension of wellbeing is far more extensive than overabundance of apps, addictive user behavior and healthy balance between real life activities and virtual presence. The point no. 8, regarding echo chambers, stereotypes and fake news, is especially relevant for this study, as we focus on the social influence

phenomena such us gossip and rumors, that are currently spreading online as communication shifts nowadays from face-to-face to machine and platform mediated. As an Australian report found in a research on young people, common apps like Snapchat, Facebook and Instagram are used these days to learn things, find friends, find out important stuff, keep in touch with friends and to gossip (Gwinner, Melrose, & Moffatt, 2017).

The Organization for Economic Cooperation and Development is also positioning growth and wellbeing at the core of its policy strategy. Digital transformation is defined as the sum of the economic and societal effects of digitization and digitalization, while the digital ecosystem contains key technologies such as Internet of things, 5G networks, Cloud computing, Big Data, Artificial intelligence, Blockchain, and Computing power (OECD, 2019a). The framework proposed by OECD experts for governmental digital transformation policy includes the following policy modules placed around growth and wellbeing: 1. Access; 2. Use; 3. Innovation; 4. Jobs; 5. Trust; 6. Society; and 7. Market openness (Figure 2). For every society, digital transformation is a complex process that encapsulates both benefits and growing opportunities as well as challenges and risks. It has a clear role to enrich communication, improve education, boost healthcare sector but, at the same time, in parallel with the facilitated online communication, there are challenges like cyberbullying, spread of disinformation and loss of jobs due to automation.

The importance of the digital transformation for the human wellbeing in terms of opportunities and challenges has determined OECD to perform an extensive analysis focused on that specific topic. In the era of Internet, mobile devices and access to various online platforms, even the wellbeing concept suffered significant updates. Individual wellbeing consists of eleven dimensions grouped in two main sets. One set is the quality of life, which is composed of health, work-life balance, education and skills, social connections, civic

Fig. 2:*Going Digital Integrated Policy Framework (OECD, 2019a)*

engagement and governance, environmental quality, personal security, subjective wellbeing. Another main set is represented by material conditions, groups income and wealth, jobs and earnings, and housing (OECD, 2019b). Opportunities target each of those above dimensions, from the creation of digital resources to improved education, access to employment, better health services, improved government service delivery and safety of transactions. Correspondent risks expose gaps in Internet use, lack of digital skills, job polarization, mental health effects, spread of disinformation, and security incidents. Disinformation distribution is perceived here as a method to undermine trust in governments and official information channels, as there are online platforms that offer streams of news replacing traditional media. The dimensions were further detailed by OECD experts so that a total number of 33 indicators describe opportunities and challenges. Most of the indicators are grouped in the education and skills dimensions (digital skills, digital skills gap, digital resources at school, teacher ICT skills risk, online courses), jobs and earnings (employment in information industries, online job search, jobs at risk of automation, lower extended job strain associated with computer-intense jobs, job stress associated

with computer-intense jobs) and governance and civic engagement (people expressing opinions online, individuals interacting with public authorities online, availability of open government data, individuals excluded from e-government services due to lack of skills, exposure to disinformation).

DIGITAL SOCIETY

Internet and equipment like mobile phones, tablets or PCs are necessary but not sufficient for the individual growth and development in the digital ecosystem. Digital skills and communication abilities become more and more important in order to successfully navigate in the new structures shaping our social organization. Individuals play the role of basic units of the network society, viewed as a social formation with an infrastructure of social and media networks defining its organization on all levels, based on information that is processed and exchanged (van Dijk, 1991/2006). The network society follows the mass society – social formation with an infrastructure of groups, organizations and communities, having as basic units the collectivities. In a similar perspective, the network is considered a set of interconnected nodes having also the valence of a new social morphology in the society. The information technology empowers the networks with the capability to expand throughout the entire social structure (Castells, 2009).

The place of collectivities in the social matrix is subsequently substituted in the digital era by the individual as an interconnection link between different networks. As van Dijk underlines it, computer networks and telephony fuel and multiply the spread of rumor, fashions, gossip and news in traditional social networks. And this was before the social media platforms dominance in the communication field. But with the rise of such tools the speed of spreading mis and disinformation has grown exponentially. It is relevant to consider the number of online platforms monthly active users for the first trimester of 2020: Facebook

– 2,5 billion, YouTube – 2 billion, WhatsApp – 2 billion, Facebook Messenger – 1,3 billion, WeChat – 1,165 billion, Instagram – 1 billion (Statista, 2020). According to a study on rumor circulation on Twitter, a message originated from any node can potentially reach an average number of 45,6 million users in just 8 rounds of communication (Doerr, Fouz, & Friedrich, 2012). It is a proof that speed and organic reach are two key dimensions of today's online platforms that should be taken into consideration by the governmental strategists in charge with public communication.

If new technologies impact so many people worldwide and drive so many benefits in all sectors, an important question arises regarding their main role for specific social categories. An Italian research report on digital wellbeing in high schools had relevant conclusions for the education sector. The test for measuring awareness and competence in the use of digital technologies had findings confirming distress among teenagers (3659 students in 171 classes) due to smartphone usage (Gui et al., 2018). On the information and literacy side, the report stated that students were more skilled in communicating using chats and social media than selecting and validating information. For UK children present in the social networking world, "being able to talk to friends" and "keeping up to date with gossip" were also the first two preferences (Swist et al., 2015).

ONLINE RUMORS AND GOSSIP

Two main dimensions were profiled by the previous Italian research as an urgency in the education strategy: the smartphone overuse and the search for and evaluation of information online. Many studies approached the first dimension to demonstrate the existence of a challenge to the user's digital wellbeing. We therefore propose to focus on the second one, which is linked to the side of social media platforms reflecting the process of online diffusion of social influence components, such as gossip and rumor. Those components are active modules of the daily

communication in the cyber environment and are massively influencing the way we understand critical pieces of reality, react to them and adapt our behavior. Social influence processes generate reactions such as increase of anxiety and panic at individual level and even more complex social reactions at group level, and they have an impact on the overall digital wellbeing similar to the information overabundance or the smartphone overuse.

As communication mediated by the social network sites grows exponentially, some authors were intrigued by the fact that false messages have a more significant impact in diffusion compared to the real news. A key finding linked the false news circulation to the novelty degree and the emotional responses of the users: false information was connected to fear, disgust, and surprise in replies, while true stories were connected to anticipation, sadness, joy, and trust. The study concluded that this foundation ensured a diffusion of 126,000 rumors on Twitter, spread by 3 million people between 2006 to 2017, that was farther, faster, deeper, and broader than the circulation of true stories (Vosoughi, Roy, & Aral, 2018). Numerous studies (as resumed in Kim, 2014) demonstrated the benefits people obtain using social networking sites (in particular) and mobile Internet (in general). Strengthening personal communication, reducing physical distance, enabling social support are just a few examples of the advantages brought by the digital technology to the psychological wellbeing. At the same time, social support operationalized on Facebook does not significantly relate to an improved life satisfaction, underlining the limitations that modern technologies still have. Access to useful and relevant information is an integral part of the digital wellbeing framework, and this is done extensively these days through social networking sites. But when intentional or accidental spread of unverified information happen through the same channels, especially during crisis or natural disasters, this is a point where

we foresee effects on the user wellbeing itself. Two main forms of the damages that rumors can induce to people are reputation loss and financial loss (Ahsan, Kumari, & Sharma, 2019); we consider those two areas important dimensions that influence directly the individual wellbeing.

Starting with the Second World War, researches on rumors carefully assessed their effects, especially focusing on the negative ones. As some of them found already in the 40's, negative statements ("bogie rumors") were more numerous than the wishful thinking ("pipe dream rumors"), alerting war officials to structure preventive measures (Allport & Postman, 1947). As ambiguity of the context and importance of the information for the audience were the key variables in their rumor formula, the concept was frequently associated with false information, although a kernel of truth was still present in the message. At that time, a recommendation proposed by the rumor specialists was to replace rumors with actual news, and tales with facts. Same tactic is also applied when we encounter rumors in modern social media and we suggest to the impacted audiences to rely on official and mainstream news, but also to check verifiable facts about the story from trusted sources. Rumor's main functions are to make sense of reality in ambiguous contexts and to manage threats to welfare through a better preparation and response to the situation (DiFonzo & Bordia, 2007a). In a prior study, the authors studied the self-enhancement factor - connected to the fact finding and the relationship building motivations -, which is maintaining a positive image of own self and favoring versions that match one's view of the world and the position of the in-group (Bordia & DiFonzo, 2004).

But are rumors solid enough factors to determine violent social upraises, so that we can perceive them as threats to people's general wellbeing? When rumors are targeting members of external groups and they mix with other determinants such as stress conditions,

social structure, political climate, hostile belief system, we are in a point where those contextual features support the process of determining the rumors themes (Knopf, 1975). Knopf criticized Allport and Postman psychological approach – that just establishes a relation between riots and inciting rumors without clearly investigating it – explaining that the social situation itself plays a role in rumor creation, and group behavior is more important compared to the individual when researching the process. More recently, unrests in the United Kingdom confirmed the powerful role that new technologies (Twitter and BlackBerry Messenger) have, on one side, in spreading news about collective violence acts during protests and, on the other side, in encouraging the participants to engage in looting behavior (Solomos, 2011). With modern Twitter hashtags campaign, current social media platforms accentuate such determinants, and we have witnessed similar protests like the ones in the 60's being repeated with significant effects in 2020, in USA.

Belief in the truth is one core condition for the rumors to influence the social ecosystem, as DiFonzo and Bordia underlined. As an effect, consumers change their behavior, economic organizations are impacted, racial tensions arise, clashes between opposing groups generate violence and, ultimately, fatalities. Rumor is a social influence process, with dimensions such as above-mentioned sense-making of the situation, uncertainty explanation and management of the external threats, but it is also a propaganda facilitator, when intentional spread is found in malicious campaigns – political elections, wars, consumer market decisions (DiFonzo & Bordia, 2007b). When rumors emerge on a race and religion foundation, they have powerful effects, as demonstrated by the 2002 violent clashes between Hindu and Muslims in the Gujarat State in India, when more than one thousand people lost their lives due to violent riots fueled and accelerated by rumors. As the collectors of the rumors described, for three months people were deprived of sleep and not able to perform regular house tasks due to climate induced by rumors about the opposing religious group (Kakar, 2004).

Compared to the rumor, DiFonzo and Bordia (2007a) consider that functions of the gossip are building, structuring and maintaining the social network. While rumor is focused on providing an understanding of an ambiguous situation or event, gossip is most frequently seen as an evaluative discussion about persons which are not present in the communication. As a result, gossip represents a social exchange process based on individual anxieties that is oriented towards the elimination of an existent discomfort (Rosnow & Fine, 1976). But when malicious gossip is directed towards a member of the group, it has a significant disruptive potential affecting the harmony and cohesion of the group (Stirling, 1956). Both gossip and rumor have known significant advancements in terms of impact and importance as the transmission channels massively incorporated the media. With the developments of the digital technologies, this progress is becoming even more relevant. Currently, gossip is encouraged and endorsed by the social media sites and messaging platforms and can be easily transformed into an offensive flow of communication, like cyberbullying, which is a profoundly negative phenomenon for the digital wellbeing. As a social process, gossip is also used in the workplace in order to gain internal influence, by affecting and changing attitudes and opinions about others. At the same time, gossip is interesting for its particular function of emotional release, when people use it to reduce stress and anxiety in organizations (Grosser et al., 2012).

Studies focused on the spread of gossip on the social networking sites (SNS) demonstrated that, contrary to other models, it has the potential to change the SNS structure itself, because it can damage some relationships while it endorses others in the communication process (Shaw, Tsvetkova, & Daneshvar, 2011). Therefore, we can approach the SNS not just as news platforms with a unidirectional impact

towards the audience, but also as flexible and modellable structures. If such phenomena like rumors and gossip can impact the SNS at their turn, the changes are going to be reflected back in the way SNS influence the audience. It's a spiral movement, in which a social process emerges from direct communication, transposes into SNS environment, finally impacting back the users and their behavior.

As instant messaging platforms like WhatsApp have been used lately in some countries (like Brazil and India) to spread false rumors and misinformation in the election campaigns (Melo et al., 2019; Reis et al., 2020), it is relevant to understand their role for the digital wellbeing. Because this platform allows public groups to be created and the access is granted with a simple invite link, its potential to harm both the physical and mental health of users – in the process of unverified or fake information circulation – increased exponentially. WhatsApp is especially encouraging the spread of online rumors and gossip due to its structure of communication in groups. People tend to act in a less critical manner in the platform's closed groups because they feel secure to openly share rumors, conspiracies and gossip about others, under the protection of an encrypted umbrella that shields their online exchanges. It is us, in the group, freely communicating about the outside hostile and dangerous world (Davies, 2020).

Facebook posts and WhatsApp messages not only deliver disinformation to broad audiences, but in some cases the effects are extremely violent. In India, online messages incited mobs in several regions of the country, that escalated into deadly lynchings against strangers or people of different religious confession, with a significant number of victims (Arun, 2019). Other studies also consider that WhatsApp is a channel for news communication and rumors spreading (text or image) to an available broad audience, the latter conducing to social unrest and violence (Garimella & Eckles, 2020).

Other forms in which individual wellbeing is threatened by rumors or gossip with the help of social media are the medical topics. As studies underlined, AIDS denialists acting to block governmental policies in the African public health sector exacerbated the number of actual victims by circulating statements implying that HIV is harmless and the medical drugs cause the disease (Zollo & Quattrociocchi, 2018).

Analysis on 2016 US presidential campaign revealed a complex foreign mechanism of disinformation working to influence online American audiences, mainly on Facebook and Twitter. False rumors spread on social media incited a man to fire a gun inside the Comet Ping Pong restaurant in Washington DC, where he was convinced he would find trafficked children in underground tunnels (Fisher, Cox, & Hermann, 2016). The rumors on this scandal named Pizzagate pointed Democrat Party leaders (one of them was Hillary Clinton) as allegedly being involved in the story, but in the end, it was proven an absolutely false scenario. Other false rumors posted on Facebook pages, destined for Texas public in USA, incited to opposing protests two different large groups in the same place, at the same time, with the objective to generate clashes (Pamment et al., 2018).

CONCLUSIONS

Above examples support visualizing a spiral process that threatens wellbeing both in the online world and the physical space, captured evidences proving that the interferences between the two sectors can be induced by external actions aimed to divide and influence areas of the societies. Those actions bring to the discussion their misleading intention, that use social influence processes to attain an intended purpose. Internet allowed vast amounts of information to be published on a multitude of communication platforms, but the frontier between unverified information and misinformation is very thin; the latter being considered to impact productivity and decision-making (Koohang & Weiss, 2003). Studies warned about the dangerous consequences of false rumors circulation during emergency

situations like natural disasters or terrorist attacks. In such contexts, when citizens rely on social media platforms in finding latest news and updates, the spread of false rumors (as an unverified news encapsulates both the kernel of truth and the false information) can harm citizens' wellbeing (Zubiaga et al., 2015). During crisis, affected communities share misinformation through social media in the sense making process, unverified information standing out as a practical tool used by people to cope with the uncertainty and tension of the context (Huang et al., 2015).

Considering the negative impact rumors have on people, researchers are motivated to find and develop new tools and applications for data mining in social media. Such attempts have been increasing in the last years, and we consider useful the structure of the process that a group of experts provided to guide those efforts. It is composed of four main stages: rumor detection, rumor tracking, stance classification (supporting, denying, querying, commenting) and veracity classification (true, false, unverified) (Zubiaga et al., 2018). Other studies focused on developing a socio-technological approach that encourages a crowd-sourced critical thinking aiming to stop the spread of false rumors in social media during natural disasters, like the Great East Japan Earthquake from March 11, 2011 (Tanaka, Sakamoto & Matsuka, 2013).

Despite their role as anxiety and stress relievers, rumors and gossip transmitted through digital technologies in online environments have a negative impact on people's mental health, physical safety and digital wellbeing. Governments should assess more precisely the effects of digital transformation, not only in terms of benefits, but also in terms of challenges faced from now on in the cyber ecosystem. The December 2020 signature of the Berlin Declaration on Digital Society and Value-based Digital Government confirms a strong European engagement to support digital transformation based on common values for EU citizens, while remaining aware of the impact on people's physical and psychological wellbeing. Education of digital skills, increase of media literacy, stronger framework for online exchanges, better policies for tech suppliers and a trusted official communication are just a few examples of measures that should be on top of every national digital strategy. And it will still not be effective, if we don't apply individually a critical stance towards online information shared by ambiguous sources, without confirmation or validation from recognizable voices, whose integrity and reputation are already known to the public.

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