Routledge
Taylor & Francis Group

Journal of Social Work Practice

Psychotherapeutic Approaches in Health, Welfare and the Community

ISSN: 0265-0533 (Print) 1465-3885 (Online) Journal homepage: https://www.tandfonline.com/loi/cjsw20

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To cite this article: Joaquín Castillo De Mesa, Luis Gómez Jacinto, Antonio López Peláez & Maria De Las Olas Palma García (2019) Building relationships on social networking sites from a social work approach, Journal of Social Work Practice, 33:2, 201-215, DOI: 10.1080/02650533.2019.1608429

To link to this article: https://doi.org/10.1080/02650533.2019.1608429

JOURNAL OF SOCIAL WORK PRACTICE
2019, VOL. 33, NO. 2, 201–215
https://doi.org/10.1080/02650533.2019.1608429

Building relationships on social networking sites from a social work approach

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ABSTRACT

Our current age of connectedness has facilitated a boom in interactive dynamics within social networking sites. It is, therefore, possible for the field of Social Work to draw on these advantages in order to connect with the unconnected by strengthening online mutual support networks among users.

The aim of this article is to examine whether 'connectedness' in social networking sites improves online social capital and resilience of social service users.

Through our analysis of social networks carried out on an experimental model, we observed the patterns of connectedness on Facebook of 50 social service end-users from Málaga, Spain. The detection of online communities through the modularity algorithm has allowed us to ascertain whether individuals' offline realities mirror their online realities. At the same time, we examined the influence certain interactions (likes, comments, etc.) have on leadership through online ethnography. Finally, online social capital, understood as the combination of connectedness and online interaction, has been correlated with users' resilience. The results reveal that both connectedness and interaction feed themselves and have correlations with resilience.

KEYWORDS

Relationships; connectedness; interaction; communities; social mirror; social work

Introduction

The paradox of the hyperlinked society reveals that the greatest social epidemic of our time is loneliness (Cottam, 2011, p. 2015). At the same time, online networking sites have emerged as tools that enable new interactive dynamics. There is a predominance of dystopian perspectives, which blame online networking sites for the constant noise, the submission to other's people recognition (Han, 2014) and polarisation (Gillani, Yuan, Saveski, Vosoughi, & Roy, 2018) caused by echo chambers (Pariser, 2011). However, as the Collingridge dilemma points out (Liebert & Schmidt, 2010), technology is only a means and it is individuals who can turn them into favourable or harmful tools.

In this context of digital transformation, Social Work has much to say. Social Work shares its primary objective with online networking sites, that is, to build relationships. Addams (1992), a precursor to Social Work, played a pioneering role in considering social relationships between individuals to be essential to overcome adversities. One century later,

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various international Social Work associations such as the Council on Social Work Education and the National Association of Social Work (2017), among others, are encouraging social workers to apply technological means to build relationships and increase the access to information, a basic primary good for disadvantaged people (Van Dijk, 2006). Due to fragile social environments, these people are more likely to experience situations of social exclusion and poverty (Woolcock & Narayan, 2000). However, there is some consensus that this must be done cautiously. The impact of online communication on well-being depends mainly on the objectives of the individual, on the nature of the communication exchange and the closeness of other nodes (Burke & Kraut, 2013; Burke, Kraut, & Marlow, 2011; Huang, Yang, Yueh-Min, & Hsiao, 2010). The aim of this paper is to analyse whether online networking sites can help to improve the online social capital of disadvantaged people, given the right conditions. The hypothesis that people connect with each other based on affinities shared in the offline reality has been tested through a social experimentation model. Based on this premise, we observed whether there is a correlation between social connectedness, social interaction and resilience among the observed social services users.

Social connectedness and closeness in social networking sites

One of the most important reasons for communicating in social networking sites is creating and keeping relationships (Donath & Boyd, 2004; Steinfield, Ellison, & Lampe, 2008; Wright & Miller, 2010). The success of social networking sites arises from the easy access they provide for individuals to satisfy the basic desire of connecting and following other members in their networks, as well as keeping social bonds even in geographically dispersed networks (Ellison, Steinfield, & Lampe, 2007; Joinson, 2008; Lampe, Elisson & Steinfield, 2006). The massive use of social networking sites has enabled shorter social distances (Edunov et al., 2016), thus helping to increase social capital and satisfy the need for social relationships (Gosling, 2009). In this sphere, the users most connected tend to be associated with have more influence and leadership, which affect to the users' behaviours of these services (Walther, Van Der Heide, Hamel, & Shulman, 2009).In the most used networking site, Facebook, groups are becoming tools that promote social connectedness (Duncan & Barczyk, 2013), cooperation (Meishar-Tal, Kurtz, & Pieterse, 2012) and active learning (Manca & Ranieri, 2016).

Social networking sites, a mirror for offline networks

We usually connect in social networking sites with people we know in the offline reality (Ellison et al., 2007). The same layers of relationships that are found in offline social networks are usually present in online platforms, and are defined by the same frequencies of interaction that define the offline world (Dunbar, Arnaboldi, Conti, & Passarella, 2015). For this reason, there is a high degree of overlap between online and offline networks (Subrahmanyam, Reich, Waechter, & Espinoza, 2008). In fact, certain similarities, affinities and interests that people share in the offline reality are often present in online networks (Castillo de Mesa, Palma-García & Gómez, 2018). This tendency towards connecting with users and organisations that are similar to us, with similar beliefs and ideas, leads to shared spaces in which the same ideas are talked about and in

which there is little tolerance for diversity (Gillani et al., 2018). These contexts are called echo chambers or filter bubbles (Pariser, 2011), and they tend to be sealed, thus leading to monolithic knowledge (Burt, 2005).

Social interaction in social networking sites

Interaction in social networking sites is considered as a type of support. Often, individuals use social networks to look for and obtain social support (Ellison, Steinfield, & Lampe, 2011; Wright & Bell, 2003). Online social support is associated with a decrease in loneliness (Lee, Noh, & Koo, 2013) and improvement of social satisfaction (Trepte, Dienlin, & Reinecke, 2015). According to Burke and Kraut (2016), there are three explicit types of interaction in social networking sites: 1) posts or comments on someone's wall; 2) 'likes' or 'favourites'; and 3) status updates addressed to wide audiences. Despite the symbolic value of these interactions, comments made by individuals to answer back to each other, in the framework of social networking sites, have higher symbolic relevance as opposed to one-click communications ('likes'), which imply lower effort.

The nature of the support provided by social networking sites varies according to the intensity of relationships. It has been demonstrated that the use intensity of social networking sites strengthens the degree of emotional (Greenhow & Robelia, 2009) and social support that is received (Kim & Lee, 2011). A Facebook user will communicate directly with core groups composed of strong ties by sharing information through comments, sending private messages or other similar interactions. This is a more emotional type of social support, and it will offer a specific type of liaison to social capital. At the same time, this user will also follow a majority of weak ties in a passive way by looking at their updates (Burke, Marlow, & Lento, 2010). These relations, which are weaker, can be a source of support for diverse information and advice (Granovetter, 1973), which tends to provide a bridge to social capital (Ellison et al., 2007) and frequent social support through likes on Facebook (Rozzell et al., 2014).

Resilience in social networking sites

Reaching a universal definition of resilience is complex, however, we may refer to it as the ability to overcome and recover from adversities allowing successful adaptation, thus increasing the development of social, academic and vocational competences (Rirkin & Hoopman, 1991). Connor and Davidson (2003) consider resilience to be a protective ability that is found in individuals in the form of a state, rather than a feature, thus being modifiable. Resilience emanates from continuous interaction with the environment in which individuals develop and socialise (Vanistendael & Lecomte, 2002). Resilience refers to the positive adaptation to any dynamic system in which the individual faces a challenge. In this sense, social relationships in online environments can indicate significant successful adaptation (Masten & Tellegen, 2012), which has great possibilities to be applied in social intervention. For this reason, the development of resilience is starting to be analysed through online relations and interactions (Mark, Anali & Semaan, 2009).

Methodology

The development and procedures of the experimental model are hereafter explained.

Participants

An experimental model was carried out at a community social services centre in the city of Málaga (Spain), in which 50 social service users were included in an online group created on Facebook. This network was selected because it is the most used online network.

The participants chosen were people interested in finding similar jobs. 40% were interested in finding a job in hospitality, 35% in the tourism sector and 25% in care services for dependant people. A certain structural diversity was sought, that is, 60% female and 40% male participants, aged from 20 to 55 years. The majority of the participants were Spanish; however, 12% had other nationalities (Morocco, Argentina, Ecuador, etc).

Design and procedure

The aim of the online group was to provide participants with an online forum where they could connect with each other, share information and support each other in the process of searching for a job. One of the key features was for participants to not know each other and, therefore, break the seal of known networks, roles and prejudices this could imply. The aim was to provide them with new networks in order to increase openness and tolerance with regard to diversity. During the procedure and once the participants had been summoned in workshops, they were informed about the objectives of the social experiment. In order to comply with ethical requirements, we followed the premises of social work in technological environments by Reamer (2013), for which their informed consent was requested for the information obtained to be used for research purposes and through a neutral Facebook profile that would avoid mutual personal interferences.

Once the participants were added to the Facebook group, they were encouraged to exchange information collectively for the purpose of helping each other to find a job, thus generating social support networks. While participants looked for jobs for themselves, they could also find suitable offers for other users and share them with them.

Methods and techniques

Different techniques and methodologies were used in order to analyse online content. Most of the methods were developed by the Gephi software (Bastian, Heymann, & Jacomy, 2009), in its version 0.9.2. This software was first launched in 2008, and it is defined as a platform for interactive display and network use, complex systems and dynamic and hierarchic graphs. Likewise, it allows the management of broad networks, thus overtaking the limitations of similar software. The SPSS software was also used, given its ability to test correlations statistically.

Social network analysis

The features of the *online* social structure observed were investigated through network social analysis applied to the social system of social networking sites, getting different

relational properties measures. For this purpose, nodes were observed, that is, in this case, the social service users analysed, and the bonds between such nodes.

The degree centrality was first analysed, which is conceived as the number of actors to which another actor is directly linked (Freeman, 1979). The degree centrality analysed in an online context is called social connectedness, defined as computer-assisted communication – currently also performed by smartphones – that involves the development of personal bonds (without common geographical constraints) and connecting with wider groups and communities of interest (Wellman, Haase, Witte, & Hampton, 2001). Higher connectedness leads to higher popularity and leadership in the network structures. According to Freeman (1979), one position is more central or peripheral when the number of contiguous points of a given position increase or diminish.

The level of betweenness centrality was also analysed as a relational feature. The level of betweenness centrality indicates the number of times a node from the network structure appears in geodesic paths (shorter paths) that can connect any pair of nodes in the network (Freeman, 1979). It indicates which ways an actor needs to follow in order to reach any other actor within the network. These intermediary nodes, called 'bridge nodes', hold strategic positions in the network, due to their ability to control information because they can strategically retain or spread such information based on their interests, obtaining more influence and capacity of leadership.

For the analysis of cohesion, the measure of closeness was taken into account, which is defined as the average distance from one node to all the other nodes in the network. Closeness indicates the average distance of an actor from the other actors, focusing on geodesic distance (Freeman, 1979), that is, the shortest path that an actor must follow in order to reach all the other actors in the network. Therefore, the inverse of the addition of an actor's distance with regard to all other actors is considered as closeness. It is not a physical distance, but the number of necessary leaps that must be performed so as to reach each other actor. Finally, the results arising from the analysis of the network structure features are shown.

In order to carry out a joint analysis of the network structure, some relevant features must be differentiated. The network density was analysed, which is the proportion of all ties that can be theoretically present (Wasserman & Faust, 2013). Such density relies on two parameters of the network structure. The degree of inclusion, on the one hand – which is calculated by deducting isolated nodes from linked nodes – and, on the other hand, the aggregate of the degree centrality (social connectedness) of all nodes.

The more inclusive a graph is and the higher the degree centrality of all points, the denser it will be. In sum, a network's density is the total number of ties at a certain moment divided by the total number of actors and it will vary based on the number of bonds that exist in the network.

Clustering coefficient algorithm

Once the information was gathered and systematised, the social structure formed by Facebook users was analysed through networking sites, in order to detect whether it was a cohesive or disperse structure. So as to find out how embedded were the nodes among neighbouring nodes, the clustering coefficient was used. The algorithm of Latapy (2008) defines the clustering coefficient of a V node as the probability of any randomly selected pair of nodes to be neighbouring nodes of v and that they are linked. For the purpose of

determining whether the structure was cohesive at a higher or lower extent, we took into account the position held by each participant (node) within the structure, thus enabling us to identify the distances between each of them.

Modularity algorithm

The modularity algorithm was also used (Girvan & Newman, 2002), as a method for community detection. It allowed us to break down and identify dense clusters of relations in broad social networks (Girvan & Newman, 2002). This algorithm considers all nodes in isolation at first and then it determines whether the bonds are within the community or between the community and the remaining network. It follows a cumulative strategy and according to higher increases in modularity, new clusters are successively created. Once the highest possible modularity between pairs is reached the procedure is interrupted. The way in which this algorithm optimises the division into communities makes it more empirically accurate. It performs adjustments according to the degree centrality, that is, the possibility of a tie between two nodes.

Online ethnographic analysis

For the purpose of exploring patterns of relation between actors and identifying key elements for social connectedness and interaction in communities, online ethnographic techniques were used (Kozinets, 2002). Rather than observing from across the street, we did so on the Facebook group.

In order to comply with ethical criteria rigorously during the extraction and management of data, communication and interaction with observed subjects was avoided, as well as confidentiality and anonymity of participants was respected at all times (Kosinski, Matz, & Gosling et al., 2015).

So as to identify based on which factors online communities in social networking sites were formed, a comparative analysis between the online universe and the offline reality was conducted. The purpose was to confirm whether the creation of online communities could be explained by the offline reality. We intended to discover if the so-called social mirror effect occurred (Dunbar et al., 2015). In other words, we tried to identify which factors influenced the formation of online communities in social networking sites. This effect can be observed by analysing whether people reproduce patterns of connectedness and interaction in the *online* world based on certain similarities they share in the *offline* reality. To that end, we looked for potentially shared similarities that matched their common socio-demographic features and shared affinities derived from the process of job search, for instance looking for a job in the same professional sector (hospitality, care services and tourism). The convergence of similarities and higher interaction was observed to result in stronger ties. The intensity of bonds (more intense relation) increased in line with the number of shared similarities (professional sector, age, sex, nationality or social interaction patterns).

Resilience

The study of resilience was performed through the 10-item Connor-Davidson Resilience Scale (CD-RISC 10) (Connor & Davidson, 2003; Davidson & Connor, 2018). This scale includes points 1, 4, 6, 7, 8, 11, 14, 16, 17 and 19 of the original scale (Connor & Davidson, 2003).

The application of this scale to social service users has not been yet explored; however, we chose to use it due to the wide range of psychometric features that the scale has showed in numerous studies. The Pearson correlation coefficient was used to analyse the correlation between online connectedness, online interaction and resilience.

Results

In the following sections, it can be observed that the initial hypothesis is supported by the results achieved.

Reticular features

The results of the analysed relational features defined the morphology of the network. It should be remembered that the analysed structure is a socio-centric network. That is, a network in which all actors can reach each other since they belong to the same context, which in this case is a Facebook group. 50 nodes and 840 ties composed this network. The degree centrality varied from zero contacts to a maximum of 50 contacts, within a possible maximum of 50 users comprising the sample. The average of degree centrality was 34 contacts, showing a considerably high average of social connectedness. The average increase of users' contacts during this period involved unknown people, contacts they did not have before. The average increase of access to information based on such higher social connectedness was proportional to participants' leadership. Regarding the betweenness centrality of professionals, we noted that five nodes (15, 1, 13, 12 and 14), the ones called 'bridges', showed a remarkable level of betweenness centrality, and also are identified with more capacity of leadership.

Social cohesion

The closeness centrality measure evinces the social distances separating users. The maximum social distance between any pair of nodes was 2. The average distance was 1.3 leaps. The total triads reached were 7669. Likewise, the average clustering coefficient was 0.81, while the average density was 0.68. These values, which vary from 0 to 1, reached high levels respectively. Hence, they prove the embedding and cohesion levels of the analysed structure.

Community detection

Through the modularity statistical measure, we obtained a division of the analysed social structure into communities. Three communities were detected, and they were identified with purple, green and orange colours (Figures 1 and 2). The modularity value was 0.67, which is considered optimal since average values range from 0.3 to 0.7 (Girvan & Newman, 2002). The three communities agglutinated in total 38% (purple community), 34% (orange community) and 28% (green community), respectively. Despite a high level of homogeneity, bridging nodes (1 and 15) – which showed high ratios of intermediation – were able to convey information from the orange and the purple community to other communities, thus increasing aperture and balance. The green community, yet, tends to closure and monolithic knowledge due to a lack of outstanding intermediation nodes.

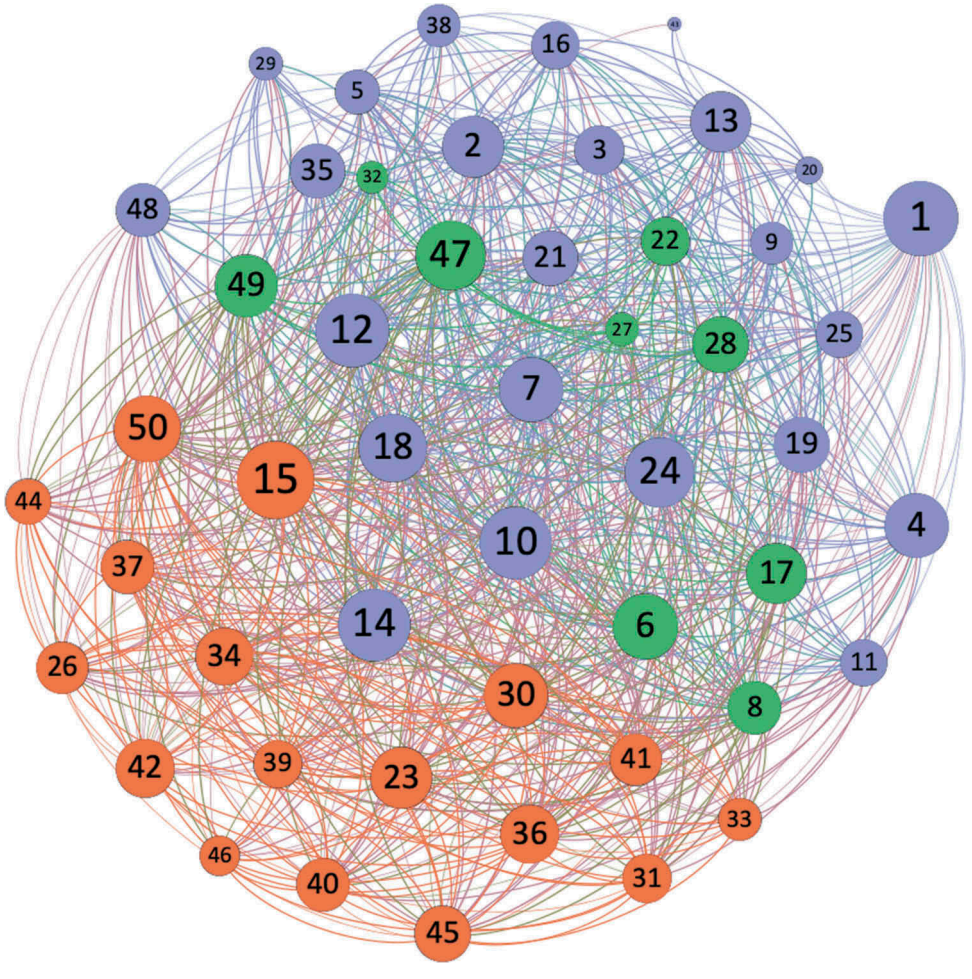

Figure 1. Community detection according to modularity algorithm (Girvan & Newman, 2002) and degree centrality (Freeman, 1979). Source: Gephi (Bastian et al., 2009).

These facts seem to not have influenced the intensity of use. In the analysis of interactions based on communities, the purple community stands out (1038) as the most aged community, while interactions in the green community (772) and the orange community (488) were less intense. Two out of the three communities showed high ratios of similarity in professional sectors in which highly demanded jobs were searched; the orange community accounted for approximately 76% of participants linked to the hospitality sector, 78% for the green community, whose participants looked for jobs in the service sector, and 89% for the purple community, whose participants looked for jobs in the tourism sector.

Participation in workshops was not organised according to this similarity, but randomly. It was detected, nevertheless, that users looking for jobs in the same professional sector tended to connect with each other based on such similarity. Hence, evincing the social mirror effect (Dunbar et al., 2015).

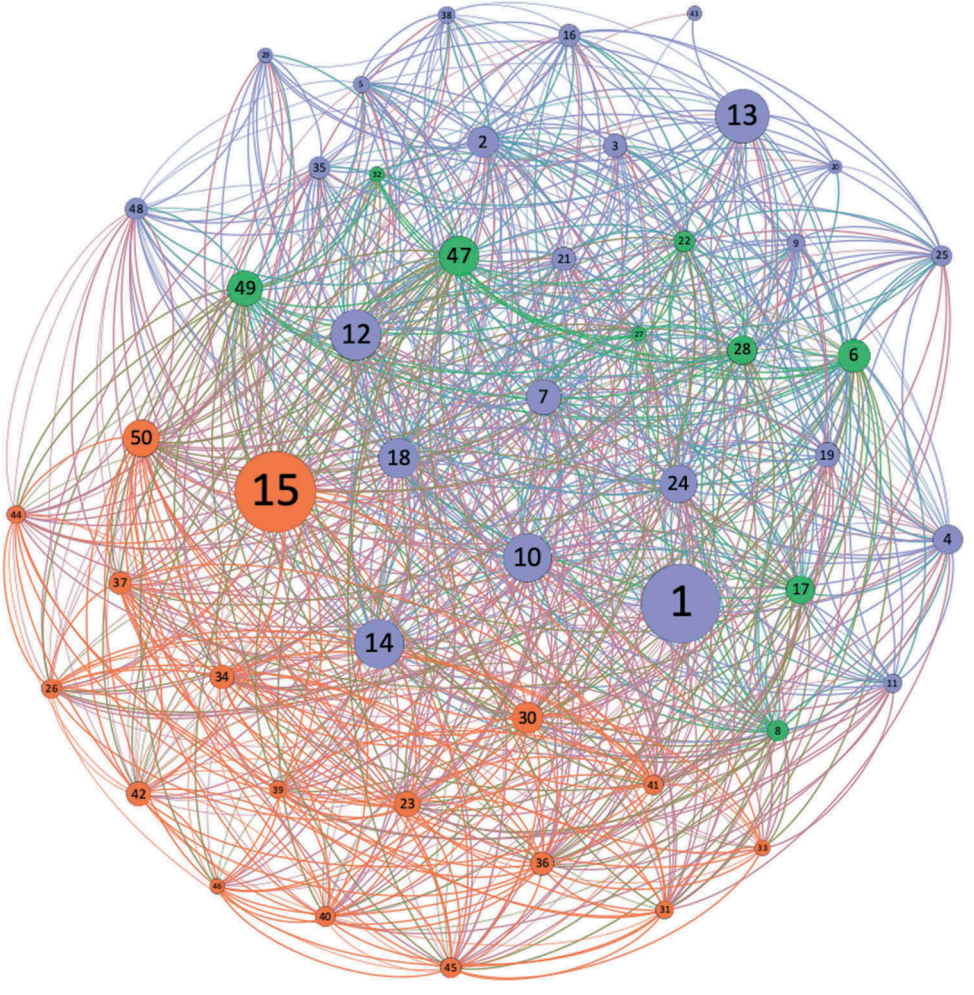

Figure 2. Community detection according to modularity algorithm (Girvan & Newman, 2002) and betweenness centrality (Freeman, 1979). Source: Gephi (Bastian et al., 2009).

Online social interaction

Another issue that was analysed was the type of support, in the form of interactions that each user of the group contributed (point 6). Participants performed a total of 2298 interactions during 1 year. These interactions ranged from posts and likes to comments. Posts represented contributions implying certain connection to the information they referred to (780). Likes, on the contrary, showed approval of the content by the user who performed it, which is considered as a type of emotional or affective interaction (792). Comments were written according to contributions made to the group (726), and they were assessed based on the content as informative (42%), emotional (55%) or instrumental support, that is, with a specific aim (for instance, buying a car with a loan) (3%).

Analysis of the correlation between online connectedness, online interaction and resilience

A positive bilateral relation was identified between the level of online social connectedness and social support in the form of online interactions: posts (r = .493, r < 0.01), comments (r= .578, p < 0.01) or likes (r = .610, p < 0.01). A positive moderate relation between social connectedness and resilience is observed (r = .138, p > .005). It is worth noting that there was a significant relation between age and intermediation abilities (r = .328, p < 0.05). The positive bilateral relation between higher age and higher social support in the form of online interactions is remarkable: posts (r = .216, p < 0.05); comments (r = .220, p < 0.05) and likes (r = .224, p < 0.05).

Discussion

Social Work must rethink its intervention approach. Nowadays, bureaucracy and managerialism rule practical social work, which has transformed occupancy in the technical and rational field. This has hindered the development of relational practice, which is considered crucial for social work (Harlow, 2003). Over 100 years ago, Addams (1902) made the point that relationships play a key role in social work practice and this viewpoint remains relevant to this day. Within the social capital that individuals possess, the structural answers to social problems can be found. Without wishing to defend the benefits of social networking sites, we consider that social workers need to adapt to the challenges posed by the digital transformation of society. We cannot look the other way. Social Work differentiates from other sciences because of its ability to transform social needs into solutions, and for this purpose, in history, we have had to apply ingenuity and to be imaginative with resources. The current universe of socialisation offered by social networking sites can be an alternative to develop solutions for community connectedness, interaction and promotion. The power of interconnection must be used (Castells, 2015, p. 29), benefiting from the new emergence of connective action, which is based on sharing personalised content on digital networks (Bennet & Segerberg, 2012).

Through our experimental model, we have confirmed that social networking sites can become useful socialisation tools for the purpose of community and group intervention when actions are strategically addressed to achieve objective. In order to carry out this intervention, Facebook groups can be appropriate online spaces for the creation of communities, when they are well oriented. We have also confirmed that the online universe is a mirror for the offline reality, in which affinities shared in the offline reality determine how individuals connect to online spaces. In our case, the predominant affinity was to belong to the same professional sector. From a strategic point of view, creating new bonds and networks makes it possible to increase aperture and tolerance with regard to diversity, particularly through some participants who due to their position in the structure, have a role as intermediaries and, therefore, have higher access to information and its diffusion, thus having more influence and leadership that leads to more diverse knowledge and tolerance (Burt, 2005). It is worth noting, for the sake of a potential future investigation, that an important emerging finding from the research reported was the discovery that intermediaries, who were found to provide more support, were mainly older people.

Furthermore, it has also been observed the correlation between social connectedness and online interaction. It makes sense and demonstrates that higher interaction is a potential

factor that increases connectedness and vice versa. Both factors are predictors of online social capital. A type of bridge to social capital has prevailed, through posts, although we have also identified liaison social capital, which through 'likes' and comments provides higher emotional support. The abovementioned social connectedness and interaction gave rise to certain resilience. That is coherent with the theory, which affirms that resilience emerges from continuous interaction with the environment in which individuals develop and socialise (Vanistendael & Lecomte, 2002). Nevertheless, this evidence will be explored in further deep in the near future.

Conclusions

As shown by the results of our research, social work must address the digital environment as a field of social research and intervention, thus benefiting from the opportunities provided by online connectedness and interaction and for the purpose of helping disadvantaged people to strategically access online information and social capital, as well as learn how to use this information towards achieving a specific goal (Van Deursen & Van Dijk, 2011). From various theoretical approaches and through the scheme known as e-Social Work (López & Marcuello-Servós, 2018), online intervention has become an unavoidable dimension of social work professionals' practice. In this sense, Social Work must make use of all available means to connect the disconnected (Del Fresno, 2015), create communities and empower individuals through online environments.

Disclosure statement

No potential conflict of interest was reported by the authors.

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Joaquín Castillo de Mesa has been an Associate Professor in the Department of Social Work at the University of Málaga (Spain) since 2010 and a member of Research Group of Quality of Life and Community and Organisational Intervention. He has been a Visiting Scholar at UC Berkeley, and at Anglia Ruskin University. His publications include analysis of social innovations, detection of communities, mining data from Big Social Data and combining analysis social networks and different algorithms for applying the results to social intervention.

Luis Gómez Jacinto earned his B.S. in Psychology at the University of Salamanca and his Ph.D. at the University of Málaga (Spain), where he has been a Full Professor of Social Psychology since 1999. He has directed numerous dissertations and is the author and co-author of several scientific publications related to Social Psychology. Currently, he is a professor in the Department of Social Studies and Work at the University of Málaga. His research is centred on the application of the theory of evolution to the analysis of psychosocial processes as well as social and community intervention.

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