

## On Movements

### *The Opportunities and Challenges of Studying Social Movement Ego-Networks: Online and Offline*

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#### INTRODUCTION

Protest is ubiquitous in contemporary societies, as is illustrated by any review of recent news headlines. A few recent events that made news headlines include nearly two million marchers taking to the streets and staring down police in Hong Kong while protesting perceived interference by the mainland Chinese government in the Island's affairs. In London, a million people took to the streets to protest Brexit. Five hundred thousand people marched in the Montreal climate strike in support of climate action, which was attended by movement icon Greta Thunberg. Nearly half a million people participated in a Women's March in Washington.

Tarrow and Meyer (1998) refer to the proliferation of protest and its diffusion into everyday life as characteristics of "the social movement society." Why do people participate in such events? One often proffered reason is that people who participate do so because they have concerns about particular issues, or even a sense of moral outrage (Jasper and Poulsen 1995). As social network scholars have long argued (Klandermans and Oegema 1987), holding particular values or opinions, or having a sense of grievance, is usually not enough to impel action. Structural connections to other social movement participants are often crucial. For example, Klandermans and Oegema's 1987 study of the peace movement in the Netherlands found that while the vast majority of the general public supported the ideals of the peace movement, only a very small proportion of the population became involved in movement activities. What mattered for participation was whether individuals had ties to other movement participants, and were asked to participate through these networks. Studies on social movement networks reveal that while support for a movement's goals is a necessary condition for participation, individuals also need to be structurally linked to other members of the movement through social network ties (Tindall 2002, 2015; Diani and McAdam 2003).

Social networks are integral to understanding social movement processes. This chapter provides a broad overview of the social network analysis methodological

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toolkit, with a focus on ego-networks, so that social movements scholars better understand how networks shape social movement recruitment and support, communication, and social-political influence. The chapter is structured as follows. First, we provide a contextual overview of research on networks, collective action, and social movements that underlines the importance of social network analysis approaches to social movement research. Second, we introduce a set of standard ego-network approaches to social movements and discuss some of the attendant challenges of these approaches. Third, we discuss less well-established qualitative and mixed-methods network approaches to social movement research. Fourth, we describe and discuss some considerations relevant to conducting longitudinal social network analysis, and modelling network dynamics. Fifth, we discuss virtual networks as sources of social movements data collection and analysis.

#### NETWORKS, COLLECTIVE ACTION, AND SOCIAL MOVEMENTS

Collective action refers to groups of people engaged in shared, concerted efforts to achieve a common goal. Phenomena are classified as collective action when they are relatively informal (versus formal activities that take place in corporations or governments), and relatively non-routine. When collective actors seek to create or resist social change, they are often referred to as a social movement. Though, as McAdam, Tarrow, and Tilly (2001) note, scholars have applied the concept of contentious politics to a broad range of phenomena.<sup>1</sup>

There is a significant social network literature on social movements, including work on ego-networks (Diani 2003; for reviews, see Krinsky and Crossley 2014; Diani and Mische 2015; Tindall 2015; Crossley and Diani 2018). To some extent, this work has built on classic studies of personal networks in communities (such as the works of Laumann 1973; Wellman 1979; Fischer 1982), work on social capital (Coleman 1988; Burt 1992; Erickson 1996; Lin 2002), and social network research on organizations (Borgatti and Foster 2003). For example, Tindall in a series of social movement studies (Tindall 2002, 2004; Tindall and Cormier 2008; Malinick et al. 2013; Tindall and Robinson 2017) drew upon concepts, survey items, and measures from Laumann (1973), Wellman (1979), Fischer (1982), Erickson (1996), and Lin (2002).

Social networks are important in social movements for coordinating collective activities (Tindall 2015), linking organizations (Andrews and Edwards 2005; Heaney and Rojas 2008), recruiting individuals (Klandermans and Oegema 1987; see also Fisher and McNerney 2012) and groups to participate in new campaigns (McAdam et al. 1988), and diffusing information (Granovetter 1973; McAdam and Rucht 1993). Movement identities are also formed through social networks (Tindall et al. 2014), and new social networks are a key outcome of mobilization (Diani 1997; Tindall, Cormier, and Diani 2012).

Social network research on social movements has utilized different units (Ring-Ramirez, Reynolds-Stenson, and Earl 2014), including individuals (Tindall 2002), organizations (Diani 2015), and movement sectors (Everett 1992). It has examined both whole networks (Diani 1990, 2015) and ego-networks (McAdam 1986; Fisher 2010a; Fisher and Boekkooi 2010).

<sup>1</sup> Although some research has focused on the distinction between social movements and other forms of contentious politics (see e.g. McAdam et al. 2001), this distinction is not important to this chapter.

As illustrated in Diani and McAdam's (2003) edited volume, a wide variety of social network-related topics have been studied in the context of social movement research. Social networks are so central to research in these areas that some scholars have proposed a re-conceptualization of the relationship between social networks and social movements, which embeds social networks directly in the definition of social movements. Diani shifts the focus away from (mostly individual) networks as preconditions of collective action, to networks as constitutive of different forms of action, ranging from social movements to coalitions to alternative communities. To this purpose, he has developed a conceptual scheme of "modes of coordination" (Diani 2015). In his scheme, social movements are characterized by relatively dense patterns of network ties across social movement organizations and collective solidarity beyond a specific organization.

Tindall and Robinson (2015) apply Diani's meso-level definition of social movements to individuals, to consider whether or not individuals can be classified as members of a social movement, depending on their ties to people in other social movement organizations, their level of identification with the movement, and their level of activism. This raises issues about social movements and the boundary specification problem (Laumann et al. 1983). Do potential members need to be fully a part of a movement for inclusion in an ego-network study? Should a boundary specification depend on how close actors are to the core of the movement? Or to the type of role they play? For example, McCarthy and Zald (1977), in their classic essay on Resource Mobilization Theory, talk about a number of different categories of actors.

As discussed elsewhere in this volume, an ego-network perspective focuses on a given individual, the alters s/he is tied to, and sometimes the ties amongst the alters. This usually involves collecting data from an individual respondent about his/her personal network. In social movement research this often involves summary measures or proxy measures (e.g., indications of the existence of a tie, or the number of ties, or of a particular type, to categories of actors). From a data analysis perspective, an ego-network approach focuses primarily on individuals as the unit of analysis. However, it is possible to utilize a whole network data collection research design and then undertake an ego-network analysis on subgraphs of the whole network. In such situations, the researcher would also have information on the indirect connections that ego has to other actors. This is particularly relevant for social movement research that collects social network data through scraping social media and related techniques.

Despite the variety of aspects of collective action addressed from a network perspective, most analysts who employ ego-network approaches focus on the role of networks (in particular, interpersonal networks) in recruitment and mobilization processes. Such a focus prompts several related questions, including: What are the relationships between movement identification and participation in personal social networks? What are the network characteristics (e.g., strong ties versus weak ties) that best explain participation? What is the role of social networks versus other factors for recruiting individuals to attend protest events? What role does the Internet play in mobilizing social movement participants?

A variety of studies examine the processes that underlie the participation of individuals in social movements (Klandermans 2015; Tindall 2015). While social networks are a consistent statistical predictor of participation (but see Fisher and McNerney 2012), they do not do anything on their own; rather, social networks facilitate and/or shape various social processes. One such process is communication – which in turn is associated with the dissemination of information, social influence, the

formation of trust, and the development of collective identities (Tindall 2015). At the individual level, the more connected one is to other movement participants, the more opportunities there are to communicate about movement issues (Tindall 2002). Communication is key for several processes. As a result of information transmitted through interpersonal networks, people may learn about issues and events they did not know about, and become more concerned about a particular issue or become more likely to attend a particular event (Tindall 2002, 2004; Fisher 2010a; Tindall and Robinson 2017).

Social influence refers to instances where attitudes and behaviours are shaped by an individual's social ties (Friedkin 2006; Snijders et al. 2010). People may be persuaded to become concerned about an issue or involved in an activity through their ego-network ties (but see Gould 2003). Social networks are also important as vehicles through which individuals are targeted for recruitment for participation in events (Klandermans and Oegema 1987; Fisher 2010).

Finally, in some circumstances, especially where movements involve higher levels of risk and cost, networks provide social and emotional support (McAdam 1986; Wiltfang and McAdam 1991; Nepstad and Smith 1999) and can potentially also be a source of legal or financial support. These are some of the processes that underlie the link between ego-networks and the participation of individuals in social movements. A simplified model illustrating some of these processes is provided in Figure 1.

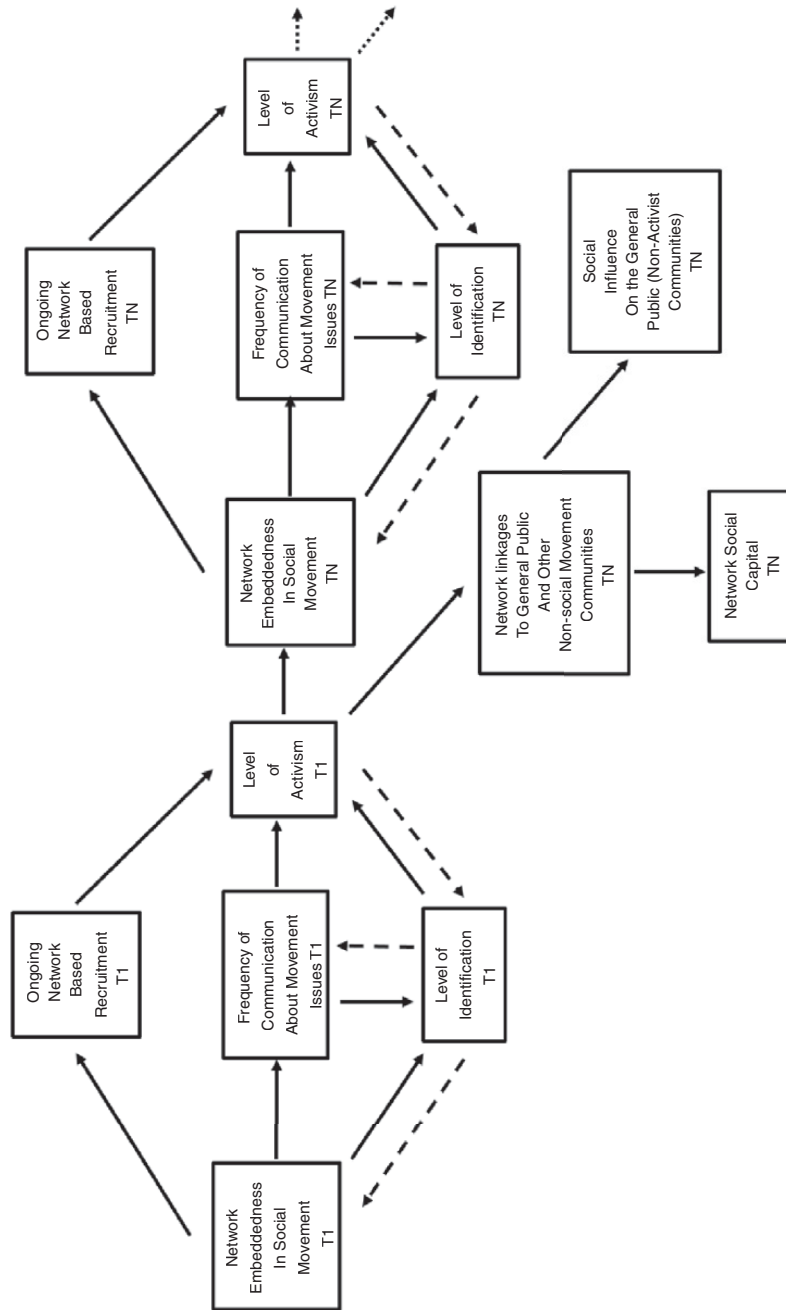
Several unanswered, or only partly answered, research questions remain regarding these processes. Some of these include: (1) What is the relative importance of social influence versus social selection processes? (2) What is the relative importance and role of virtual network ties versus non-virtual ties? and (3) To what extent are there multiple pathways to activism that implicate ego-networks in different ways? We explore some of these questions below.

## EGO NETWORK METHODOLOGIES AND SOCIAL MOVEMENTS

In social movement research, some ego-network strategies include using single-item summary count measures (Marsden 2011; Perry et al. 2018) rather than systematically documenting all of the alters in an ego's network, using modified position generators (Tindall et al. 2012), using two-mode data collection (of ties to different organizations, or to actors in different organizations; see particularly Heaney and Rojas (2008); Park (2008); Fisher (2010a, 2019); and Malinick et al. (2013)), or using qualitative and mixed methods approaches (Stoddart et al. 2015). We provide select examples of some of these strategies and discuss different approaches to sampling for ego-network data collection on social movements (Diani 2002).

### Challenges of Standard Social Network Analysis Approaches to Social Movements

Ego-network designs (Crossley et al. 2015; Perry et al. 2018) are well suited for research problems in social movements, such as micromobilization. However, it is also useful to consider the benefits and costs of other network approaches. The standard contemporary approach to social network research is to collect whole network data on a census of network members (Knoke and Yang 2008). We will refer to this approach as Standard-1. This approach enables researchers to use



\* Dashed lines indicate paths of potential reciprocal influence. Dotted lines indicate processes continue over time.

FIGURE 1 A network-social psychological model of the participation of individuals in low cost/risk social movement activism.

sophisticated statistical analyses such as Exponential Random Graph Modelling (ERGMs) (Lusher, Koskinen, and Robins 2013).

A standard survey approach to social science research, which is often also used in ego-network studies, is to conduct a random sample (or related probability sample) of the members of a network (Diani 1995; Tindall 2002). We call this approach Standard-2. This approach enables researchers to use various types of multivariate statistical analyses, such as Ordinary Least Squares (OLS) regression analysis (McAdam 1986; Tindall 2002).

There are several challenges with Standard-1 and Standard-2 approaches for research on social movements including:

1. Social movements are often large in scale, and thus it is not practical to collect whole network data. (This problem is also often faced by other research areas, such as community research; e.g., Wellman (1979).
2. Movements involve people in organizations, as well as those who do not belong to formal organizations, so there is usually no single all-inclusive sampling frame.
3. Social movement organizations are usually hesitant to disclose their lists to others, so it is often difficult to use organizations' lists as sampling frames.
4. Often, participation in social movements involves elements of controversy and conflict, and thus employing name rosters (even if one was able to), may pose ethical issues (Kadushin 2012).

We touch on all of these points through our discussion, but point (4) deserves closer attention.

Collective action and social movements (especially the latter) are often by their very nature contentious (McAdam, Tarrow, and Tilly 2001). This means that they often involve conflict and sometimes illegal activities. McAdam (McAdam 1986; Wiltfang and McAdam 1991) has talked about costs and risks of social movement participation. Costs involve money and time that might be incurred in participation. Risks involves potential harm that might befall participants such as physical harm or incarceration.

Even when only peaceful and/or legal protest methods are used, social movement activists are sometimes targeted for sanctions by governments, police, employers, or other interest groups (see discussion in Fisher 2010a, 2010b). For example, the past president of the United States routinely labelled people who disagreed with him as enemies of the people and winked at suggestions that reprisals be taken against them. A common tactic of corporations is to target social movement participants with "strategic lawsuit against public participation" suits (see Hilson 2016).

Social network analysts have made terrorism a substantive subject of inquiry. Sometimes, contentious political action is even labelled as "terrorism." As Goodwin (2017) notes, there is no academic consensus on what constitutes terrorism. To a certain extent, "terrorism" is in the eye of the beholder. As Kadushin notes (2005, 2012), the data collected by social network scholars can easily be used by adversaries to attack research participants and significantly harm them. Indeed, allegedly, in some instances, social network analysts have worked with security officials in mapping the networks of "terrorists." Actors who engage in contentious politics are not necessarily being irrationally paranoid when they express concern about participating in social network studies.

While there are usually costs and risks to participating in social research, the risks are systematically greater for people who have engaged in contentious politics to participate

in social networks studies. On the one hand, researchers need to be acutely aware of this. On the other hand, ego-network approaches are one way to reduce the risk, as those who are identified are usually individuals, or small segments of a network, rather than an entire network, and ego-network methods sometimes preserve the anonymity of alters.

### Collecting Ego-Network Data on Social Movement Participants

One approach to the challenges of collecting whole social network data is to collect sample data (Perry et al. 2018), such as through a random sample survey of the general public (Klandermans and Oegema 1987; Tindall and Piggot 2015).<sup>2</sup> However, the proportion of true movement participants is likely to be very low (Tindall and Robinson 2015) and survey questions need to be relatively general rather than tailored to a specific movement. Tindall's study (as reported in Tindall and Piggot 2015) provides one example. In this study, a random sample of the general public was obtained. Respondents were asked about their affiliation with a variety of environmental movement organizations and their ties to people in environmental organizations.

A second category of approaches is to study subsets (or aspects) of a movement. A common strategy is to conduct a probability survey sample of a social movement organization, or a set of organizations (Tindall 2002; Tindall et al. 2014; Tindall and Robinson 2017). In several of these studies, Tindall asked respondents questions that obtain summary measures of the number of ties to people in different role relationships, their affiliation with environmental organizations, and their ties to people in particular environmental organizations.

A third approach is to survey (or otherwise study) people who attend protest events and other social movement events (Jasper and Poulsen 1995; Heaney and Rojas 2008; Fisher 2010a, 2019; Walgrave et al. 2011; Klandermans et al. 2014). This is a useful strategy for overcoming barriers to access, and can be particularly useful for collecting ego-network data.

A fourth approach is to study networks of social movement organizations and individuals by analyzing digital traces of online activities (Earl et al. 2013). We will expand on this approach, as this is a relatively new area of scholarship, in a later section of this chapter.

Below, we explore some examples that are relatively more unique to social movement research.

### Event-Oriented Research Designs

One solution to overcoming the challenges to obtaining random samples for research on social movements and social networks through traditional means (e.g., getting organization lists, or other type of representative sampling frame) is to use random sampling procedures to collect data at protest events (Koopmans and Rucht 2002; for a full description, see Fisher 2010a, Fisher et al. 2019; see also Jasper and Poulsen 1995; Heaney and Rojas 2008; Walgrave et al. 2011; Klandermans et al. 2014; Fisher 2019). For example, Fisher used a paired comparison approach to examine social

<sup>2</sup> Though with declining general public survey response rates, this approach has its own challenges. With a probability sample of the general public, only a small subset of survey respondents will be movement participants.



protest and social networks in the United States and France (Fisher 2010a). She studied the World Says No to the Bush Agenda during the Republican National Convention in New York City in 2004 and the “Black Tuesday” Day of Protest against the Contrat Première Embauche in Paris in 2006. As Fisher notes, these were large marches that targeted domestic politics and were largely peaceful.

For this study, protesters were randomly surveyed at both large-scale protest events. Study participants were selected using a field approximation of random selection at the demonstrations. As described by Fisher (2010a: 122):

Starting from different points across the field site, surveyors “counted off” protesters standing in a formal or informal line, selecting every fifth protester to participate. Because the field situations varied somewhat, random selection was achieved by choosing every fifth person queuing up to march, or choosing every fifth person who was marching as determined by the researcher working in a particular area.

### Name and Organization Rosters

In studies of whole social networks, name rosters (Marsden 2011) are a common survey data collection method. A cousin of the name roster, popular amongst social movement scholars, is the organization roster (e.g., see Diani 1995, 2002, 2015; Tindall 2002). This technique can be used in collecting data from social movement organization representatives. In conjunction with a census, it can yield whole network mapping, but such data can also be used in random sample, ego-network analyses.

In surveys of individuals, organizational rosters can also be used to indicate the ties that individuals have to organizations. In this context, respondents can indicate which of the organizations: (1) they have heard of, (2) they are supporters/members of, (3) they are active members of, (4) they are former members/supporters of.

In the context of social movement research, Tindall (2002, 2004; Tindall et al. 2014; Tindall and Robinson 2017) developed a somewhat novel extension where, with regard to each organization listed, respondents are asked if: (1) they know an acquaintance who is a member of the organization, (2) they know a close friend or family member who belongs to the organization. This enables a measure of weak ties and strong ties to people in social movement organizations (based on role relationship) and allows for measures of social network range/diversity – the number of different organizations one is tied to through ego-network ties. Both survey questions, when used with individual respondents, yield two-mode data (Borgatti and Everett 1997). For example, data collected by Tindall (Tindall et al. 2014) enables measures of the centrality of egos vis a vis ties to organizations, and the centrality of organizations vis a vis ties to egos.

### Summary Counts and Categorical Measures

For studies of the social networks of individual participants in social movements, probably the most commonly employed procedures are summary counts and categorical measures. Single-item summary measures ask respondents to provide summary assessments of egocentric network properties (Marsden 2011). Some examples include the level or volume of informal social contact. However, these types of measures do not provide data on specific actor to actor ties. Hence, they only allow for



a limited set of analytical techniques, such as measures of degree centrality (Freeman 1978).

The use of count measures is often motivated as a practical alternative to techniques such as the name generator or name roster in order to save time in an interview, or space on a questionnaire. But serendipitously, the use of count measures may also help overcome the ethical problem of identifying other social movement participants. In addition to count measures, Mehra et al. (2014) develop a scale of types of ego networks. Participants then select the image that best describes their impression of their own ego network. This avoids time in identifying specific individuals and also gives more of an overall impression of structure although without any actual measures.

Tindall (2002, 2004; Tindall, Robinson, and Stoddart 2014; Tindall and Robinson 2017; see also Diani 1995) has used summary measures in a series of studies asking respondents how many people they know in their social movement organization, and also asking them how many people they know in a set of role relationships such as: (1) close friends, (2) acquaintances, (3) coworkers, (4) family members living in the respondent's household, (5) other relatives, and (6) other. In some of these studies, Tindall also asked about how many ties within each category were with women, enabling a measure of gender homophily (McPherson, Smith-Lovin, and Cook 2001).

### Modified Position Generator

The position generator (Perry et al. 2018) was originally developed by Nan Lin (e.g., Lin, Fu, and Hsung 2001). This instrument measures a respondent's relationships to types of alters instead of ties to particular individuals. Follow-up questions ask respondents to indicate whether their relationships are strong (kinship, friendship) or weak (acquaintanceship). Other follow-ups can also be added. This measure was developed for social capital studies and for understanding the role of social capital (held by individuals) in facilitating social mobility (Lin 2002; see also Erickson 1996).

Tindall and colleagues have used this instrument in several contexts, including, to study: (1) gender differences in political participation (Tindall and Cormier 2008); (2) diversity of identities related to natural resources and the outdoors (Harshaw and Tindall 2005); and (3) diversity of ties environmental activists develop to people from different occupations as a result of their participation in the environmental movement (Tindall et al. 2012). So far, this technique has received limited use in the social movements literature.

## QUALITATIVE AND MIXED METHODS SOCIAL NETWORK ANALYSIS APPROACHES TO SOCIAL MOVEMENTS

Quantitative approaches dominate the social network analysis field and provide a powerful toolkit for analyzing various dimensions of the structure of social networks. However, social network studies of social movements benefit from engagement with qualitative and mixed-methods approaches. These approaches are particularly useful for getting at how people interpret the meanings of their social network ties and relationships. We discuss a few of the benefits of qualitative and mixed methods network approaches to social movements research.

First and foremost, consistent with an ego-network analytic approach, qualitative data collection through interviews or field work helps document and analyze how individual social movement actors interpret their network relationships in ways that potentially provide more complex and deeper accounts than are possible through quantitative network instruments. For example, Stoddart and Tindall (2010) analyzed qualitative interview data with environmentalists involved in contestation over forestry practices in British Columbia, Canada. Participants were asked about their relationships with other actors, including other members of their own environmental group, members of other groups in the environmental movement, members of government agencies, forestry corporation management, forestry workers, and First Nations. Consistent with previous quantitative analyses of the structure of movement participants' networks, they found that participants had strong within-group and within-movement relationships, as well as relatively well-developed ties with government and forestry companies. By contrast, relationships with forestry workers and First Nations were weakly developed. To this point, their findings aligned with and helped validate parallel quantitative analyses.

However, the value added by the qualitative approach came from participants' ability to talk about how they thought about and evaluated these network relationships. Their strong ties within groups and across the movement were positively valued and often combined workplace collaboration with friendship, while their strong ties with government and forestry companies were utilitarian and often characterized by frustration and antagonism. By contrast, weak ties with forestry workers and First Nations were also viewed positively. While quantitative analysis is useful for analyzing the structure of movement participants' social networks, by combining this with qualitative interview data and analysis we gain opportunities to understand what relationships of collaboration and conflict actually entail and mean for participants.

Second, qualitative approaches provide opportunities to explore social movement network mechanisms that can be difficult to grasp in a single quantitative study. For example, researchers in interview studies can ask open-ended questions about which individuals or organizations are particularly important as alters for social movement collaboration or conflict. Rather than starting from researcher-defined lists of alters, this open-ended approach begins from activists' experiences and interpretations of their networks. Such questions can then be followed up with clarifying or exploratory probes. This may help generate more valid analyses of who is seen as important, influential, or powerful in social movement networks of collaboration and conflict.

### **Mixed Methods Social Networks Analysis Approaches to Social Movements**

There has been increasing interest in mixed methods research (Small 2011; e.g., mixing quantitative and qualitative approaches) in social network analysis, which is a fruitful area for ego-network research on social movements. Mixed-methods research design presents nine distinct possibilities, set out in Table 1, from qualitative-dominant to quantitative-dominant to symmetrical.

To illustrate a few examples of the range of possibilities for social movements research, Tindall carried out multiple survey-driven projects with environmental movement participants. Network data collection was primarily quantitative, including

TABLE I *Priority of method*

Sequence	QUAL → quant	QUAL + quant	quant → QUAL
	QUAL → QUANT	QUANT + QUAL	QUANT → QUAL
	qual → QUANT	QUANT + qual	QUANT → qual

the use of network matrices. However, the surveys also included open-ended questions that collect qualitative data that gives additional insight into the meaning of network relationships, including the data underlying the analysis discussed above (Stoddart and Tindall 2010). This is an example of a QUAN + qual design, where the project had an overarching quantitative research design. Qualitative data collection and analysis was carried out in parallel, but with the qualitative data playing a supportive role in the project.

Another example is that quantitative network analyses can be used to visualize the structure of activists' networks (Perry et al. 2018; McCarty et al. 2019). These sociograms can be presented to participants in separate interviews as prompts to talk about the meaning of network relationships. This provides insight into the roles, influence or power of different alters, as well as the affective dimensions of these relationships.

### Longitudinal Social Network Dynamics

The dynamics of ego-social networks (Perry et al. 2018) over time amongst social movement participants is an important but understudied topic (McAdam 1989; Tindall 2004, 2007). Longitudinal research on social networks amongst social movement participants can: (1) help to resolve the social influence versus social selection debate (Snijders et al. 2010) in the context of social movements; (2) provide enhanced understanding of the factors associated with micro-mobilization, and micro-demobilization, and (3) yield insights into how micro-level processes relate to meso- and macro-level processes.

Longitudinal analysis can provide insights into the influence versus selection analytical problem. In social movements, it seems likely that both processes are in play. But this distinction is difficult to assess in single mode cross-sectional studies and especially in those that focus on event participation. Mixed-methods research is one way of getting leverage on this topic in ego-network research. For example, McAdam (1986) has theorized that "biographical availability" plays an important role. This concept refers to the idea that certain statuses related to an individual's biography (e.g., holding a full-time job versus having a flexible schedule, having a family and raising small children versus being single) affects one's ability to participate in social movement activities. Such effects can be difficult for researchers to detect with cross-sectional quantitative data because effects can work in different directions (and cancel each other out). For example, one person might opt out of social movement participation because they have parenting responsibilities, but another might incorporate their children into their activism (such as through the recent climate strikes). Relatedly, one might be motivated by their children to engage in certain forms of activism, such as addressing environmental problems like climate change, or other problems that their children will face. Ego-networks may statistically interact with

certain “biographical availability” factors. Also, it is possible that over time, because of biographical availability factors, both engagement in ego-networks and participation in activism may switch from being mostly offline to being mostly online. We would urge more research on these topics.

More generally, time is a dimension that is undertheorized in ego-network research on social movements. One possible way in which time is important, beyond effects that are confined to individual trajectories, is that micro-level processes may interact with meso- and macro-level processes over time. For instance, in the area of micro-mobilization, both “the cycle of protest” and “biographical availability” likely affect the relationship between network ties and participation. At time periods when there is a high volume of protest and other types of mobilization activity, there is more intergroup interaction. At low points in the cycle of protest, ties to other groups become latent. When movement issues heat up there is more intergroup interaction and joint events (such as rallies), and such interaction promotes further individual activism. Similarly, at high points in the cycle of protest when movement issues are more salient, especially in the media, one’s identity as a member of the movement becomes more salient. At such times intergroup interaction reinforces movement identification, and increased identification salience translates into greater activism.

As noted above, the relationship between network ties and social movement participation may be affected by changes in biographical availability. At later stages of a movement, people who were once relatively young with few commitments earlier on may establish families, careers, and raise children. Such commitments may decrease their availability for maintaining ties with other activists and diminish their activism. Similarly, some elderly participants may become less able to participate in activism due to physical limitations. On the other hand, “middle age” activists may become more active as they become older, as they become free of child rearing responsibilities, or move into part-time work or retirement and so have more flexible schedules and fewer risks regarding employment.

Figure 2 illustrates a general model of the relationship between ego-network micromobilization, individual activism, the cycle of protest/level of movement mobilization<sup>3</sup>, and other factors. Ego-network factors are displayed as affecting individual activism. Increased or decreased individual activism affects the cycle of protest, and the cycle of protest/level of movement mobilization cyclically affects ego-network micromobilization. There are, however, other factors that influence ego-network micromobilization, individual activism, and the cycle of protest. As Figure 2 suggests, other micro-level factors such as biographical availability can affect both ego-network micromobilization and individual activism. Further, as Figure 2 illustrates, the cycle of protest is not merely a function of the aggregate of efforts of individual activism, but it is also affected by other macro- and meso-level factors such as political opportunities or media attention.

The top right quadrant of Figure 2 identifies some factors that may have a negative effect on activism. There may be other barriers to participation beyond biographical availability (e.g., geographical, financial, language, etc.). Most of the discussion in this chapter has focused on how ties to other participants facilitate individual activism.

<sup>3</sup> Tarrow (1998) defines a protest cycle as “a phase of heightened conflict across the social system”. We use the term a little less precisely here, to just mean increases or decreases in the intensity of protest. This could occur across the social movement sector (which is more consistent with Tarrow’s usage) or be restricted to a particular movement, or mobilization campaign.

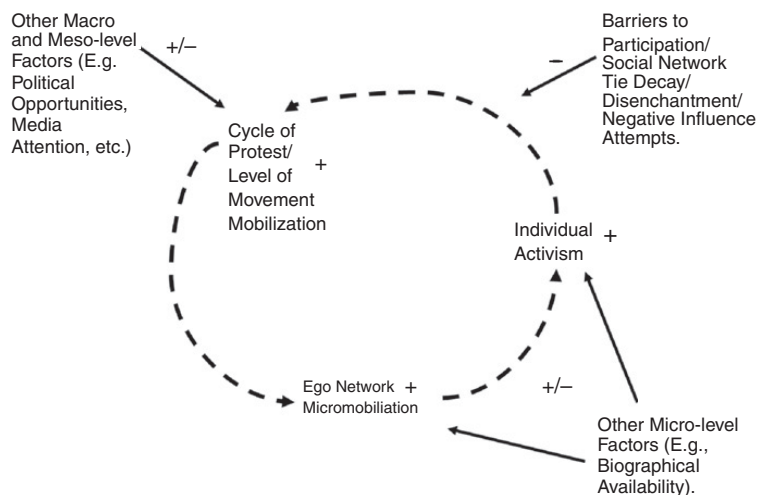


FIGURE 2 Micromobilization and the Cycle of Protest.

Somewhat understudied, however, is the fact that ties “decay” (Burt 2000). Many ego-network studies on social movements examine the relationship between the existence of ties and participation, but relatively little work has focused on tie formation and decay. Growing disenchantment with a movement (Klandermans 2015) or movement organization is another reason why activists may exit a movement (e.g., disagreement with tactics, strategies, or framing). Whether or not an individual exits based on disenchantment is probably in part related to the characteristics of their ego-network. Finally, there is little research on the role played by negative influence attempts by ego network members (see McAdam and Paulsen 1993; Tindall et al. 2021). These are all processes that could be fruitfully explored in longitudinal ego-network research designs.

While longitudinal research provides many opportunities, we would also like to note that there are challenges. The normal social science challenge of obtaining research funding also exists for social movement researchers. In addition, it is not easy to predict when social movements are going to start, or when ebbs and flows of protest or mobilization will occur. In this regard, the study of social movements is distinctive from some topics that have been well studied using social network dynamic models, such as tie formation/dissolution and substance use amongst school children over relatively short periods of time (intervals measured in months). Further, coordinating funding with these critical junctures in the context of social movement research is even more challenging. So, while we call for more longitudinal research, we are cognizant of these considerations.

#### COLLECTIVE ACTION, SOCIAL MOVEMENTS, AND VIRTUAL SOCIAL NETWORKS

For almost two decades, social movement scholars have been studying digital social networks (Earl and Kimport 2011; Pavan 2017; Tufekci 2017; Earl 2018b). One of the primary motivations for new computational approaches to collecting and analyzing social media data on social movements is the (once suspect) proposition that digital connections can potentially transform what social movements do, how they do it, and ultimately the effectiveness of their strategies (Earl and Kimport 2011; Mattoni and

Pavan 2019). This provides several exciting opportunities for ego-based network analysis.

Social media platforms serve several different roles that are relevant in the context of research on social movements, including: (1) providing rapid access to information and breaking news, including from legacy media outlets whose stories are frequently circulated on social media platforms (Earl et al. 2010; Stoddart and Tindall 2015); (2) facilitating communication amongst activists and between activists and others (Earl et al. 2013); and (3) as a tool for building and maintaining networks and potentially providing “integrative power” for movements (Pavan 2017). While some commentators think of social media as a unique phenomenon, in our view it is more fruitful to think about social media as (often being) complementary to traditional (legacy) media and offline personal networks (Wellman and Tindall 1993), especially as the boundaries between online and offline life break down (Raine and Wellman 2012).

There are a variety of intriguing theoretical ideas about the role that virtual networks play in activism. These theoretical frameworks can be applied in the context of ego network approaches, which we will discuss below, but in general their scope is much broader. Earl and Kimport’s (2011) “leveraged affordances” approach is among the most widely cited and influential perspectives on the emergence of a new digital repertoire of contention. Their work intervened in early high-level debates about what effects – if any – the web and internet communication technologies have on activism. The idea at the core of their approach is that the web and internet communication technologies offer key “affordances” to activists, including reduced coordination costs for participation and organization, and the ability to organize and engage in collective action without being physically co-present. How these affordances are used influences the level of effect. If new digital affordances are not fully leveraged, then changes in degree or size are more likely, such as when more people show up at a protest or when participation in online or offline protest campaigns suddenly surges (Earl and Kimport refer to these as *scale changes*). If new digital affordances are more fully leveraged, then fundamental shifts in the way that social movements work may occur (Earl and Kimport refer to these as *model changes*), as when people with little background in social movements design and lead campaigns (Earl and Schussman 2003) and/or lead without organizations (Earl and Kimport 2011), and when individual participants self-organize (Earl et al. 2017).

Earl and Kimport contend that activists who skilfully leverage internet communication technologies may be creating a new repertoire of contention (see Tilly 1997) that is part of a shift away from long-term social movements and towards shorter-term campaigns. These short-term campaigns rely less on physical co-presence and the organizing capacities of social movement organizations and more on the coordination of “quick rushes of participation” that utilize new collections of tactics and can be triggered at low cost (Earl 2015; Earl et al. 2015). For example, drawing on Bennett and Fielding (1999), Earl (2015) talk about “flash activism” and “flash power.” Earl (2015: 41) states:

Online activism, though, can draw on a new model of power that draws its power from its quick but overwhelming force. The analogy that Bennett and Fielding make is to a flash flood—in a flash flood, the flood may be over in an hour, but the devastation that such quickly rising water can bring is nonetheless spectacular. Thus, while traditional movements draw power from consistency, flash activism draws power from ephemeral but nonetheless potent collective actions.



Earl and Kimport's (2011) theoretical framework is a full-fledged theory of digitally enabled activism that transcends any specific approach to network analysis, but it lends itself well to an ego-based approach. This is due in part to the fact that Earl and Kimport build on a foundation of offline social movements research where there are already long traditions of using ego network approaches. For example, research that focuses on *scale* changes could use ego network analysis to assess the relative importance of face-to-face connections with digital connections and could be used in ways that are fairly consistent with other ego-based network research on micro-mobilization, but with an additional focus on virtual ties. Although they do not directly use network measures, Maher and Earl (2017, 2019) demonstrate the importance of these ego-based effects on youth social movement participation. Research focusing on *model* changes is perhaps less suited to an ego networks approach but could focus on whether and how different configurations of online and offline relationships facilitate the kinds of learning and diffusion processes necessary for model changes. (See also, Zeynep Tufekci's (2017) "capabilities and signals model," and Fisher's (2019) work on "distributed organizing.")

A considerable amount of empirical research is now devoted to working out the details of these theories by answering focused questions about how social media and internet communication technologies are used by activists in contemporary campaigns (Earl et al. 2015), and to what effects (e.g., Vasi and Suh 2016; Abul-Fottouh and Fetner 2018); the organization and dynamics of social movement online communities (Caren, Jowers, and Gaby 2012); the role of network structure in information diffusion within activist social media networks (Starbird and Palen 2012; González-Bailón and Wang 2016; González-Bailón, Borge-Holthoefer, and Moreno 2013), political communication and message reception (Earl and Garrett 2017), and the formation of collective identities (Gerbaudo and Treré 2015). Ego-based approaches to analyzing virtual networks, or the interface of online and offline networks, is still an emerging area of research, but one that holds great potential for advancing social movement theory.

### Collecting Virtual Social Network Data

Data collection on digital social networks amongst social movement participants is also increasingly common. This has been done in several ways including studying hyperlinks amongst social movement organization websites, studying online petitions, and studying data produced through social media platforms such as Facebook and Twitter. Two of the most reliable ways of collecting data from the web are web scraping and making requests to application programming interfaces. For more on the details of these techniques, see Foster et al. (2016), Mitchell (2018), and McLevey (2020).

Unfortunately, some application programming interfaces only allow access to some of the data researchers may require. For instance, Twitter offers researchers the possibility to construct a wide variety of networks based on semi-stable social relationships (e.g., follower networks) or interactional networks (e.g., retweets, mentions). But, these networks lack important features – such as information about face-to-face relationships or the meaning and emotional weight of ties. That said, these data are not subject to many social and cognitive biases (e.g., recall bias, recency bias)



that influence what we learn about network structure through survey questions and interviews, which is also important to consider.

Our ability to collect data from the web is making new kinds of research possible, but it is critical that scholarly communities realize that the value of such research is only as good as our understanding of how the data are generated in the first place. Importantly, how people use platforms like Twitter, Facebook, Instagram, Reddit, TikTok, and YouTube and the organization and governance of online communities shape what we see and don't see as well as the meaning of different kinds of online ties (e.g., website links, "friend" ties on social network sites). We should not simply collect and naïvely trust web data because it is (relatively) available and easy to collect (Earl 2018a); much can be missed or misunderstood with such an approach.

Instead, it is extremely important to pair computational approaches to studying social media and internet communication technologies with other research, such as surveys, interviews, and participant observation. When it comes specifically to online networks and social movements, for example, this could involve pairing large-scale work on the structure of networks with focused observational work on how people make decisions about when to form, how to manage, and when to dissolve online connections. In many cases, this might involve mixed ego-network/socio-centric approaches, where digital collection has a socio-centric approach and linked survey data collection has an ego-network approach. Finally, it is essential that we hold digital data to the same measurement standards that we hold data collected by more established methods (Earl 2018a).

## CONCLUSION

In conclusion, social network processes are central to a number of important aspects of social movements such as micromobilization, identity formation, diffusion, and coalition formation. Social movement activity involves some relatively unique types of phenomena, and entails some relatively unique challenges for researchers. But as we have argued, not only are ego-network approaches particularly appropriate for studying particular types of problems (such as micromobilization), they can be a useful solution to certain challenges (the need to maintain anonymity for ethical reasons). Qualitative and mixed-methods approaches can be very fruitful for providing understanding about the meaning of social network relationships, and for shedding light on the mechanisms underlying the relationships between social network structures and social movement phenomena. Ego-network approaches hold promise for understanding important aspects of social network dynamics in the context of social movements. This is a topic that would benefit from further research. In addition to the obvious relevance of micro approaches, to fully understand social network dynamics, explanatory models need to take into account meso- and macro-level phenomena. Finally, the study of virtual networks is an exciting avenue for present and future research. Researchers need to be reflective about the relationship between online and offline networks, and to not assume that they are unrelated or separate phenomena. In some instances, online activism and networks may constitute new phenomena, but in many cases they may be intertwined with offline phenomena. Also, online networks and activities may either amplify preexisting processes, or they may entail new forms of activism. Researchers should be cautious about simply using digital data because they are easy to obtain. Standards for theoretical and methodological rigor should be applied to the study of online networks

and activism, in the same ways that they apply to offline networks and activism. In our view, coupling digital data collection with other methods, in mixed methods approaches, is a particularly promising approach.

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