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Peer influence on protest participation: Communication and trust between co-workers as inhibitors or facilitators of mobilization

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ABSTRACT

In this article, we investigate how communication and trust networks between employees affect participation in a strike. We analyze whether the strength of network relations is related to congruence in strike behavior using social network data on 59 Dutch workers. We find that private communication networks and trust networks lead to similar strike behavior. This finding indicates that networks not only promote protest mobilization but are also vehicles for demobilization, albeit through different network relations.

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1. Introduction

How do social networks affect protest participation? Several scholars have attempted to answer this question (e.g., Campbell, 2013; Lim, 2008; Passy and Giugni, 2001; Kitts, 2000; for an overview, see Krinsky and Crossley, 2014). It has long been acknowledged that individuals do not make the decision to participate in protests in a “social vacuum” (van Zomeren and Spears, 2009, p.667). An important proposition is that “social networks serve as channels of [...] mobilization” (Lim, 2008, p.961). The recruitment of individuals and the coordination of action depend on a network structure (Diani, 2012; Dixon and Roscigno, 2003; Kim and Bearman, 1997; Klandermans, 1984). Social networks, both formal movement networks and personal networks, are important channels for mobilization because networks facilitate access to information and help individuals to weigh the impact of their options (Klandermans and Oegema, 1987; Diani, 2004; van Laer, 2007; Mannarini et al., 2009). When individuals are asked to participate in protests by someone with whom they have a (personal) connection, the likelihood of participation increases (Lim, 2008). When individuals must make decisions about participation, they look to their social environment for guidance (Diani, 2012). People's social networks are the basis of this environment (Passy and Giugni, 2001; Passy and Monsch, 2014).

One proposition about the effect of networks on social movement participation is that a homogenous network favoring participation boosts participation, whereas a network consisting of groups with opposing opinions or interests has a

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hindering effect (Kitts, 2000; Tindall, 2002). Individuals who have these opposing groups in their network are likely to receive “varied information, opinions, and evaluations” (Tindall, 2002, p.418). Without opposition, an individual is likely to make a decision in favor of participation (Tindall, 2002; McAdam and Paulsen, 1993), whereas people who do experience opposition from others in their network who are important to them are likely to make the decision not to participate (Mutz, 2002). Santoro, Vélez and Keogh (2012) find that cross-cutting ethnic ties can also positively affect participation in ethnically-focused political and cultural protest, which suggest that the negative effect of heterogeneous networks on protest participation may be less straightforward.

In times of protest, it is not uncommon for individuals to be confronted with people in their social network who are in favor of the protest and people who oppose the protest. Our research question, therefore, is as follows: what mechanism determines the decision to participate in protests if people have ties to different opposing groups?

We empirically investigate the effect of network ties on participation during a labor strike of a cleaning brigade. The empirical part of our paper consists of two parts. First, we study the effect of three different communication networks of workers (i.e. private communication, work-related communication and strike-related communication) on their participation in a strike. We investigate the conditions under which each network affects protest participation. Second, we analyze the role of trust in one's peers - defined as the decision in taking the risk to unilaterally transfer the control over one's action, without any real (direct) commitment of the trustee (cf. Coleman, 1990: 97–99). We use trust as a moderator and investigate whether trust affects similar strike behavior, arguing that when a worker trusts a colleague, it is likely that information from this colleague is perceived as a valid base for making decisions on strike participation. We use social network data on 59 employees in an organization in which a strike occurred and where not all workers participated in the strike. Thus, our respondents have a theoretical chance of being exposed to opposing pressures from their colleagues. Our data was collected in 2012 using face-to-face structured interviews. We tested our hypotheses on a dataset of 3422 dyads.

Our research contributes to the understanding of individual participation and the role of networks as channels for protest diffusion. First, we investigate the effects of different communication networks and a trust network on protest participation, offering an initial explanation of the effect of these communication networks (Diani, 2003). Second, most prior research has focused on networks of activists only. Research designs with little or no variation in the individuals' social context regarding participation allows for limited generalization (Kitts, 2000; McAdam and Paulsen, 1993; Siegel, 2009). Our empirical research allows for an analysis of a mixed social context of participants and non-participants.

2. Theory

2.1. Social networks and mobilization

During mobilization for protest, social networks play a vital role by serving as channels of information (Snow et al., 1980). Individuals acquire information through their networks about the protest, the behavior of others and possible costs and benefits of participation and non-participation (Kitts, 2000). Contact with mobilizing ties is a necessary step toward participation (Kitts, 2000). Thus, via their (personal-) ties in their networks, individuals gather information about the opinions of others and about others' participation or intention to participate. Moreover, through networks, issues about the conflict are integrated into the “day-to-day experiences” of potential participants (Dixon and Roscigno, 2003, p.1296). Interactions with others in the network will create feelings of solidarity, which promote participation. This participation will then be motivated by social approval. Encounters with other (future) participants in the network will increase the costs of non-participation (Fernandez and McAdam, 1988).

Thus network relations promote mobilization and network actors will attempt to convince others to participate in protests. Without network actors who attempt to influence an individual to participate, participation in protest is highly unlikely. This seems to imply that all interactions between actors in social networks are targeted toward participation, and that interactions with actors who oppose participation in protests are absent or have not influence. However, people belong to multiple, potentially differing social groups, and individuals are potentially exposed to opposing views and pressures towards protest participation. Therefore, we argue that the effect of network ties can also de-motivate people for protest participation. When a protest is looming, a potential protester might find him- or herself surrounded by a group of people with mixed stances on the protest. Some will encourage participation, whereas others will discourage participation in the protest. The effect of these so-called “opposing pressures” in a network on an individual's decision to participate have been investigated by several scholars (e.g., Kitts, 2000; Tindall, 2002; Santoro et al., 2012). So far, however, the results are equivocal. Kitts (2000) and Tindall (2002) found that opposing pressures from ties in a network moderate protest and social movement participation. The individual receives mixed information, which may lead the individual to avoid making a decision at all (and thus to not participate). The form of opposition in these studies is based on opinions about the protest, and the opposing pressures consist of different opinions about the protest. Santoro et al. (2012) find that opposing ties, or “cross-cutting ties”, lead to *more* political participation. They investigate the effect of ties with both one's own ethnic minority group and with the dominant group and find that the existence of these so-called cross-cutting ties (e.g., ties with people from the other ethnicity group) increases the likelihood of participation because it exposes individuals to intergroup hostility, which motivates them to act on behalf of their own group. This hostility is necessary to transform conflict into overt (collective) action. Their research focused on hierarchical groups (i.e., minorities or majorities based on nationality), and opposition between groups was caused by a difference in demographics. The study demonstrates that ties with opposing groups or individuals can increase the

probability of participation. Although these authors' theory is based on more or less fixed characteristics (nationality), the proposed mechanism might also be applicable to opposition based on differences in opinions. Confrontation with opposite opinions might bring conflict to the surface and make the individual more prone to participate.

One situation, in which individuals are faced with possible opposing pressures and must make decisions about whether to join industrial protest, is a labor strike. When the union calls for a strike, employees are likely to experience opposing pressures from their social ties about whether they should participate. Dixon and Roscigno (2003) summarize the literature and argue that communication networks are a necessary conduit for strikes. Moreover, they argue that, as is the case for social movement participation, strike participation is dependent on the worker's embeddedness in his or her work network. A worker's network is not restricted to ties with a union but consists of management and colleagues. Colleagues play a fundamental role in the mobilization for a strike because they largely determine both the success of a strike and its social costs. People will participate only if they expect enough other people to participate (Granovetter, 1978; Kitts, 2000), and a work network creates immediate and future costs associated with not striking when colleagues do (cf. Dixon and Roscigno, 2003). Although the importance of social networks has been acknowledged, the effect of the countervailing pressures in day-to-day employment relations has not been addressed.

This study aims to investigate the effect of network embeddedness in groups with opposing pressures on individuals' decision to participate in protest. Individuals faced with uncertainty will look to others for guidance on their own behavior. People will look to others whom they consider successful or legitimate for directions about how to act and will imitate the behavior of these people. This *isomorphism* (DiMaggio and Powell, 1983) leads to a homogenization of behavior between these individuals; people are more likely to follow the behavior of those who are most like themselves (McAdam and Rucht, 1993). Macy, Kitts and Flache (1997, p.7) stress the idea of "friends conform"—that is, individuals follow or imitate those to whom they feel attracted. However, the individuals to whom an individual feels close to might not be homogenous in their opinions or behavior. Therefore, the mechanism of isomorphism does not answer the question of how ties to heterogeneous network actors affect behavior, particularly with regard to participation. We argue that important clues to these questions are found in the type of communication ties. We distinguish three types: protest communication ties, private communication ties and work communication ties. These types differ in the type of information that is exchanged as well as the social support with which they are potentially associated. Moreover, we argue that trust is an important moderator of the effect of informational ties on the decision to participate.

2.2. Which communication ties matter? Protest ties, private ties and work ties

One of the preconditions for influence is the diffusion of information between network ties (Myers et al., 2012; Lim, 2008; Passy and Giugin, 2001; Marsden and Friedkin, 1993). Based on this information, actors can make comparisons about the behavior and attitudes of others (Marsden and Friedkin, 1993). When a protest is looming, network actors will influence each other by exchanging information about the protest, their own contributions and the contributions of others. These protest communication ties are specifically directed at the protest, and we argue that these ties are channels for influence through information diffusion. By talking about an (upcoming) protest event, actors exchange not only information about their own intended behavior but also opinions and views about the protest. Such an exchange of opinions is known for its converging effect (Bakshy et al., 2012; Marsden and Friedkin, 1993). Thus, social networks affect an individual's 'cognitive toolkit' (Passy and Monsch, 2014). Lim (2008) argues that ties based on political activism are most effective for mobilization. The specific purpose of these ties (i.e. the attempt to influence others to show the same behavior regarding the protest) makes this type of tie particularly effective for mobilization. We expect that colleagues with whom a worker communicates about a protest will have a positive effect on acting the same during protest. We also expect that the effect of this communication increases with the strengths of protest communication ties. Therefore, we formulate the following hypothesis:

Hypothesis 1. *The strength of protest-related communication positively affects similar strike-behavior.*

These protest communication ties are unlikely to be the only ties between workers who have interacted before the protest. Therefore, we further distinguish between private communication ties and work-related communication ties. Talking about private or work matters does not necessarily imply that information about the protest is exchanged, but it may affect the decision to participate through another mechanism: social support or social pressure. People will participate in collective action when they are asked to do so by someone they know personally, and influence is more likely when the tie between two workers is stronger (Kitts et al., 1999). Research shows that an individual is more likely to imitate the behavior of others he or she considers to be a friend than the behavior of "strangers" (Lim, 2008; Kitts et al., 1999). Whereas protest ties work via protest information diffusion, we argue that private and work-related ties work via social support and pressure; these networks create social pressure for the worker to not defect from the alter(s). Not behaving like alter or a group of alters can have severe consequences, such as the loss of friendship or the loss of a long-standing cooperative relationship with one's peers. We expect that the strength of private and work related communication ties will have a direct positive effect on the likelihood that two people will show similar behavior in the case of network embeddedness in groups with opposing views on protest participation. Hence we predict.

Hypothesis 2a. *The strength of private communication ties positively affects similar strike behavior.*

Hypothesis 2b. *The strength of work-related communication ties positively affects similar strike behavior.*

When private communication and work communication ties already exist between workers, it is likely that these ties will affect protest communication ties. Although protest networks can develop independently of pre-existing networks, these pre-existing ties will make mobilization for protests easier. Existing communication ties offer the opportunity to diffuse information about the protest (Kerr and Siegel, 1954, in: Dixon and Roscigno, 2003). We expect private and work communication tie networks to affect the likelihood of protest ties.

Hypothesis 3. *The presence of private and work related communication ties positively affects the presence of protest communication ties.*

2.3. Trust networks

Previous research has shown that people follow the behavior of those they trust. Interaction between two actors in a network creates personal trust between these two actors, which leads to adherence to norms (McClurg, 2003). That is, when workers interact, a bond of trust forms between these workers that leads to an increased likelihood of imitation of behavior and the formation of coalitions (Mislove et al., 2007). We define trust following Coleman's (1990) description of placing trust as a decision in taking the risk to unilaterally transfer the control over one's action, without any real commitment of the trustee (Coleman, 1990, pp. 97–99). Trusted others provide guidelines about the “right” way to act and about who is reliable in times of protest (Kane et al., 2005). We expect that trust will have a direct effect and that workers will be more likely to imitate the behavior of those they trust. Therefore, we formulate the following hypothesis:

Hypotheses 4. *Higher levels of trust positively affect similar strike behavior.*

2.4. Moderation effect of trust

In addition to the direct effect of trust on participation, trust may moderate the effects of the three communication ties. To begin with its effect on protest communication, we argue that when a worker trusts another person, it is likely that information from the other person is perceived as more valid for the decision of whether to participate (e.g. Granovetter, 1985; Klandermans, 1984; Passy and Giugni, 2001; Snow et al., 1980). Klandermans (1997) argues that to be mobilized, it is necessary that the source of information is perceived as trustworthy. Born et al. (2013a) find that trust is used as a filter for information. Passy and Giugni (2001) state that trust is crucial; when a worker receives information but the source of information is not trusted, his or her participation is very unlikely. Trust in networks can thus facilitate the decision to participate by reducing the costs of participation and by providing necessary support (Benson and Rochon, 2004). We expect a similar effect when the information is directed toward non-participation.

Hypothesis 5a. *The positive effect of protest communication ties on same strike behavior increases when trust is higher.*

Second, we examine an interaction effect between trust and the private and work related communication networks. Trust affects the expectations of other's behavior (Ostrom, 2003), for instance about whether alter keeps his or her promise to support the ego. Such a promise may concern an agreement to go on strike. For a worker who can rely on the participation of others, engaging in a strike is less risky than for a worker who is uncertain about his or her colleague's word to join the strike (and thus runs the risk of an uncomfortable confrontation in the picket line). Likewise, the promise of a colleague to refrain from striking and keep working constitutes an important determinant of a workers decision. Showing up at work while others are on strike unexpectedly, may come as an unpleasant surprise: a worker does not want to be the single colleague defecting from a norm to participate, nor does he or she wants to responsible for all the work. Therefore, the trust that others stick to their word and show support during a vulnerable situation such as labor strike, will increase the effect of the social support and peer pressure executed through social ties. Moreover, Ostrom (2003) argues that (face-to-face) communication increases shared norms on reciprocity, which in turn strengthen the effect of trust on cooperation (Ostrom, 2003). We therefore expect an interaction effect of trust and communication:

Hypothesis 5b. *The positive effect of private communication ties on same strike behavior increases when trust is higher.*

Hypothesis 5c. *The positive effect of work communication ties on same strike behavior increases when trust is higher.*

3. Methods

3.1. The case study: a cleaning brigade

Our study was conducted in a cleaning company which was affected by a sector strike under the motto “Clean enough!” (“Schoongenoeg!”, which is a figure of speech for “We had enough!”) in 2012. The strike lasted 105 days (from January 2nd, 2012 to April 17th, 2012) and was the longest strike in the Netherlands since 1933. The strike's goals were a moderate wage increase of about 5% and it was labeled as a strike for respect: compared to the national minimum wage, even experienced and older cleaners in the Netherlands earn only a maximum amount of about 120% of the national minimum wage (which was

8.72€ per hour in 2011). Further, the collective agreement of the cleaning sector differed from regular collective agreements in some ways: While in other industries absenteeism due to sickness is paid for, the collective agreement of the cleaning sector did not provide such an arrangement by neither the insurance company nor the employer. Employees and unions wanted to change especially this part of the former collective agreement and labeled the issue about the payments in time of sickness as an issue of “respect”. They asked for the same regulations that apply to almost all other Dutch employees who receive their whole salary during the first days of sickness absenteeism. After settlement, the strike resulted in an increase of salaries by 4.85%, better training opportunities and a general agreement for supervision of cleaners concerning their stress at work and improved working conditions for temporary agency workers. Further, employer and union agreed to set up an experiment to pay the first days of sickness leaves for a certain period of time.

The cleaning firm participating in the study at hand belongs to one of the five biggest cleaning companies in the Netherlands. In particular, one on-site managed cleaning brigade in one Dutch firm was analyzed. To ensure anonymity of the affected parties, the client's firm will be called “Office”. At times of the study, the cleaning company at Office provided an exceptional working sphere compared to other cleaning companies: While fluctuation is usually pretty high in the cleaning sector of about 15%–35% each year (EFCL, 2010; FNV Bondgenoten, 2011), the fluctuation rate at the cleaning company analyzed was below 5%. In total, 60 employees work at the cleaning company at Office, 6 additional employees are hired via a temporary employment agency.

Cleaners are organized in five teams. Four teams are responsible for either one particular building or several groups of buildings. One team serves as a cross-departmental brigade and operates heavy electrical machines and devices. Mostly, individual cleaners have specific tasks, e.g. are cleaning their own route with certain rooms. However, most buildings also require some team work in the sense that halls or other bigger conference rooms are cleaned up jointly by several cleaners.

3.2. Data collection

We conducted structured interviews in March and April of 2012. Of the 66 cleaners in the cleaning brigade, 7 cleaners refused to participate in the study, leading to a total of 59 respondents. Of our respondents, 13 cleaners participated in the strike, 45 cleaners did not participate, and one cleaner participated but returned to work before the strike was settled. The cleaners were personally interviewed with a paper-and-pencil survey. The questionnaire contained closed questions about individual characteristics, such as age, gender, and education; work-related questions, such as the respondent's working position, tasks and (possible) conflicts with colleagues and supervisor; questions about strike behavior, attitudes and (participation) norms; and network questions. Further, some open questions were included about relevant episodes of the work environment, relation to supervisors and relations among the cleaners. Concerning the cleaner demographics, not only the low turn-over rate in the company (about 1% per year) was exceptional, but also the gender composition (14 cleaners were male, 45 cleaners were female). The average age was 41.4 years. 76% of all interviewed cleaners were born in the Netherlands, 24% were born outside the Netherlands (the main other countries of origin are Turkey, Morocco and Poland). Concerning hierarchy, we have four cleaners in our sample that also execute supervising functions. All other cleaners are equal in terms of their hierarchical status within the company.

3.3. Measurements

The dependent variable was a dyad of *same strike behavior* between two workers. When there is influence from one worker on another, this situation results in these workers showing similar behavior (c.f. Bikhchandani et al., 1998; Marsden and Friedkin, 1993). The dependent variable was grouped into three nominal categories: 0 = both workers do not strike; 1 = workers show different strike behavior; 2 = both workers strike. The reference category for this variable was category 1, in which workers show different strike behavior, so we could compare this group of workers to the two categories in which workers behaved alike with regard to their strike behavior.

To measure the different types of communication networks (i.e., private communication ties, work-related communication ties and protest-related communication ties), we asked the cleaners about their contact with others in their network prior to the strike. We offered the cleaners a list with the names of all of their colleagues and asked them to indicate how frequently they talked about private matters, talked about work matters and talked about the strike in the three month previous to the first strike day. Private communication was measured with the item “How often do you discuss private matters with ...”; work-related communication was measured with “How often do you discuss work related matters with ...”; and strike-related communication was measured with “How often did you discuss the strike with ...”. Respondents could rate the intensity of the contact between “1” (minor communication) and “7” (very frequent communication). Colleagues with whom the respondents had no contact at all were rated “0”. All communication ties were determined retrospectively by asking the respondents to score the ties as they were in the three month prior to the strike.

We based our measurement of trust on Glaeser et al. (2000), who argue that this is the way to measure actual trusting behavior rather than attitudinal trust. The trustworthiness of colleagues was measured with one item: “Would you lend €50 to ...”. Lending money or not is motivated by the expectation that the one who borrowed the money will return the money. Such expectations are based on sharing norms, e.g. on the importance of keeping (implicit) promises. Respondents were offered a list of all of their colleagues and were asked to specify to which colleagues they would lend money. This dummy variable consists of two categories, “no trust” (= 0) and “trust” (= 1).

We also included several control variables which are regularly found to account for network context and homophily in networks. First, we controlled for union membership. As argued above, ties based on activism appear to be most effective in mobilizing people for protest (Lim, 2008). Ties to affiliations such as a social movement or the union are effective means of mobilization, and union members are more inclined to participate in the strike (Akkerman et al., 2013). Second, we included a context variable indicating whether the cleaners work in same building to control for spatial proximity (cf. Snow et al., 1980). Cleaners who never work in the same building, are less likely to interact with each other than cleaners who work in the same building, although regular meetings were held for all workers, in particular during the strike. Thirdly, nationality varied within our group of respondents, which might create, for example, language barriers. Having the same nationality not only facilitates communication, it indicates similarity in cultural background and shared norms, e.g. about protesting and contesting employer authority. Finally, we controlled for identical gender (c.f. Ibarra, 1992; Louch, 2000a,b). For all of these network context variables, we created binary variables indicating whether two workers on the same dyad were similar to each other (0 = not similar; 1 = similar).

4. Analyses and results

We start our analyses with a descriptive examination of the four networks. We present the network graphs of the protest, private and work communication and the trust network, after which we report on several commonly used network descriptives. Next, we proceed with answering to what extent network embeddedness affects protest participation. We first analyze our data with a *Multiple Regression Quadratic Assignment Procedure* (MRQAP) with the double semi partialling permutation method (Dekker et al., 2007). MRQAP analysis (in contrast to linear regression) addresses the issue of dyadic autocorrelation, i.e., the potential interdependence that exists between observations. One common problem for analyzing social network data is the interdependency between observations. The likelihood that actor B has a relation with actor A is not independent from the relation actor A has with actor B. This dyadic autocorrelation problem violates the assumption of independence between measurements of OLS regression, increasing the risk of a Type I error (incorrect rejection of the null hypothesis) (ibid.). MRQAP is a non-parametric method that is robust against the autocorrelation of relational data (Bowler and Brass, 2006; Kilduff and Krackhardt, 1994). The basic idea of any QAP analysis is that multiple permutations are done, which leads to multiple distributions of the coefficients, which forms a sampling distribution to which the empirical coefficients obtained from the observed data set are compared (Dreiling and Darves, 2011). With this technique, we examine whether the embeddedness in the communication networks and the trust network affect the probabilities that both actors in the dyads act in concert during a strike (1: either both on strike or both refrain from striking) or behave differently (0: one of the actors is on strike, while the other is not). For MRQAP analyses, we used unique, directed dyads ($N = 3422$).

Although this analysis informs us about similarity in strike behavior, it only distinguishes between two potential behavioral options, while in reality there are three distinctive options: the two actors behave differently; the two actors refrain from striking; and the two actors both join the strike. Because it is theoretically possible that the decisions for participating together versus not participating together are caused by different mechanisms (e.g. information or social pressure), we lose information using the dichotomous variable in the MRQAP analyses. While the MRQAP can handle continuous and dichotomous dependent variables (Borgatti et al., 2013), it is not able to analyze multinomial categorical dependent variables. Therefore, we retest our hypotheses with a Multinomial Logistic Regression Analysis (MLRA), which is more informative on the question what joint behavior is chosen and how these choices are affected by the four networks. With MLRA, we analyze “predictors for a dependent that consists of “unordered group classifications” (Petrucci, 2009, p.194). Advantages of MLRA are that it does not require normally distributed predictors, both continuous and categorical independent variables can be used simultaneously, and odds ratios are used as estimators. Odds ratios are helpful to interpret categorical independent variables (Petrucci, 2009). The MLRA, however, does not control for autocorrelation due to the dyadic structure of social network data, as explained above. In order to keep the interdependence between relations in the regression analyses as low as possible with dyadic data, we used the non-directed dyads in the MLRA, by symmetrizing the relation between two actors on a dyad (using the lowest score), resulting in 1711 cases. Comparing the results of both methods, we conclude that the results of our findings are fairly stable.

4.1. Description of the networks

The starting points of our analysis are the networks as they are depicted in Fig. 1, Fig. 2, Fig. 3 and Fig. 4. These figures are a visualization of whether, prior to the strike, strikers and non-strikers had ties with each other or mostly had ties among their “own” group (i.e., workers who show the same behavior). The graph in Fig. 1 on strike-related communication shows a strong division between the later groups of strikers and non-strikers. Whereas the later strikers had contact with workers who eventually went on strike as well as with workers who did not, several non-strikers interacted only with other future non-strikers. The graph in Fig. 2 shows the private communication network. Private communication seems to be somewhat divided between strikers and non-strikers; there are a number of later non-strikers who only had contact with other later non-strikers. The later strikers, however, had contact with workers from both groups. The graph in Fig. 3 shows the work-related communication network. Strikers and non-strikers seem to be connected mostly with workers who later show the same behavior (i.e., striking or non-striking). Two workers only had contact with each other (i.e., they form a separate “network” together), and both of these workers would become strikers. Fig. 4 shows that trust networks are somewhat

Fig. 1. Strike-related communication in network.

divided among strikers and non-strikers. The different clusters are linked by some workers, but they seem to consist of mostly later strikers or mostly later non-strikers. There are two small groups that consist of later non-strikers only.

Table 1 reports the descriptive statistics of the networks and shows that the overall density of the communication networks is rather low. Reciprocity is lowest for the strike communication network (reciprocity = .701) and highest for the work-

Fig. 2. Private communication in network.

Fig. 3. Work communication in network.

related communication network (reciprocity = .800). The reciprocity of the trust ties is .526; approximately half of the ties are reciprocal.

4.2. Network relations and similar participation behavior during a strike

First, we estimate our models with MRQAP. We start with discussing the effects of the network context variables, reported in Table 2 under model 1. We find that when both workers in the dyad have the same membership status (i.e. are both union members or both non-members), this positively and significantly increases the likelihood of the same strike behavior (standardized coefficient = .333; $p = .000$). In this model, we find no significant effects for spatial proximity (i.e. whether two workers work in the same building or not), nor for nationality or gender.

4.3. The role of communication

Next, we focus on the role of communication ties between workers. In our second model, reported in Table 2, we test hypothesis 1, which predicts that the strength of protest communication ties positively affects same strike behavior. In our MRQAP analysis, we find no significant effect of protest communication on the likelihood of same strike behavior. This indicates that information exchange about the protest is not enough for one worker to influence the strike behavior of another.

Fig. 4. Trust in network.

Contrary to private and work communication, the content of the communication probably matters here: they might have argued about it because of different opinions or agreed because of the same opinion. This finding contradicts an important assumption in mobilization theory which considers protest networks as one of the main determinants of participation. The results with regard to our control variables remain the same as in the first model.

Next, we test hypothesis 2a and hypothesis 2b in model 3, Table 2. Hypothesis 2a predicts that private communication positively affects same strike behavior. We find that private communication ties positively and significantly affects similarity in strike behavior (standardized coefficient = .08, $p = .011$). It indicates that when two workers have stronger ties in the private communication network, they are more likely to show the same strike behavior. Thus, as we expected, the social pressure that workers might experience from their private ties to act in a certain way increases the likelihood that two workers will show the same behavior during a strike. We find no significant results for hypothesis 2b, which predicts that work-related communication positively affects imitation. These findings, combined with the results of the protest communication network, suggest that social pressure in private ties has more impact on mobilization than information about the strike. Private communication ties have the strongest effect on the same strike behavior. It may be easier to diverge from colleagues than it is to diverge from friends. In this model, we find a negative, significant effect of working in the same building (standardized coefficient = $-.04$; $p = .091$). For now, this finding, that working in the same building negatively affect same strike behavior, is difficult to interpret. The results of the MLRA in the next section will shed some more light on this finding.

Hypothesis 3 predicts that private and work-related communication positively affects protest communication ties. We find that private communication ties are significantly positively associated with protest communication ties (standardized coefficient = .23, $p = .000$). Moreover, when colleagues communicate about work, they are also more likely to communicate about the strike (standardized coefficient = .37, $p = .000$). This finding confirms our expectations that a protest network is (partly) dependent on the existence of other ties between workers. This supports hypothesis 3.

Next, we investigate the effect of trust on same strike behavior. Hypothesis 4 predicts that trust is positively related to same strike behavior. Table 2 shows the results of this test under model 4. We find that ties between two workers in the trust network positively and significantly affect same strike behavior (standardized coefficient = .053, $p = .021$). Hypothesis 4 is

Table 1

Descriptive statistics of the communication and trust networks.

	Density	Average Degree	No. of ties	Arc based reciprocity
Protest communication	.311	17.966	448	.701
Private communication	.379	21.983	670	.766
Work communication	.356	20.629	486	.800
Trust	.061	3.542	209	.526

Table 2

Results of the MRQAP analyses.

	Model 1	Model 2	Model 3	Model 4	Model 5
Union membership	.333***	.322***	.330***	.330***	.329***
Building	-.010	-.021	-.036*	-.039*	-.039*
Nationality	.035	.036	.037	.037	.037
Gender	-.018	-.017	-.018	-.020	-.020
Protest communication		.035	.016	.010	.001
Private communication			.085**	.067**	.074**
Work communication			-.030	-.033	-.041
Trust				.053**	.052**
Protest comm.*trust					-.001
Private comm.*trust					-.014
Work comm.*trust					.019
R ²	.112	.114	.118	.120	.120

Note: *** p < .01; ** p < .05; * p < .10.

therefore supported. Thus, when two workers trust each other, the likelihood of these two workers showing the same strike behavior increases. Private communication remains positive and significant as well. This is an important finding that indicates that a trust relation and private communication both are important when workers want other workers to show the same behavior. This relation seems more important than communication about the protest itself, and personal relations seem to trump protest-related information exchange. The results regarding our network variables remain consistent.

4.4. The full model

In the last model, we add our interaction variables to further investigate the moderating effect of trust on the effect of different types of communication, to test [hypothesis 5a](#) (the positive effect of protest communication ties on same strike behavior increases when trust is higher), [hypothesis 5b](#) (the positive effect of private communication ties on same strike behavior increases when trust is higher) and [hypothesis 5c](#) (the positive effect of work communication ties on same strike behavior increases when trust is higher). Model 5 in [Table 2](#) shows the results. We find no significant effects of interaction between any of the communication networks and the trust network. The effects from the prior models, remain consistent. This means that trusting each other does not increase the effects of information (protest communication ties) or social pressure (private and work related communication ties), at least not significantly. These findings refute hypotheses [5a](#) through [5c](#).

Summarizing the results of our MRQAP analyses, we find that private communication ties and trust ties positively and significantly affect the likelihood that two workers will show the same strike behavior. That is, when two workers communicate about private matters or indicate that there is a trust relation between them, these two workers are significantly more likely to do the same when a strike occurs. This is an important and new finding in strike-related network research. Until now, protest-related networks were considered a main determinant of participation in protest. However, we found that private ties or a trust relation are important determinants for workers to decide what to do when a protest looms.

4.5. Both on strike, or both not on strike?

In this section, we report on the retesting of our hypotheses by performing several multinomial logistic regression analyses (MLRA). Re-testing our hypotheses with MLRA allows us not only to investigate the difference between workers showing similar or different strike behavior but also offers the opportunity to investigate whether there is a difference between workers who both participate and workers who both do *not* participate. Thus, the MLRA allows us to test whether participating together is caused by different mechanisms than not participating together.

A first step before performing MLR is to check for multi-collinearity ([Petrucchi, 2009](#)). The correlations between the different independent variables can be found in [Table 3](#). Although the independent variables all correlate significantly to one another, there is no multi-collinearity problem. The highest correlation is between private communication and work communication ($r = .655$).

Table 3
Correlation analysis of independent variables.

	1	2	3
1. Protest communication			
2. Private communication	.466**		
3. Work communication	.510**	.655**	
4. Trust	.366**	.467**	.394

Notes: ** = $p < .01$.

The dependent variable was not included in the correlation analysis because this variable is categorical.

Next, the dependent variable is grouped into three nominal categories: 0 = both workers do not strike; 1 = workers show different strike behavior; 2 = both workers strike. The reference category for this variable is category 1, in which workers show different strike behavior, so we compare this group of workers to each category in which workers showed similar behavior. We followed the sequence of models as we did for MRQAP analysis. The chi-squares and likelihood ratio tests of our models can be found in Table 4. When the significance of the likelihood ratio test is less than .05, a good model fit can be assumed (Petrucci, 2009).

4.5.1. The non-strikers

We begin by comparing the group in which two workers in the dyad were both non-strikers with the group in which workers showed different strike behavior. The results of these analyses are reported in Table 5. In the discussion of the MLRA, we focus on the full model (model 5, in Table 5). We find that in the full model, the three communication networks do not have a significant effect on the likelihood that both workers in the dyad did not participate. Hence, for this group, we reject hypothesis 1 (the strength of protest-related communication ties positively affect the same strike behavior) hypothesis 2a (the strength of private communication ties positively affect same-strike behavior) and hypothesis 2b (the strength of protest related communication ties positively affect same-strike behavior).

We find that trust is important for two workers to both not participate. The more two workers in a dyad trust each other, the more likely they are to both not participate, or put differently, the less they trust each other, the less likely it is that they both refrain from striking ($B = .916$; $\text{Exp}(B) = 2.499$, $p = .054$). When there is a trust relation between two workers, they are 2.5 times more likely to both not participate than to show different strike behavior. Hypothesis 4, therefore, is accepted for non-participation: higher levels of trust positively affect the same strike behavior. We found no evidence for interaction between the communication networks and the trust networks as none of interaction effects are significant. The hypotheses about the interactions between communication networks and trust are therefore rejected. As in the MRQAP, equal union membership increases the likelihood of both workers not striking ($B = 1.270$; $\text{Exp}(B) = 3.559$, $p = .000$), and the chances of both of these workers not participating are approximately 3.5 times greater than these workers showing different strike behavior. Lastly, we found that having the same nationality increases the likelihood of both workers not participating ($B = .367$; $\text{Exp}(B) = 1.444$, $p = .008$).

4.5.2. The strikers

When we compare the group of workers who both strike with the workers in a dyad who show different behavior, we find different results than we find for the non-strikers. Whereas trust networks trigger similarity in *non*-participation,

Table 4
Model fit of the models.

Model	Model Fitting Criteria			Likelihood ratio tests		
	AIC	BIC	–2 log Likelihood	Chi-square ^a	df	Sig.
Model 1						
Intercept only	363.758	374.648	359.758			
Final	153.550	207.999	133.550	226.208	8	.000
Model 2						
Intercept only	553.853	564.472	549.583			
Final	333.233	398.571	309.233	240.350	10	.000
Model 3						
Intercept only	783.246	794.135	779.246			
Final	565.818	652.935	533.818	245.427	14	.000
Model 4						
Intercept only	811.741	822.630	807.741			
Final	593.481	691.488	557.481	250.260	16	.000
Model 5						
Intercept only	811.741	822.630	807.741			
Final	599.226	729.902	551.226	256.514	22	.000

Notes: ^a "Computed by subtracting –2 log likelihoods of the final model from intercept. A larger chi-square suggests a greater contribution of the independent variables to the dependent variable than the intercept-only model. Statistical significance ($< .05$) suggests good model fit." (Petrucci, 2009: 200).

Table 5

Results of the MLR analyses.

3 Category strike behavior	Model 1			Model 2			Model 3			Model 4			Model 5		
	B	Exp(B)	Sig.	B	Exp(B)	Sig.	B	Exp(B)	Sig.	B	Exp(B)	Sig.	B	Exp(B)	Sig.
Both workers do not strike ^a															
Intercept	-.282		.066	-.279		.070	-.306		.048	-.316		.042	-.327		.035
Same membership	1.287	3.621	.000	1.286	3.619	.000	1.281	3.600	.000	1.274	3.576	.000	1.270	3.559	.000
Same Building	-.164	.849	.419	-.152	.859	.479	-.269	.764	.246	-.298	.743	.203	-.297	.743	.207
Same nationality	.337	1.401	.014	.337	1.401	.014	.356	1.427	.010	.361	1.434	.009	.367	1.444	.008
Same gender	-.013	.987	.905	-.014	.986	.898	-.016	.984	.887	-.013	.987	.910	-.010	.990	.930
Protest communication				-.010	.990	.849	-.042	.491	.491	-.049	.952	.430	-.068	.934	.339
Private communication							.130	.097	.097	.080	1.083	.330	.159	1.172	.109
Work communication							-.024	.737	.737	-.040	.961	.582	-.062	.940	.448
Trust										.631	1.879	.033	.916	2.499	.054
Protest comm.*trust													.033	1.034	.836
Private comm.*trust													-.277	.758	.122
Work comm.*trust													.104	1.109	.555
Both workers strike ^b															
Intercept	-3.486		.000	-3.594		.000	-3.641		.000	-3.651		.000	-3.615		.000
Same membership	2.599	13.456	.000	2.628	13.845	.000	2.631	13.886	.000	2.622	13.765	.000	2.624	13.788	.000
Same building	1.494	4.453	.000	1.025	2.787	.004	.894	2.446	.022	.862	2.367	.029	1.058	2.880	.012
Same nationality	-.303	.739	.290	-.340	.712	.241	-.313	.731	.281	-.304	.738	.295	-.325	.723	.267
Same gender	-.170	.884	.513	-.154	.857	.558	-.168	.845	.524	-.164	.849	.535	-.144	.866	.293
Protest communication				.291	1.337	.000	.256	1.292	.006	.248	1.282	.009	.216	1.241	.073
Private communication							.242	1.274	.050	.196	1.217	.127	.305	1.356	.073
Work communication							-.109	.897	.388	-.122	.885	.339	-.327	.721	.079
Trust										.580	1.787	.221	.052	1.054	.949
Protest comm.*trust													.096	1.101	.669
Private comm.*trust													-.325	.722	.239
Work comm.*trust													.477	1.612	.100

Note: the bold values represent the significant results.

^a The reference category is worker 1 does not strike, worker 2 strikes.^a These data compare “both workers do not strike” and the reference group (“Workers show different strike behavior”).^b These data compare “both workers strike” and the reference group (“Workers show different strike behavior”).

communication networks trigger similarity in *participation*. When two workers communicate about the strike, the likelihood of these two workers both participating increases ($B = .216$; $\text{Exp}(B) = 1.124$, $p = .073$). This finding confirms hypothesis 1, which states that the strength of protest communication ties positively affect joint strike participation. The same applies to private communication ties: when two workers communicate about private matters, these workers are more likely to strike together ($B = .305$; $\text{Exp}(B) = 1.356$, $p = .073$). This confirms Hypothesis 2a (the strength of private communication ties positively affect same strike behavior). We find a negative effect for work communication ties; when two workers communicate about work, they are more likely to show different strike behavior than they are to both go on strike ($B = -.327$; $\text{Exp}(B) = .721$, $p = .079$). Hypothesis 2b, which states that the strength of work communication ties positively affects same strike behavior, is therefore rejected. Talking more about work, reduces the changes that two cleaners both go on strike, or put differently: the less two cleaners talk about work, the changes increase that they both chose to go on strike, compared to acting differently.

For the group of strikers, we find no effect of trust or of interaction effects. When we consider our control variables, we find a significant effect of union membership ($B = 2.624$; $\text{Exp}(B) = 13.788$, $p = .000$). When two workers in a dyad hold the same union membership status, they are approximately 13 times more likely to both join the strike than to show different strike behavior. Moreover, when two workers work in the same building, they are almost 3 times as likely to both go on strike ($B = 1.058$; $\text{Exp}(B) = 2.880$, $p = .012$).

In the introduction of the results section we motivated the use of two statistical tools for testing our hypotheses. We used the less informative MRQAP to estimate the effects on joint or different behavior, corrected for interdependency of observation in a dyadic data structure. We re-tested our hypotheses with MLRA, in order to discriminate between joint strike behavior and joint non-strike behavior, even though MLRA procedure does not correct for auto correlation in the data structure. Table 6 compares the outcomes of the two procedures. Any effects not present in the MRQAP, but present in the MLRA can be caused by overestimation of the effects due to autocorrelation (leading to Type I errors). Feeling less confident about effects showing up in the MLRA only, we focus our conclusion on similar results of both methods.

Bearing this in mind, we can conclude that communication networks and trust networks differ in their effects on same strike behavior. Whereas trust is most important for non-participation, communication networks are most important for two workers to participate together. This distinction between the two groups could also explain why we find no significant effect of protest communication ties in our MRQAP analysis. The number of dyads of workers who both did not participate is larger than the number of dyads of participants, which could have overpowered the effects of the communication network ties. However, our analyses show that protest communication is not the most important factor for two workers to show similar

Table 6

Comparing the outcomes of the MRQAP and the MLRA.

	MRQAP	MLRA		Outcomes MRQAP vs MLRA
	Similar strike behavior vs different behavior	Both non-strike vs different strike behavior	Both on strike vs different strike behavior	Equal outcome
Hyp. 1 protest ties	n.s.	n.s.	+	–
Hyp. 2a private ties	+	n.s.	+	yes
Hyp. 2b work ties	n.s.	n.s.	–	–
Hyp. 4 trust ties ^a	+	+	n.s.	yes
Hyp. 5a–c Interactions communication ties with trust	n.s.	n.s.	n.s.	yes
Same union membership	+	+	+	yes
Same building	–	n.s.	+	–
Same nationality	n.s.	+	n.s.	–
Same gender	n.s.	n.s.	n.s.	yes

^a Hypothesis 3 concerns the association between protest communication ties and private and work related communication ties, and is not subjected to the retests.

strike behavior. When one worker wants to convince another *not* to participate in a strike, a trust relation is important, whereas for participation in a strike (in addition to protest communication), having a private relation is important. These effects of private communication ties and trust ties are new findings in strike research.

5. Conclusion and discussion

We began our research with the question of how network relations with different groups affect an individual's decision to participate in protests. Our research shows that private communication ties and trust network ties increase the likelihood of the same strike behavior. This is not limited to participation; workers seem to decide like others with whom they have close contact, and ties can influence workers toward non-participation.

We found that private communication ties increase the likelihood of same strike behavior, especially participation in a strike. Trust also increases the likelihood of same strike behavior, but this is mostly important for non-participation. When two workers trust each other, this significantly increases the odds that these two workers will both not participate in a strike. These are important findings for two reasons. First, they indicate that mobilization for non-participation needs to be conducted via different channels than mobilization for participation. Whereas private communication ties are important for mobilization for participation, trust seems to be especially important when one worker wants to influence another to refrain from striking. Workers will act like others they trust. Born et al. (2013b) indicated that support for non-participation increases the probability of inaction. This research also shows that workers tend to show the same behavior as trusted others. Second, these findings are important because they show that protest networks might not be the main determinant with regard to strikes. In our overall model, we found no effect of protest communication ties. We did find an effect of protest communication ties on the likelihood of two workers both striking, but this effect was smaller than that of private communication ties. Private ties might create an additional pressure for workers to act like others because workers do not want to defect from those with whom they have (close) relations. These pressures seem to be more important than the information provided through protest communication ties.

In our Dutch case study, labor relations may have been relatively good, and engaging in strikes in such cases action probably involves taking a high risk, for instance of disturbed relations afterwards (Thommes and Akkerman, 2013; Thommes et al., 2015). This has two implications for the external validity of our cases study. First, investigating such a 'difficult' case for mobilization provides a conservative test of our hypotheses. This allows for a generalization of our conclusions to contexts in which protest is more common and inflicts lower risk of loss deterioration of social relations among workers and between management and workers. In addition, studying protest participation in organizations in which employees have a daily opportunity to build trust relations, may overestimate the effect of trust. Even though the trust in this network is not particularly high, trust may be less common in other protest context (for instance in demonstrations, in which potential participant have lower levels of previous interaction). Therefore, the levels of trust found in labor relations may be uncommon in other forms of protest.

Our study contributes to the understanding of individual participation and the role of networks in two ways. First, we investigated the effects of network relations with different groups on an individual's decision to participate in protests. We studied what individuals decide in times of protest when they are related to with both strikers and non-strikers and found that private communication and trust have a significant effect on same strike behavior. This result is a first step in explaining and predicting the effects of the different pressures workers may experience. Second, our research addresses the persistent selection bias in previous empirical studies by investigating an entire network that consists of both strikers and non-strikers. This approach allowed us to investigate actual participants and to shed light on why workers choose *not* to participate. By investigating a complete network, we provide a first step toward solving this methodological problem.

Our research has several limitations that should be addressed in future research. First, we investigated the network at one point in time; however, networks are not static (Takács et al., 2008). Although we included controls in order to account for homophily-tendencies in the networks, longitudinal data would have some advantages over this static approach. We are only able to offer conclusions about the relationships as they were at the time of our data collection, but relationships change over time and are affected by collective action, as shown by Thommes and Akkerman (2013). It would be interesting to investigate the effects of opposing ties in longitudinal research. Additionally, although the results of the MRQAP and the MLR are quite similar, it must be noted that the MRQAP is more suitable to address the independence of our network measures. However, the MLR offers a first step in explaining the difference between mobilization for participation and mobilization for non-participation. Lastly, due to the timing of our research, the results regarding protest communication must be interpreted with caution. At the time of data collection, the strike was already going on. Although we specifically asked respondents to rate the communication as it was three months before the strike happened and we present an initial, important indication of what causes the imitation of protest behavior, we cannot state with certainty whether workers showed similar behavior because they communicated about the strike (see also Bakshy et al., 2012) as retrospective answers might be less reliable. Thus, our research offers a first step in investigating associational networks, while the causal effect of strike communication must be interpreted with some caution.

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