THE RELATIONAL ANTECEDENTS OF INTERPERSONAL HELPING: "QUANTITY," "QUALITY," OR BOTH?

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Abstract

Having a large network of colleagues means having several opportunities to help those colleagues, as well as a higher chance of receiving requests for help from them. Employees with large networks are therefore expected to help more in the workplace than those with small networks. However, large networks are also associated with cognitive costs which may reduce the focal employee's ability to both recognize the need for help and engage in helping behaviors. For this reasons, we assert an inverted U-shaped relation between the size of an ego's social network and her engagement in helping behavior. However, high-quality relationships imply higher mutual understanding between the actors, and hence lower cognitive costs. In turn, the position (and threshold) of the curve between network size and interpersonal helping should be influenced by the quality of the relationship between the provider and the beneficiaries of help. Analysis of employee-level, single-firm data supports these ideas, providing preliminary evidence that relationship quality compensates for the difficulties that may arise from having large social networks.

Keywords: Interpersonal helping, relationship closeness, social networks.

INTRODUCTION

Within an organization, employees often engage in behaviors that are helpful to colleagues, for example, by supplying information to those who have been absent or are to engage in a new task, or offering assistance to those with heavy workloads (P. M. Podsakoff, MacKenzie, Paine, & Bachrach, 2000; Van Der Vegt, Bunderson, & Oosterhof, 2006; Van Dyne & LePine, 1998). Such interpersonal helping in the workplace is important for the effective functioning of the organization. It preserves relationships, enhances team spirit and cohesiveness, leading to improved communication and coordination, and overall performance (P. M. Podsakoff et al., 2000; Van Dyne & LePine, 1998). It is one of the factors that allow firms to prosper, expand, and grow.

It is thus hardly surprising that research has been investigating which factors may favor the emergence of interpersonal helping in organizations (Grant, 2007; LePine & Van Dyne, 2001; Moorman, Blakely, & Niehoff, 1998; Settoon, Bennett, & Liden, 1996; Van Der Vegt et al., 2006). Such research has identified different types of antecedents, in particular, the individual attributes of actors, situational variables, and task-related variables (P. M. Podsakoff et al., 2000). More recently, research has also addressed the relational aspects of interpersonal helping (Bowler & Brass, 2006; Grant, 2007; Settoon & Mossholder, 2002; Venkataramani & Dalal, 2007; Wilson, 2000). This research has produced two important insights. First, employees help more if they are in contact with a large number of colleagues (Amato, 1990; Settoon & Mossholder, 2002), and, second, employees are more helpful to those colleagues with whom they have high quality relationships (Anderson & Williams, 1996; Bowler & Brass, 2006; Venkataramani & Dalal, 2007). Both effects have been depicted as linear, implying that helping behavior increases unlimitedly with the quantity and quality of network relationships (Bowler & Brass, 2006; Settoon & Mossholder, 2002;

Venkataramani & Dalal, 2007). Potential interactions have not been explored, which, we argue, represents a gap in the literature.

Other research suggests that having a large network of contacts may also introduce important cognitive challenges (McFadyen & Cannella, 2004). Bounded rational agents have limited attention resources to allocate across their contacts and dedicate to the behaviors they engage in (Ocasio, 1997). Thus, while large networks provide opportunities for engaging in interpersonal helping, the complexity associated with such networks also impose cognitive costs of various kinds. This can make helping more difficult for the focal employee. Not only will she have to spread her helping behavior across more, perhaps less familiar, colleagues, the resulting complexity will also represent a challenge to her (fixed amount of) attention. The drain on attention comes about not just in the process of actually helping a colleague, but also in the process of trying to understand what is the colleague's problem (the latter may be seen as cognitive set-up costs of each relation).

Thus, for an employee with many network ties, at some point an additional network tie may result in decreasing helping behavior on the margin. In fact, it is conceivable that the focal employee becomes so overwhelmed by the complexity inherent in a large (and expanding) network of colleagues that her helping behavior may even drop. Declining helping behavior (on the margin and absolutely) may put a brake on the expansion and performance of firms, which should therefore have an interest in offsetting these negative effects.

However, a close relationship between the provider and the beneficiaries of help may play a fundamental role in reducing cognitive costs in the face of complexity. A close relationship implies high mutual understanding between colleagues. A provider of help can for example better recognize when a colleague needs help and what kind of help he or she may need. A beneficiary of help can

thus better target a relevant provider of help. Firms can increase the closeness of relationship between colleagues, for example by setting up mentoring and team-building programs.

These arguments are novel to the literature on the relation between network size and interpersonal helping, which implies that we have a partly incomplete view of the relational antecedents of helping. For example, we do not know if firms will experience a penalty in terms of reduced helping behavior as their size increases and employee networks also increase, and if they can at least partially offset this penalty by investing in relationship quality. To address these gaps, we pose two related questions: Is there a point where a unit increment of the size of the network leads to zero additional helping? How is the relation between the size of an employee's network and her engagement in interpersonal helping impacted by the quality of her work relationships?

We address these questions by theorizing and testing the interaction effect of network size and relationship closeness on interpersonal helping in the workplace. We argue that small networks provide few opportunities for helping, whereas large networks may overload the focal employee with an excessive amount of information, reducing her recognition of the various needs to engage in interpersonal helping. Thus, we hypothesize that the relation between network size and interpersonal helping has a curvilinear (inverted U) shape. We also argue that this relation is moderated by relationship closeness, because the latter allows individuals to more accurately ascertain colleagues' need for help. Empirically, there is an endogeneity challenge represented by the fact that helping and closeness are mutually reinforcing. Our data does not allow us to directly handle this problem. This calls for caution in interpreting our analysis, results that otherwise does not contradict our hypotheses.

In sum, we add to previous studies that use a social network approach to examine the importance of dyadic and relational characteristics for interpersonal helping (Bowler & Brass, 2006; Venkataramani & Dalal, 2007). Specifically, by taking the cognitive costs of large networks into

account, we cast new light on how network size links to interpersonal helping in the workplace. Moreover, we introduce relationship quality as an important contingency for the realization of the helping potential of large networks. By doing so, we respond to Venkataramani and Dalal's (2007, p. 963) call for research looking at how "individual network characteristics […] interact with each other or with individual differences or attitudes and appraisals in affecting helping." More broadly, by highlighting the importance of relationship quality as an element that helps firms and their employees to cope with the cognitive costs of large networks we proffer new theory on the complementary nature of the structural (network size) and qualitative (relationship closeness) element (Settoon & Mossholder, 2002) of the relational antecedents of helping.

THEORY AND HYPOTHESES

Network Size and Interpersonal Helping

Interpersonal helping in the workplace involves cooperative behaviors, such as giving task-related advice, support, and assistance to a coworker who has been absent or has heavy workloads (Settoon & Mossholder, 2002; Van Der Vegt et al., 2006; Van Dyne & LePine, 1998; Venkataramani & Dalal, 2007). Much research on helping has been developed within the domain of organizational citizenship behavior (Organ, 1988; P. M. Podsakoff et al., 2000) and the related concept of prosocial organizational behavior (Brief & Motowidlo, 1986). Interpersonal helping in the workplace favors mutual learning and the sharing of best practices, enhances team spirit and cohesiveness, preserves relationships, and in turn leads to increased cooperation and higher organizational performance (P. M. Podsakoff et al., 2000; P. M. Podsakoff, Ahearne, & MacKenzie, 1997; Van Der Vegt et al., 2006; Van Dyne & LePine, 1998).

Prior research identifies a number of different antecedents of interpersonal helping, such as individual characteristics of actors (e.g., demographic variables, affective commitment), situational

variables (e.g., group cohesiveness, perceived support), and task-related variables (e.g., job satisfaction). More recently, the relational logic that underlies social network research has been applied to the context of interpersonal helping (Bowler & Brass, 2006; Settoon & Mossholder, 2002; Venkataramani & Dalal, 2007), based on the importnat idea that that social ties are to be conceived as conduits that allow for the mobilization of resources (Adler & Kwon, 2002; Kwon & Adler, 2014){Casanueva:2010tf, Casanueva:2013ts, Lin:1981uw, Wassmer:2012tp}. Thus, research on the relational drivers of helping has highlighted the size of the helper's network (Amato, 1990; Settoon & Mossholder, 2002) and the quality of his or her relationships with the recipients of help (Bowler & Brass, 2006; Venkataramani & Dalal, 2007) as two important antecedents.

Employees with large networks are in "the thick of things" and are focal points of communication (Freeman, 1979; Wasserman & Faust, 1994). Having access to a larger number of coworkers implies more opportunities for recognizing if some of them need help (Amato, 1990). Further, having a large number of contacts makes the focal employee potentially more likely to receive requests for help (Amato, 1990; Settoon & Mossholder, 2002). The reasons are that a central individual is known by several others, and that individuals with large networks tend to have more task-relevant resources, power, and status (Brass & Burkhardt, 1993), which increase the likelihood that they will receive requests for help (Burke, Weir, & Duncan, 1976). Thus, based on the logic that individuals with large networks are both more likely to receive help requests and better able to provide help, research has proposed a linear relation between network size and interpersonal helping (Amato, 1990; Settoon & Mossholder, 2002).

However, employees are also exposed to the cognitive costs that come from having large networks. Increasing the number of relations in a network increases the amount of information and ideas in the network (McFadyen & Cannella, 2004). Yet, employees have limited abilities to attend to information, and can only allocate a certain amount of attention to a certain number of activities

(Ocasio, 1997; 2011; Simon, 1955). Thus, the higher the number of relations that an employee holds, the greater the total cognitive cost of stabling and maintaining those relations and processing the information that flows through them (McFadyen & Cannella, 2004).

Given the higher cognitive costs associated with large networks, we expect the realization of the helping potential of network size to be contingent on the focal employee's ability to process the information that is embedded in the network. Employees that are linked to few coworkers are not likely to be cognitively overwhelmed by their social networks, yet they will have few opportunities for recognizing instances where their help is needed. In contrast, employees that are linked to many coworkers are likely to receive so much information that they experience overload. How much information individuals can perceive, absorb, and process depends on the attentional resources they can allocate to this task. While the amount of such resources in part depends on personal characteristics (for example, intelligence, ease of concentrating, whether the individual is rested or tired) ultimately, attentional resources are limited, and at some point increasing information will result in overload.

As the number of network contacts increases, the focal employee will move closer to the point where her attentional resources are fully utilized. More colleagues will present their different needs. The focal employee will have to allocate attention to understanding these needs and will have to engage in actual helping behavior. As her attentional resources begin to be challenged, the amount of helping she will provide will increase at a decreasing rate. Research shows that information overload reduces information-processing performance (Davis, Lohse, & Kottemann, 1994; Hwang & Lin, 1999; O'Reilly, 1980). At some stage increasing the number of network contacts can lead to an actual drop in the amount of helping behavior that the focal employee provides. Too much information may be cognitively demanding to the point that the focal employee experiences confusion, which would both limit the ability to identify and process explicit or implicit

requests for help, and in turn to engage in interpersonal helping behaviors. An additional reason why helping behavior increases at a decreasing rate and may even decline beyond a certain point is that focal employee has other tasks to attend to than helping colleagues. In sum, larger networks may, after a certain point, present limits and liabilities which exceed those arising from networks of an intermediate size, resulting in lower levels of help (Polley & Van Dyne, 1994). As a consequence, and different than Settoon and Mossholder (2002) and Amato (1990), we expect a curvilinear relation between network size and interpersonal helping, and hypothesize that networks of intermediate size result in higher levels of helping than relatively small or large networks.

Hypothesis 1. There is a curvilinear relation between network size and interpersonal helping such that employees help more when their networks are of intermediate rather than small or large size.

The Moderating Effect of Relationship Closeness

Research on the relational antecedents of helping has highlighted the quality of a relationship as a second, important aspect that may determine the extent to which employees engage in interpersonal helping. High-quality relationships, such as those characterized by close friendship (Bowler & Brass, 2006) or positive affect (Venkataramani & Dalal, 2007) foster the emergence of feelings of trust and mutual concern which lead to acceptance of short term inequity, increased reciprocity and, in turn, increased interpersonal helping. Thus, employees tend to be more helpful with those colleagues with whom they have high-quality relationships (Anderson & Williams, 1996; Bowler & Brass, 2006; Venkataramani & Dalal, 2007).

In particular, research has highlighted relationship closeness—that is, the degree of cognitive, emotional, and behavioral interdependence between two actors—as the "flagship variable of interpersonal relationship research" (2012, p. 565). Relatedly, an important discussion in network research has been developed around the idea of the "strength" of a tie (Granovetter, 1973;

Krackhardt, 1992), where the classic indicators of strength are the frequency, emotional closeness, and duration of a social relationship (Burt, 1997a). Given its direct link with the idea of closeness and affect, we specifically focus on emotional closeness as our indicator of quality in the relation between a help-provider and a help-seeker. However, in addition to the direct impact on helping which has been highlighted in previous research, we propose that relationship closeness should also have a moderating effect on interpersonal helping.

When two actors have a close relationship, they develop a greater knowledge of each other and, in turn, an improved ability to understand each other (Sternglanz & DePaulo, 2004). ThusFor example, research highlights that friends are better at reading each other's cues than strangers (Fleming, Darley, Hilton, & Kojetin, 1990; Stinson & Ickes, 1992). Further, research highlights that having a so called "theory of mind" (Premack & Woodruff, 1978)—that is, the activity of inferring another person's desires, intentions, knowledge, and beliefs—results in an increased mutual understandings, which in turn may lessen cognitive load by reducing information asymmetries, and facilitating social coordination (Bagozzi et al., 2013; N. Foss & Stea, 2014; C. D. Frith & Frith, 2008; U. Frith & Frith, 2003; Gallagher & Frith, 2003; Lenells, Stea, & Foss, 2015; Singer & Fehr, 2005). We expect that the improved understanding that characterizes close relationships will also have a significant effect for the actors involved in helping behaviors.

First, a help provider with a large network of emotionally close contacts should receive better requests for help than a help provider with an equally large network of more neutral contacts. As there will be an increased mutual understanding between the two actors (Sternglanz & DePaulo, 2004), an emotionally close help seeker will be better able to signal a potential request for help in a way that makes it easier for the help provider to understand the request, increasing the overall efficiency of the communication process and, hence, decreasing the risk of overload for the help provider. Second, a help provider with a large network of emotionally close contacts will be better

able to decode, identify, and understand requests for help than a help provider with an equally large network of more neutral contacts. Increased mutual understanding from the side of the helper implies that the effort required for the identification of opportunities to help is lower, increasing the efficiency of the process, and in turn decreasing the risk of overload. In sum, by facilitating the signaling, search for, and recognition of opportunities to help, as well as the mutual understanding of the needs for helping and the abilities to help, high closeness reduces the overloading effect of large networks, resulting in higher levels of helping.

Hypothesis 2. Relationship closeness moderates the inverse U-shaped relationship between network size and interpersonal helping.

METHODS

Data Collection and Research Site

The data used in this research were collected at the employee level in a single firm: This has the advantage of keeping constant external factors and firm-varying factors that might affect employees' engagement in interpersonal helping behavior. The firm that formed the site for our data collection is Chem-X (a fictitious name), a 93 employees, highly specialized, international chemical firm headquartered in Denmark. Chem-X focuses on the manufacturing and supply of compounds for pharmaceutical and personal care products. It is a highly vertically integrated firm that covers many parts of the value chain. Chem-X has a culture that emphasizes the role of informal, interpersonal relationships in the workplace. This makes it a promising context for the analysis of social structures. Furthermore, the sample size is appropriate for a complete network study based on survey data due to the fact that smaller samples may have limited statistical power, while larger ones risk generating poor quality data because of the effort required to complete network surveys.

Thus, prior research with similar data has consistently used samples of comparable size (Carnabuci & Dioszegi, 2015; Mehra, Kilduff, & Brass, 2001).

At the time of data collection effort, the firm was planning a major re-organization of its physical layout, and was interested in learning more about the determinants of interpersonal helping behavior in order to factor this insight into the reorganization of office layout and space. The data collection was conducted in close collaboration with the firm, and Chem-X provided full access to all employees and managers for the purposes of the study. Our main point of contact in the firm was the HR director, but we also conducted a number of interviews with employees, middle-managers and top-managers of the firm, both before submitting the questionnaire, and after conducting the survey.

The data were collected through a web-based questionnaire, which we developed on the basis of a focused literature review. We based the network part of the questionnaire on Burt's (Burt, 1992) design, and used the standard method of name-generator and name-interpreter items (Marsden, 1990). Respondents were first asked to generate a list of contacts with whom they have a relationship, and then asked to further characterize their relationship with each listed person. All questions were translated in Danish and back-translated in English so as to reduce the risk of comprehension problems (Brislin, 1986). Finally, the questionnaire was pretested both with management scholars and with representatives of Chem-X to ensure that our items and the wording was easily understood, and made sense within the firm.

In March 2012, a questionnaire was distributed to all 93 employees. The invitation to respond to the questionnaire was uploaded on the front-page of the intra-net of the firm with a link to the survey-instrument. In addition, all employees in the firm received a personal email from the CEO and HR-director urging them to respond to the questionnaire. After a week a reminder was submitted to all employees that had not responded at that time, and they were given one more week

to respond before closing the survey. In addition to the questionnaire submitted individually to all employees, we collected interpersonal helping-rating data by means of a separate questionnaire sent to the 15 managers in the firm that had employees referring directly to them. The response rate was 86 percent for the questionnaire sent to all employees, and 80 percent for the questionnaire sent to the managers. Because of missing values, the final number of cases used in the data analysis was 68. For 45 of those 68 employees whose responses we use in this research, we received both individual self-assessment of interpersonal helping, and the manager's assessment of the same behavior.

We examined the risk of nonresponse bias in different ways. We discussed the results and demographic breakdown of respondents (e.g., in terms of their age, education, tenure, and gender) with firm representatives that assured us that there were no visible biases differentiating those responding to the survey from the overall distribution of employees in terms of demography. Furthermore, we conducted a wave analysis in terms of comparing the demographic variables for early (1^{st} week respondents) and late respondents (2^{nd} week respondents) (Rogelberg & Stanton, 2007). The assumption is that the group of late respondents will be more similar to the non-responding group than the group of early respondents. However, an analysis of variance (ANOVA) of the difference in means for the two groups for the demographic variables showed that the hypotheses of differences in the means can all be rejected (F-values < 2). These tests make us confident that our data do not suffer from major problems of nonresponse bias.

Measures

The survey data includes both individual employee's self-reported perceptions and self-assessment of behavior, and managers' assessment of employee behavior. Specifically, each employee provided demographic information, information on their work-related network, and perceptual responses on items related to affective commitment, collaborative climate, job

satisfaction, as well as self-assessment of their helping behaviors. In addition, employees' engagement in interpersonal helping was also assessed by managers.

In the statistical model, we use the self-reported employee data (including their own assessment of helping behavior) to maximize the number of included observations. Although such self-reported measures have well-known weaknesses they remain an accepted way of capturing perceptions and behaviors among employees (Howard, 1994). In particular, it has been argued that employees are optimally suited to self-report creativity, knowledge flows and, similarly, other work-related aspects where they are, in fact, the only ones who are aware of the subtle things they do in their jobs (Janssen, 2000; Reinholt, Pedersen, & Foss, 2011; Shalley, Gilson, & Blum, 2009). A similar logic should also apply to helping behaviors in the workplace, where each employee is arguably the one that is better aware of the amount and usefulness of help she is offering on a daily basis. Furthermore, although self-reported measures are subject to bias, they have been found to correlate substantially with supervisory ratings—see Axtell et al. (2000), for an example on employee creativity. As outlined below, this is also the case in this study.

Common method bias is an obvious limitation of self-reported measures. However, the questionnaire consisted of different scales and some of them were reversed, which diminishes the risk of biases. In addition, we performed a number of statistical analyses to assess the severity of common method bias. First, a Harman's one-factor test on the items indicated that common methods bias was not an issue. That is, multiple factors were detected and the variance did not merely stem from the first factors (P. M. Podsakoff & Organ, 1986). In fact, the items included in the model form several factors with an eigenvalue > 1, and the first two factors only capture 27 percent and 12 percent of the total variance, respectively. Second, we ran a confirmatory factor analysis where all 16 items loaded on the same factor (a Single Factor Model). The assumption is that the existence of a single factor that is the common denominator across all items reflects the

presence of a common method bias (P. M. Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). However, in our case the goodness-of-fit statistics is highly unsatisfactory for the Single Factor Model capturing the common method bias (GFI = 0.68, NFI = 0.39 and RMSEA = 0.17) which makes us confident that our data do not suffer from common methods bias. Third, the fact that for the dependent variable (interpersonal helping) we can match individual employee self-assessments with managers' assessment for the same individuals allows us to test for inter-rater reliability. Conducting such an inter-rater reliability test results in high and satisfactory values for the Kappa-coefficient—a measure of the agreement between the two raters (Gwet, 2014).

The statistical tests do not eliminate the threat of common method bias. However, they suggest that our results are not driven predominantly by common method variance. Moreover, our results are based on complex estimations that involve multiple independent variables and interaction terms. It has been argued that it is highly unlikely that the results of such models emerge solely as a result of common methods bias (Evans, 1985; Siemsen, Roth, & Oliveira, 2010).

Dependent Variable

Interpersonal helping. Research highlights that extra-role behavior can be differentiated from in-role behavior (Brief & Motowidlo, 1986; Organ, 1988; Van Dyne & LePine, 1998). Other research, however, has questioned this differentiation in the context of citizenship behaviors (MacKenzie, Podsakoff, & Fetter, 1991; Morrison, 1994; P. M. Podsakoff et al., 2000). As have previous researchers (Anderson & Williams, 1996), we study interpersonal helping in the workplace without making an explicit distinction between in-role and extra-role helping.

Interpersonal helping is a multi-item measure that is based on the employees' self-assessment of their helping behavior. Individual employees were asked to indicate on a seven-point scale (1 = completely disagree and 7 = fully agree) their assessment concerning the following questions on interpersonal helping from Settoon and Mossholder (2002): "I help colleagues with work-related

issues", "I help colleagues with work when they have been absent" and "I help colleagues with heavy workloads." The obtained Cronbach alpha-value for this construct was 0.74, and in the confirmatory factor analysis the construct obtained strong reliability, with values of 0.81 for composite reliability (CR) and 0.58 for average variance extracted (AVE). All these measures indicate that the construct is highly reliable and characterized by convergent validity.

In addition, managers have been asked to assess employees' engagement in helping behavior. However, since each manager was asked to assess several employees, we decided to use a reduced set of items in order to limit respondent fatigue. Thus, each employee was assessed on the same seven-point scale for two of the items listed above, namely: "The employee helps colleagues with work-related issues" and "The employee helps colleagues with heavy workloads." (with CR=0.78 and AVE=0.80 for this construct). For 45 employees we could match the responses from employees and managers. When conducting the inter-rater reliability analysis on these two items we found a weighted Kappa-coefficient of 0.58 and 0.65, respectively, which is satisfactory (Gwet, 2014).

Independent Variables

***Network size*.** We asked each respondent to identify those colleagues in Chem-X (indicating their name and department) with whom he or she had "communicated the most regarding work-related topics" in the last year. The item was based on the work of Burkhardt and Brass (1990), and is chosen in line with the idea that through general work-related conversations employees develop a better understanding of each other's work-related problems and difficulties, which in turn may stimulate the emergence of interpersonal helping behaviors.

Based on this information we created a matrix on the network relations (relation or not = 1/0) among the employees that have either responded themselves or been listed by others. Since all ties might be vehicles for creative behavior, we symmetrized the matrix following the rule that when either member of a pair nominated the other, the pair was considered to have a tie (Mehra et al.,

2001; Reagans & McEvily, 2003). The total number of ties varies between 2 and 22. We used the contacts' own responses as our source of information on the relation between ego's contacts. By so doing, we avoid the distortions that characterize network data based on ego's assessment of alter-alter relations (Kumbasar, Rommey, & Batchelder, 1994).

Network size is measured as "degree centrality" (Freeman, 1979), which counts the number of ties of each node in the network (Freeman, 1979; Wasserman & Faust, 1994). The squared value of degree centrality is added in order to test the non-linear relationship between network size and helping behavior suggested in Hypothesis 1.

Relationship closeness. Defined as the degree of cognitive, emotional, and behavioral interdependence between two actors, relationship closeness has been recognized as a key variable of interpersonal relationship research (A. Aron, Aron, & Smollan, 1992; A. Aron, Aron, Tudor, & Nelson, 1991; Dibble et al., 2012). As in previous research, relationship closeness is assessed for each relationship with the emotional closeness item of the classic tie strength measure (Burt, 1992; 1997a): "How close is your relation with this colleague?". The item was measured on a seven-point scale (1 = very distant and 7 = very close) for each relationship. If the respondent listed more than one tie, the average was calculated across the listed relationships to create an overall measure of relationship closeness of all work-related ties for each respondent.

Note that this measure only captures closeness for the relationships reported by the focal employee (ego), and not for those reported by his or her network contacts (alters). Thus, we capture closeness based on the ties that are listed by ego, while our measure of network size includes also the undirected ties. The logic behind this is that while on the one hand all employees (that is, both ego and alters) may trigger helping behaviors (for example, in the case of alters by signaling the need for help, or in the case of ego by spontaneously recognizing that need), on the other hand

relationship closeness is likely to play a major role on ego's engagement in helping only if it is perceived by ego.

Control Variables

A number of controls are included in order to tease out the effect of potential alternative drivers of interpersonal helping behavior. In line with Podsakoff et al. (2000) our control variables are grouped along three main dimensions: Individual characteristics, situational variables, and task-related variables. We also added a fourth, relationship-based dimension as it has been discussed by research on the relational antecedents of helping (Bowler & Brass, 2006; Settoon & Mossholder, 2002; Venkataramani & Dalal, 2007).

Individual characteristics. The first group of control variables captures the individual attributes of the actors. *Affective commitment* is included in the model since it is a key variable capturing individual attributes of the actors in previous studies (P. M. Podsakoff et al., 2000). Affective commitment is a single item measure based on the question from Meyer, Allen, and Smith (Meyer, Allen, & Smith, 1993): "I really feel as if this department's challenges are my own." Also the *tenure* of the respondent is included as the experience that follows from tenure may be positively related to helping behavior (P. M. Podsakoff et al., 2000).

Situational variables. The second group of control variables is situational variables where research highlights that organizational context and work environment impact on employees' engagement in interpersonal helping behavior (P. M. Podsakoff et al., 2000). Specifically, a work environment where communication, cooperation and mutual respect are promoted may reinforce feelings of reciprocity and cohesiveness which in turn may facilitate helping behavior (Brief & Motowidlo, 1986). We have thus included the variable of *collaborative climate* to capture this aspect. Collaborative climate consists of three items from Ramaswami (1996), namely, "Management encourages cooperation between employees", "Management fosters an environment

where members respect each other" and "Management encourages work-related discussions between members," that also perform very well in forming a construct for collaborative climate (CR=0.90, AVE=0.74).

Task-related variables. The third group of controls are task-related variables where feelings of satisfaction have been highlighted as another potentially important antecedent of helping behavior (Brief & Motowidlo, 1986; P. M. Podsakoff et al., 2000). *Job satisfaction* was measured with four items from the Minnesota Satisfaction Questionnaire (MSQ) that tap individual liking of the job (Bowler & Brass, 2006). The four items are: "All in all, I am satisfied with my job", "In general, I like my job", "My job is interesting", and "In general, I like working here". These four items form together a construct of job satisfaction (CR=0.85, AVE=0.59). *Support functions* is also added as a control variable as some tasks are per definition more oriented towards helping than others. This is a dummy variable for those employees working in the IT and HR-departments (coded 1 while all others have been coded 0).

Relational variable. Finally, greater *frequency of interaction* has been found to matter in terms of facilitating cohesiveness within the group (Burt, 1997a), and, in turn, providing more opportunities for helping (Amato, 1990; Venkataramani & Dalal, 2007). Thus, frequency of interaction in the relationship was added as a control variable. Frequency of interaction is assessed for each relationship with the frequency item of the classic tie strength measure (Burt, 1992; 1997a): "How often do you communicate with this colleague?". The item was measured on a nine-point scale (1 = almost never and 9 = multiple times a day). For each individual respondent that have listed more than one relationship, we calculated the average of the listed relationships for frequency.

RESULTS

The correlation matrix is shown in Table 1, and includes descriptive statistics for all variables. None of the independent variables have correlations that indicate problems of multicollinearity, as all of the correlations among the independent variables are below the commonly accepted threshold of 0.4.

In addition, the AVE-values for the reflective constructs are listed in the diagonal of the correlation matrix and the fact that these AVE-values are higher than the binary correlations among all the listed variables indicate discriminant validity of our constructs.

Insert Table 1 here

We ran hierarchical regression to test the proposed hypotheses. Several checks were done to verify that the assumptions of the regression model were met, including examining variance inflation factor (VIF) values, residual plots, and normal probability plots of the residuals. Model 1 is our base-line model that includes the main effects of the two variables—network size and relationship closeness—and the six control variables. In Model 2 we add the squared term of network size to test the curvilinear relationship proposed in Hypothesis 1. Hypothesis 2 is tested in Model 3, where the interaction effect between relationship closeness and the curvilinear specification of network size is added. The results are presented in Table 2.

Insert Table 2 here

It appears from Model 1 that the included variables explain no less than 53% of the variation in interpersonal helping behavior ($F = 8.54$, $p < 0.001$). This is due to the significant effects of affective commitment, job satisfaction, and supply functions, and to the relatively high ratio of explanatory variables to observations in the dataset. It is further noticeable that network size as a main effect does not have a significant impact on interpersonal helping behavior. This might be due to the fact that network size does not entail a uniform effect along the scale, but rather differing effects on helping behavior. Therefore, when the squared term of network size is introduced in

Model 2, both the first order and second order effect of brokerage becomes significant. Specifically, the first order effect turns positive ($\beta = 0.17$, $p < 0.05$) and the second order effect turns negative ($\beta = -0.01$, $p < 0.05$), while the other variables basically remain the same. This is also reflected in the increase in R-square from 0.53 to 0.58, and in the significant result of the F-test of the increment in the R-square ($F = 5.88$, $p < 0.01$).

In all, Model 2 indicates support for Hypothesis 1 that interpersonal helping behavior is higher for those employees that have an intermediate network size. The positive first order effect indicates that first helping behavior increases with the increase in network size, but only up to a certain point where increased network size is negatively related to helping behavior as indicated by the significant negative second order effect. It is also noticeable that, in line with prior research findings (Anderson & Williams, 1996; Bowler & Brass, 2006; Venkataramani & Dalal, 2007), relationship closeness turns significant ($\beta = 0.18$, $p < 0.05$) in this model, while the variable is at the brink of becoming significant in the other models ($p < 0.10$).

The full model is specified as Model 3, which includes the interaction effect between relationship closeness and the squared term of network size. In order to reduce problems of multicollinearity both variables (relationship closeness and network size) were mean-centered before creating the interaction term. The VIF-values listed in Table 2 measure how much the variance in the coefficient is increased because of collinearity. A commonly accepted threshold for the existence of problems of multicollinearity is when VIF-values are at 6 and above. In Model 3 with all our interaction effects, the highest VIF-value is 5.14, indicating the absence of a problem of multicollinearity. The stability in the coefficients across the three models indicates the same thing.

The curvilinear relationship of network size remains in Model 3, with the coefficients being even larger than in Model 2. Further, the F-test of increment in the R-square ($F=12.19$, $p < 0.001$) indicates that Model 3 is superior to Model 2. Model 3 explains more than two thirds of the

variation (70%) in interpersonal helping behavior, and obtains a very satisfactory goodness-of-fit for the whole model (F-value of 12.21, $p < 0.001$). Notice that the interaction effects between the curvilinear specification of network size and relationship closeness also become significant, in line with Hypothesis 2.

Since the sum of direct and moderating effects of network size and relationship closeness may be hard to interpret from the coefficients, it is customary to draw the relationship in a graph as shown in Figure 1. Figure 1 is based on the coefficients of Model 3, and shows that relationship closeness matters. Specifically, the effect of network size on interpersonal helping is higher for those employees that are on average closely connected to their colleagues, indicating support for Hypothesis 2. One aspect is striking from Figure 1: The pattern is very different for those employees that have high closeness in their relationships with colleagues. While the inverse U-shaped effect is particularly strong for employees with low closeness, it seems that the improved mutual understanding that characterizes very close relationships may completely offset the negative effects of overload proposed in Hypothesis 1. This could also suggest that the linear relationship identified by Amato (1990), and Settoon and Mossholder (2002) may apply particularly to contexts where the provider and beneficiaries of help have developed high quality relationships.

Among the control variables, job satisfaction is consistently significant over all the presented models. This confirms prior research highlighting job satisfaction as an individual attitudinal variable that predicts helping behaviors (P. M. Podsakoff et al., 2000). Similarly, and in line with prior research (P. M. Podsakoff et al., 2000), affective commitment is also significant in Model 1 and 2. Our results on support function may seem less intuitive: Employees working in support functions (IT and HR) score significantly lower than all other employees in terms of interpersonal helping. A possible explanation is that these employees implicitly consider helping as a normal dimension of their in-role function rather than as a specific behavior that can be assessed

independently. Finally, frequency of interaction is significant only in Model 3, while the controls for tenure and collaborative climate are insignificant in all models.

Robustness Checks

A number of robustness checks have been conducted to test the stability of our models. First, research on interpersonal helping also highlights education, age, gender, occupational status and expertise as important predictors (Bowler & Brass, 2006; P. M. Podsakoff et al., 2000). For this reason, we also ran the models while including age, gender, and education that tease out the variation in helping behavior that may emerge from these characteristics. Moreover, we added whether the respondent has a leadership role or not. This controls for the fact that leaders typically conduct more helping behavior *qua* their position of having responsibility for managing people. Since none of these variables was significant, nor was in any way confounding any of the focal results, we decided not to include them in the final model so as to reduce the number of estimated parameters, given our relatively small sample size.

Second, we tested our models on the restricted sample where employees' engagement in interpersonal helping behavior was assessed by the employees' supervisors. While, most likely due to the lower number of observations, the model based on managers' assessment of employee helping has a weaker explanatory power than our final model, the results that we obtained using the non self-reported measure of helping are qualitatively identical to the ones that we report in our final model in the sense that all the hypothesized relations are significant. The biggest difference is in the strength of the effects, but the nature of the relationships is identical.

Third, we conducted a number of robustness checks to verify that the results are not driven by outliers. In particular, we removed all observations with high Cook's distance or residuals. We also ran the models without the observations with top and bottom values for the different variables. The results remained very stable across these different specifications of the models.

CONCLUDING DISCUSSION

Contribution to Theory

What drives interpersonal helping in the workplace? This research suggests that the combination of the size of an employee's network with the quality of the relationships in that network is critical to answering this question. Thus, different from prior studies (Amato, 1990; Settoon & Mossholder, 2002), we do not find a linear relation between network size and interpersonal helping, but rather a curvilinear one. This finding is consistent with the idea that the benefit of having access to many coworkers may, after a certain point, be outweighed by the costs of handling those relationships (McFadyen & Cannella, 2004). Given the importance of interpersonal helping in the workplace (P. M. Podsakoff et al., 1997; Van Dyne & LePine, 1998), this research was aimed at better understanding the consequences of those costs, and what factors may mitigate them.

We find that employees help the most when the size of their networks is intermediate, and that this relation is contingent on the quality (emotional closeness) of the relationships that they maintain with their contacts. This finding is interesting because previous research on the relational antecedents of helping has: 1) looked at the effects of network size on interpersonal helping without taking into account employees' limited ability to manage large networks (Amato, 1990; Settoon & Mossholder, 2002), and 2) speculated but not yet tested (Venkataramani & Dalal, 2007) whether and how relational factors combine with each other in predicting interpersonal helping.

Building on prior research on the relational antecedents of helping (Bowler & Brass, 2006; Grant, 2007; Settoon & Mossholder, 2002; Venkataramani & Dalal, 2007), this study makes at lease three contributions. First, different from prior research (Amato, 1990), we develop and test new theory that proposes a curvilinear specification of the size-help relationship. By showing that

there is a limit to the benefits of large networks in terms of employees' engagement in helping behaviors we contribute to the current literature on the relational antecedents of help (Bowler & Brass, 2006; Grant, 2007; Settoon & Mossholder, 2002; Venkataramani & Dalal, 2007; Wilson, 2000).

A second, perhaps more interesting contribution, comes from the finding that the emotional closeness that may flourish in interpersonal relationships in the workplace acts as a powerful moderator of the size-help relationship. Specifically, our results suggest that emotional closeness mitigates much of the negative effect that an excessively large ego-network seems to exert on ego's commitment on helping behaviors. To the best of our knowledge, this paper is the first one to provide initial evidence of this interesting effect.

Lastly, by teasing out an important condition under which large networks are conducive to interpersonal helping, we also contribute to a contingency view on social networks (Burt, 1997a; Fang et al., 2015){Burt:1997fq}. Different from research that focuses on the contingent effects of individual experience (L. Fleming, Mingo, & Chen, 2007) and cognition (Carnabuci & Dioszegi, 2015), or on contextual heterogeneity (Mors, 2010) and collectivism (Xiao & Tsui, 2007), our perspective pinpoints the emotional closeness among the embedded actors in an ego-network as a key condition for larger networks to trigger helping behaviors. In so doing, we advance research that proffers a contingent view of the value generated by network structures inside the organization (Burt, 1997b).

Limitations and Future Research

The contributions of this study should be considered in light of its limitations. First, we rely on cross-sectional data, and for this reason the direction of causality in our model cannot be fully ascertained. In other words, while we theorize that network size and relationship quality lead to interpersonal helping, it is not possible to exclude alternative causal explanations. For example,

interpersonal helping may be argued to reflect pre-existing individual characteristics, and individuals that are particularly willing to help their colleagues may try to position themselves in social contexts that allow them to interact with several colleagues. However, our arguments run in the opposite direction because abundant research highlights that interpersonal helping is influenced by the two relational variables that we are considering in this study (Amato, 1990; Anderson & Williams, 1996; Bowler & Brass, 2006; Settoon & Mossholder, 2002; Venkataramani & Dalal, 2007). This notwithstanding, the endogeneity problem represented by, for example, closeness and helping being very likely to be mutually reinforcing is a real one. Unfortunately, our data do not allow us to construct suitable instruments that may address this problem. Additional research based on experimental or longitudinal data is needed to confirm the directions of causality that we propose in this research.

Second, we test our framework in one Danish organization, and for this reason questions on the generalizability of our findings can be raisedwhich implies inherent caution regarding the interpretation of our findings beyond the scope of the particular organization where the data where collected, . However, it is not uncommon for full network studies to be conducted on data collected on a single organization—e.g., Carnabuci and Dioszegi (2015), Mehra et al. (2001), Zhou et al. (2009). Furthermore, to the best of our knowledge there are no company specific factors that would make the effects captured in our study uniquely relevant and applicable to the company used for this study. The same should also apply to culture-specific factors. For example, as research shows that culture may moderate the effect of network variables (Zhou & Su, 2010). For example, Xiao and Tsui (2007) found that the performance effect of structural holes differs in individualistic and collectivistic cultures, and Chua, Morris and Ingram (2008) found differences in American and Chinese network configurations involving trust. However, while we do not mean to suggest that relational antecedents of interpersonal helping are necessarily stable across cultures, it seems

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reasonable to assume the interactive effect of network size and relationship quality on interpersonal helping to be culture-free, as being based on mechanisms of cognitive overload, and overload reduction. Nevertheless, future research should test if our results are replicable in different cultural contexts.

Third, the theoretical focus of this study called for the adoption of an individual, ego-network level of analysis. As a consequence, we did not focus on which ties exactly received more or less help. Nevertheless, the overall effect on interpersonal helping that we empirically capture at the ego-network level is indeed resulting from the specific, individual ties which aggregate into each actor's ego-network (Ahuja, Soda, & Zaheer, 2012; Tasselli, Kilduff, & Menges, 2015). The assumption that we made is that, given our theoretical focus, it is fair to average relationship closeness in an ego network. Yet, a more fine-grained, relationship-specific analysis of the phenomena that we begun to explore in this paper would be very interesting, and represents another potentially fruitful avenue for future research.

Practical Implications

Interpersonal helping is a behavior that favors learning, cohesiveness, cooperation and, ultimately, performance (P. M. Podsakoff et al., 2000). Thus, understanding the nature, and defining enhancers of the relationship between network size and interpersonal helping is very important to practitioners. Extant research provides parts of such insights, as it points to the positive effect on an employee's engagement in interpersonal helping of that employee's number of contacts (Amato, 1990; Settoon & Mossholder, 2002), and quality of relationships (Anderson & Williams, 1996; Bowler & Brass, 2006; Venkataramani & Dalal, 2007). However, our research additionally highlights that managers should be attentive to the cognitive costs of having employees add ties to their networks. First, the cognitive costs of a large ego network may mean that employees find it difficult to locate who exactly is in need of help, and what kind of help they need. Second, our

analysis shows that this effect can be offset by increasing relationship quality, for example, by means of investing in corporate mentoring programs, "know your colleagues," and get together-programs.

More broadly, managers continuously make choices that impact the creation, modification, and evolution of networks, as well as that of the relationships that take place in those networks anyhow. For example, managers make decisions on projects, department size, links between units that all may influence the size of employees' networks. Similarly, managerial decisions on staffing projects, or hiring people recommended by employees may influence the emotional closeness of the relationships that employees come to develop with each other. Our findings complement prior research on the interplay between formal and informal structures (McEvily, Soda, & Tortoriello, 2014) as well as on how design features play a role in driving interpersonal dynamics in the workplace (Stea, Foss, & Foss, 2015a; Stea, Linder, & Foss, 2015b) by suggesting that managers should be cognizant of the important consequences that their decisions have for networks and relations in the workplace.

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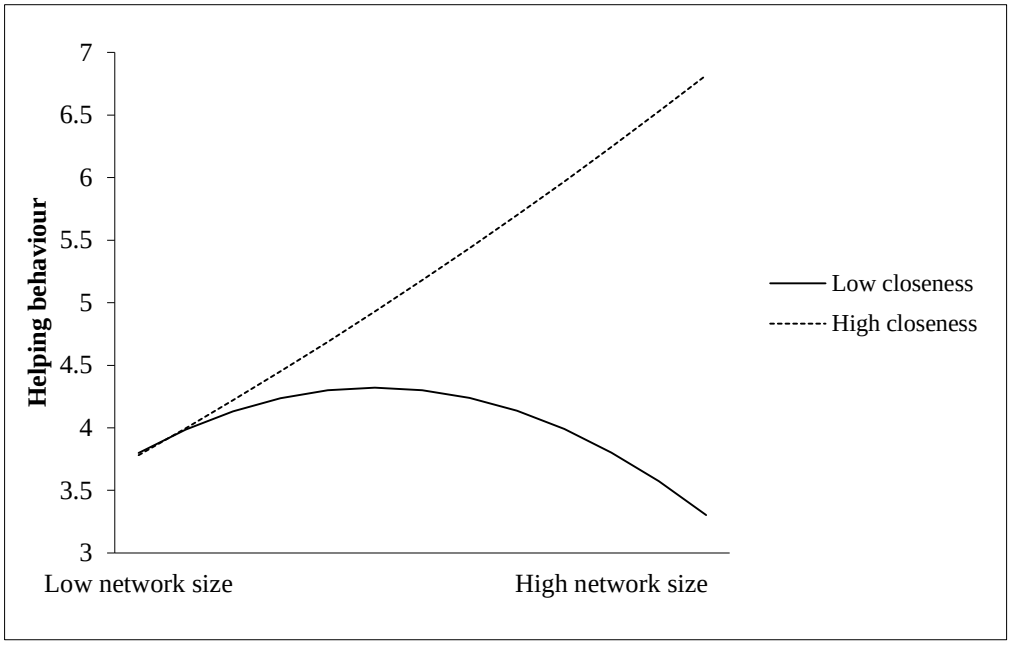
FIGURE 1

Relation between Helping behavior, Network size and Relationship closeness*



* The Excel-file offered by Jeremy Dawson to plot quadratic effects moderated by one variable is used to create the graph (http://www.jeremydawson.com/slopes.htm). Low and high network size / closeness is measured as one standard deviation below and above the mean.

TABLE 1

Correlation Matrix (n = 68)*

with the AVE-values listed at bold in the diagonal for reflective constructs

	1	2	3	4	5	6	7	8	9
1) Helping behavior	**0.58**								
2) Network size	0.11	1.00							
3) Relationship closeness	0.07	-0.24	1.00						
4) Affective commitment	0.43	0.12	0.10	1.00					
5) Tenure	-0.08	-0.05	-0.14	-0.17	1.00				
6) Collaborative climate	0.30	0.10	0.01	0.13	0.04	**0.74**			
7) Job satisfaction	0.43	0.01	-0.10	0.34	-0.13	0.32	**0.59**		
8) Support function	-0.45	-0.11	-0.01	-0.14	0.13	-0.11	-0.03	1.00	
9) Frequency	0.25	0.31	-0.24	0.14	-0.01	0.12	0.28	-0.07	1.00
Mean	5.92	7.61	4.17	6.04	8.29	5.70	6.31	0.10	4.08
Std. dev.	0.66	3.22	0.78	0.79	6.96	0.99	0.62	0.31	0.77
Min. values	3.5	1	2.5	4	0.1	2	4	0	1.8
Max. values	7	13.5	7	7	29	7	7	1	6

* All coefficients above |0.25| are significant at 5% significance level.

Values for network size and relationship closeness is here presented before mean-centering

TABLE 2. Hierarchical Regression Results *(n = 68)** with coefficient, std. dev., and VIF-values.

	Model 1	Model 2	Model 3
Network size	0.002 (0.020) *1.18*	0.166* (0.071) *1.34*	0.784* (0.372) *1.46*
Relationship closeness	0.130 (0.088) *1.36*	0.176* (0.087) *1.43*	0.129 (0.109) *3.56*
Network size * Network size		-0.012* (0.005) *1.34*	-0.104*** (0.027) *1.37*
Network size * Relationship closeness			-0.111** (0.047) *1.77*
Network size * Network size * Relationship closeness			0.022** (0.006) *5.14*
Affective commitment	0.173* (0.084) *1.28*	0.169* (0.081) *1.28*	0.090 (0.071) *1.39*
Tenure	0.007 (0.009) *1.09*	0.006 (0.008) *1.09*	0.008 (0.007) *1.19*
Collaborative climate	0.067 (0.064) *1.16*	0.082 (0.062) *1.17*	0.079 (0.053) *1.20*
Job satisfaction	0.300** (0.114) *1.43*	0.287** (0.109) *1.43*	0.230* (0.094) *1.47*
Support functions	-0.924*** (0.196) *1.06*	-0.891*** (0.195) *1.13*	-0.866*** (0.202) *1.69*
Frequency	0.139 (0.091) *1.44*	0.155 (0.088) *1.45*	0.270** (0.078) *1.60*
Intercept	2.647** (0.926)	2.097* (0.919)	2.550 (1.283)
F-value	8.54***	8.77***	12.21***
R-Square	0.53	0.58	0.71
Adj. R-square	0.47	0.51	0.65
F-test for increment in R-square	n.a.	5.88**	12.19***

***, **, and * indicates a significance level of 0.1%, 1% and 5%, respectively.