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Information sharing in a hybrid workplace: understanding the role of ease-of-use perceptions of communication technologies in advice-seeking relationship maintenance

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Abstract

Shifts to hybrid work prompted by the COVID-19 pandemic have the potential to substantially impact social relationships at work. Hybrid employees rely heavily on digital collaboration technologies to communicate and share information. Therefore, employees' perceptions of the technologies are critical in shaping organizational networks. However, the dyadic-level misalignment in these perceptions may lead to relationship dissolution. To explore the social network consequences of hybrid work, we conducted a two-wave survey in a department of an industrial manufacturing firm ($N = 169$). Our results show that advice seekers were less likely to maintain their advice-seeking ties when they had a mismatch in ease-of-use perceptions of technology with their advisors. The effect was more substantial when advice seekers spent more time working remotely. The study provides empirical insights into how congruence in employees' perceptions of organizational communication technologies affects how they maintain advice networks during hybrid work.

Lay Summary

The COVID-19 pandemic forced many organizations to switch to a "new normal" of organizing, relying exclusively on remote work through communication technologies. Today, as we transition out of the pandemic, we are ushering in the era of the "next normal," or hybrid work arrangements for knowledge workers within the workplace. Yet, little is known about the implications of the shift to hybrid work. Specifically, how does the shift to hybrid affect information sharing? We conducted a field study to see whether employees' perceptions of the primary communication technology used in an organization are associated with information sharing and, more specifically, advice seeking. We also explored the extent to which employees who worked remotely changed their advice-seeking ties. Results show that misalignment in the perceived ease of use of the technology between advice seekers and providers was negatively associated with the maintenance of advice-seeking ties. Advice seekers with a greater tendency to work remotely were less likely to maintain advice-seeking ties with providers whose perceptions of the technology did not align with theirs. As a result, asymmetry in technology perceptions and the extent of time spent remotely in hybrid work arrangements have significant social implications in hybrid organizational contexts.

Keywords: media multiplexity theory, relationship maintenance, advice networks, communication technology, hybrid work, SAOMs

Shifts to remote and hybrid work precipitated by the COVID-19 pandemic have had a profound impact on workplaces. Before the pandemic outbreak, remote and hybrid work had been typically confined to a narrow set of jobs and organizations (Sparrow & Daniels, 1999). The dramatic shift in work arrangements in the wake of the COVID-19 pandemic demonstrated that a broader range of jobs could be effectively carried out in hybrid configurations. Following this experience, many organizations are responding to employees' demand for flexibility in work locations and are considering flexible work arrangements that allow their employees to spend some workdays in remote mode (Barrero et al., 2021). Such hybrid approaches can benefit organizations and employees. On the one hand, onsite work cultivates office culture, fosters trust in collaboration, encourages serendipitous and informal conversations to facilitate newcomer adaptation, and creates a boundary between work life and home life. On the other hand, remote work eliminates employees'

commuting time, permits more flexibility in time management, and has the potential to access talent from a wider pool (Barrero et al., 2021). Given the potential benefits of combining onsite and remote work, an even larger percentage of the workforce may potentially embrace hybrid work in the future.

One major impact of the COVID-19 pandemic is that it forced organizations to participate in an involuntary global "beta-test" of web-enabled work. In times of remote or hybrid work, employees rely heavily on digital collaboration technologies to seek or provide professional advice, communicate task-related information, and manage conflicts. Therefore, the perceptions of employees toward organizational communication technologies are critical in interpersonal coordination, collaboration, and knowledge sharing, reconfiguring a constellation of relationships in organizations—the organizational social networks. Extant research (Dahlander et al., 2021; Garton et al., 1997) has examined

informal relationships that are critically important for individual productivity (Argote et al., 2003), group cohesiveness (Fershtman, 1997), as well as organizational productivity and innovation (Tortoriello & Krackhardt, 2010). However, it is unclear how informal networks would change due to an organization-wide move to hybrid work accompanied by a greater reliance on digital collaboration technologies. This reliance poses a dilemma: Technologies are required for remote work, but employees do not uniformly perceive technologies as easy to use (Adams et al., 1992; Morris & Venkatesh, 2000; Trevino & Webster, 1992). This ease-of-use perception of communication technologies could affect employees' capability of identifying, utilizing, and interpreting information in mediated communication, thereby affecting information sharing in organizational contexts. Furthermore, a misalignment between a pair of employees' ease-of-use perceptions of technologies could lead to discrepancies in their ability to utilize and interpret information mediated by the communication technologies. This, in turn, may lead to distrust and hindrance in information sharing, advice-seeking, and collaboration in organizational processes.

During hybrid work, it is particularly important to understand the social network consequences of employees' perceptions toward communication technologies for two reasons. First, hybrid workplaces pose challenges for organizing. Hybrid work arrangements and the increasing reliance on technologies have caused changes in individual roles, occupational status, or reconfiguration of interactions across functional units. For example, employees may find it difficult to forge or maintain relationships with colleagues with different work arrangements. This micro-level relational change can reconfigure the network structure of informal ties in organizations and create challenges for managers to navigate. Secondly, understanding the social relationships within organizations provides insights into developing digital collaboration technologies to respond to novel needs in the hybrid workplace. The features and functions of existing digital collaboration technologies may not be sufficient to overcome such challenges. Understanding how perceptions of technologies are associated with social relationships among employees in hybrid work helps pinpoint the problems in organizing. It has the potential to guide the design and implementation of collaboration technologies.

While hybrid arrangements consist of components of remote and onsite work, it is critical to recognize that hybrid work is on a continuum between remote and onsite. In the past, studies that examined knowledge and collaboration have been predominantly focused on fully remote settings, like distributed organizations (Cramton, 2001), distributed teams (Yuan & Gay, 2006), online communities (Jadin et al., 2013), or virtual teams (Choi & Cho, 2019; Mesmer-Magnus et al., 2011). Thus, our existing understanding of information sharing and organizational social networks does not directly translate to hybrid work settings. Therefore, this study focuses on the social implications of technology perceptions in hybrid work arrangements.

In this study, we aim to answer the following research questions:

RQ1: How would organizational social structure be affected by technological mediation when an organization moves to a hybrid mode?

RQ2: How do employees' perceptions of digital communication technologies affect advice-seeking in the hybrid workplace?

We advance media multiplexity theory (MMT) by examining how the ease-of-use perceptions of communication technologies used in organizations shape advice networks in the context of hybrid work. Through a natural experiment, between fully in-person and hybrid employees, we provide empirical evidence that the dyadic dissimilarity in employees' ease-of-use perceptions of the primary communication technology, Microsoft Teams, used within an organization hinders advice-seeking. This effect was particularly strong when advice seekers spent much of their work time remotely during hybrid work. The theoretical and practical implications of these findings are further discussed.

Literature review

Information sharing and advice networks

Scholars focusing on the instrumental properties of information have emphasized the key role that information plays in contouring the organizational social structure and have regarded organizations as information-processing entities (Thompson, 2003; Tushman & Nadler, 1978). Information in organizations can shift dynamics in social structure by conferring power to those who possess specific information and disempowering those who do not (Leonardi, 2007). As organizations routinely collect and evaluate information in the decision-making process that will give rise to changes in organizational social structure, the practice of actors in organizations acquiring and disseminating information is an essential antecedent to changes at an organizational level (Daft & Weick, 1984).

Because information is closely related to an organization's social structure, it is especially important to consider the role of information conveyed by communication channels in times of change. Researchers studying the structure and dynamics of organizations argue that organizational social structure is shaped by communication and interaction among members (Goffman, 1983; Spiegel, 2004). If researchers wish to capture the process of organizing in action, then they must focus on specific types of communication and interaction that contour the social structure (Ellison et al., 2014; Garrett et al., 2007). One early trend in the scholarship was to study patterns of advice-seeking relationships. Scholars found that alongside the formal organizational structure, organizational actors often construct their networks of advice-seeking based on factors such as geographic proximity and participation in shared activities (Blau, 1955; Organ et al., 1986; Swales, 2018). Advice networks reflect the communication of expertise and the flow of knowledge and information (Krackhardt, 2003). Krackhardt defined advice networks as a type of strong ties that stem from work routines in organizations. From a dynamic and interactional perspective, advice-seeking networks serve as a fundamental component of social structures when examining the process of organizing in times of change (Leonardi, 2007).

Advice-seeking relationship maintenance in computer-mediated communication

Research demonstrated that changes in advice networks are tied directly to the attitudes, perceptions, and knowledge an

individual has about information technologies (Aydin & Rice, 1992; Barley, 1990; Burkhardt & Brass, 1990; Leonardi, 2013; Rice et al., 1999; Sykes et al., 2014). The utilization and adoption of computer-mediated communication (CMC) tools—particularly enterprise social media platforms—have altered the routines of social interactions within the workplace (Short et al., 1976; Fulk & Yuan, 2013; Leonardi et al., 2013; Treem & Leonardi, 2013). The affordances of enterprise social media create capacity for maintaining social capital by making it easy for users to keep up with what their colleagues are doing and creating conversational fodder by providing information about the informal networks in which users are embedded.

The COVID-19 pandemic hastened the use and integration of enterprise social media platforms as dominant means of maintaining work-related relationships within organizations. In virtual organizations, where members are geographically distributed, and the communication processes are highly dynamic, technology, organizational social structure, and advice-seeking patterns are tightly intertwined (DeSanctis & Monge, 1998). While organizational culture and practices are relatively stable forces (i.e., operate as a routine), the transition to hybrid work has direct implications for using communication technologies and can be a punctuating force. In other words, this kind of change can disrupt an established social structure and lead to new advice-seeking patterns because it reconfigures informational capabilities. With CMC tools, information filtered out due to technological capabilities affects employees' capacity to interpret and share information with their colleagues (Rice, 1992), and employees' attitudes and perceptions toward enterprise social media platforms can affect the information they can obtain.

MMT and technology acceptance model

Social relationships are associated with media use and information sharing. MMT (Haythornthwaite & Wellman, 1998; Haythornthwaite, 2002) argues that the number of communication media, including face-to-face communication, used by two people is positively associated with the strength of their interpersonal relationships. In an extension of the theory, Ledbetter & Mazer (2014) argue that it is important to consider the alignment in communicators' attitudes towards online social connection as evidence shows interdependence persists when both communicators have a positive attitude toward technology-mediated communication. In organizations, it would follow that a dyad with a close advice-seeking relationship established multiple channels, including in-person, for communication at work. With shared norms and practices, they would have a lower psychological barrier to switching to an alternative channel of communication (e.g., other online platforms or in person) to maintain the relationship. In a hybrid workplace, employees have more freedom to choose the communication modality that they find convenient and effective to maintain established work-related relationships. Yet, many organizations are concerned that employees are losing their social capital in the hybrid workplace (Tsipursky, 2022), which may lead to difficulty in coordination. While the primary focus of MMT is the presence of network ties across multiple communication channels, there is a need for further theorizing on factors that contribute to the potential dissolution of these ties.

In this article, we introduce a boundary condition for the dissolution of ties considered by MMT: ease-of-use

perceptions of the communication technology primarily used in the organization. The boundary condition is informed by the technology acceptance model (TAM). We argue that the dyadic misalignment in ease-of-use perceptions is a moderating factor in the association between strong ties and the use of multiple communication channels, which can trigger the dissolution of strong ties.

Early literature on technology adoption that proposed TAM (Legris et al., 2003; Malhotra & Galletta, 1999; Venkatesh & Davis, 1996) highlights that ease-of-use perceptions of technologies are a determinant of the extent to which users would think the technologies are useful to perform their jobs and further predict the use of the technologies at work. In organizations, the adoption of communication technologies facilitates work-related communication and access to online social capital among employees (Huang & Liu, 2017). Employees more comfortable with an organizational communication platform are more likely to use it frequently and therefore maintain relationships via online communication. More specifically, in organizations, ease-of-use perceptions of technologies lower the barrier to obtaining information through technologies; lower levels of the ease-of-use perception may create a hurdle to the processing of information by organizational members.

Dyadic dissimilarity in ease-of-use perceptions

To explain why strong ties may dissolve, we draw upon theories of homophily. While homophily based on similarity in attitudes, opinions, and beliefs is critical to building and maintaining relationships, researchers have also found the incompatibility of norms, beliefs, and practices between dyads leads to the dissolution of interpersonal relationships (Burt, 2000, 2002; Kleinbaum, 2018; Tröster et al., 2019; Zhang & King, 2021). Burt (2000) showed that asymmetry or misalignment between a pair of employees' opinions and practices resulted in tie decay and even tie dissolution. In this case, misalignment in their perceptions of the ease of use of communication technologies in the workplace can lead to disruption or dissolution of a relationship. More specifically, dyads with misaligned ease-of-use perceptions of the communication technology used in organizations are likely to disengage with one another over time. This dyadic misalignment in perceptions of a technology's ease of use can manifest in two scenarios: (a) "disillusionment" of the advice seekers and (b) "intimidation" of advice providers.

The disillusionment of advice seekers can happen when advice seekers perceive the technology is easy to use, while advice providers do not perceive so during hybrid work. Disillusionment with advice providers' ease-of-use perceptions of technology in hybrid work can lead to concerns about the effectiveness of information exchange and potentially hurt the maintenance of advice-seeking relationships, especially when the information is crucial for work-related decision making. In this situation, advice seekers would be concerned about getting enough meaningful information from advice providers. For example, advice seekers might infer that certain providers do not use the technology frequently based on the "availability" status signaled by the digital collaboration technology. This would discourage advice seekers from reaching out to those advice providers. The advice-seeking relationships that might have formed during the traditional in-person work arrangements risk dissolution because advice seekers

would be more likely to turn to alternative advice providers who perceived the technology as easy to use.

The other case of misalignment is related to the "intimidation" of advice providers that prevents advice seekers from taking the initiative. It occurs when advice seekers' comfort level with the technology is low, whereas advice providers think the opposite. In this instance, advice seekers have limited access to leverage the information filtered from the technology, thus deterring them from reaching out to advice providers. Additionally, advice seekers may perceive the advice providers as significantly better than them in using the technology. Therefore, the intimidation of the advice provider would prevent advice seekers from reaching out for advice.

Given these two scenarios of misalignment in ease-of-use perceptions of the communication technology between advice seekers and providers, we posit that:

> Hypothesis 1: Dyadic dissimilarity in perceived ease of use of the primary communication technology in the hybrid workplace is negatively associated with advice-seeking tie maintenance.

Hybrid work and degree of remoteness

Much of recent research on the use of technology in the workplace focused either on in-person work or fully remote work settings (e.g., Bush and Frohman, 1991; Jarvenpaa & Leidner, 1999). Hybrid work arrangements, where employees spend a portion of their workdays in the physical office and the rest remotely, have been largely overlooked. Since a hybrid workplace includes some work time in the physical office, the configuration of social networks can be fundamentally different from fully remote work because employees meet with colleagues from time to time. For example, research on virtual work suggested that remote employees are more likely to experience social and professional isolation compared with those who spend all their workdays in the physical office (Golden et al., 2008). Research also indicates that remote workers receive less informal feedback and training (Sardeshmukh & Sharma, 2012), and lack the social support needed for psychological safety (Korunka, 2021). Remote workers relying on digital communication technologies may experience lower visibility in the eyes of their managers and therefore have a lower chance of promotion (Cristea & Leonardi, 2019; Mortensen & Haas, 2021). However, it is unclear if and how some in-person office presence envisioned in hybrid work would mitigate these challenges, and how a mix of work arrangements would affect organizational social structure.

To understand the hybrid workplace, it is crucial to address an individual's degree of remoteness to advance our understanding of hybrid work dynamics. Degree of remoteness is defined as the proportion of time an employee works remotely versus in-person in the office. Some studies have followed this approach and explored the effects of remote work intensity (Martinez-Amador, 2016). However, this line of research highlights the distinctive experiences of remote and onsite employees. It suggests that some employee experiences and behaviors (e.g., co-worker relationships) vary depending on their remoteness, while others do not (e.g., relationships with supervisors). This means some of the hybrid work experience is different from a fully remote one or an entirely in-person one, whereas others are similar.

In the context of hybrid work, organizations allow for flexible work arrangements. The flexibility creates a wide range of asymmetries between employees. The maintenance of advice-seeking relationships depends on the work arrangements of the two parties in a dyad. The work arrangements of both parties in the advice-seeking relationships are individual attributes that may challenge MMT in the context of hybrid workplace. As Haythornthawaite and Wellman (1998) show, in-person communication consists of unscheduled face-to-face encounters and scheduled face-to-face meetings, which are important communication channels in MMT. When working remotely, employees do not commuicate with their strong ties in person, which limits the opportunities to main the ties. Given the high reliance on digital collaboration technologies in hybrid work, we posit that the degree of remoteness of the dyads moderates the effect of misalignment of the ease-of-use perceptions of technologies on the maintenance of advice-seeking ties.

> Hypothesis 2: Dyadic dissimilarity in perceived ease of use of the primary communication technology in the hybrid workplace is negatively associated with advice-seeking tie maintenance, particularly for (a) advice seekers or (b) advice providers with a high degree of remoteness.

Method
Participants

To address the research questions and hypotheses, we conducted a two-wave survey in the Human Resources department of the China branch of a multinational industrial manufacturing company. A total of 223 employees working in this department participated in either or both Time 1 and Time 2 surveys. Participants ranged in age from 24 to 62 years ($M = 37.83$, $SD = 7.07$, $Mdn = 37$). All participants attained bachelor's degrees or above. Employees worked in 16 cities in China, and a majority of them were based in large cities such as Beijing and Shanghai. One hundred eighty-five out of 200 employees completed the Time 1 survey (response rate: 92.5%). At Time 2, 107 out of 119 employees completed a follow-up survey (response rate: 90.0%). The response rates for both survey waves were well above the 80% threshold suggested in Kilduff and Tsai (2003), which positioned us well for constructing separate networks respectively for each wave. Two units within the department at Time 1 were no longer part of the department in Time 2. Hence, we removed 37 employees who worked in those two units in Time 1 from our sample. The final sample, after participants who provided incomplete responses were deleted, consisted of 169 participants (22.5% male, 87.5% female). Among these 169 participants, 43 of them left the department and 13 joined the department between Time 1 and Time 2. Ninenty two of them completed both waves of the survey.

Procedure

We collected two waves of survey data on employee interaction at two different points—(a) before the outburst of the pandemic when most employees were in entirely in-person work arrangements (i.e., pre-measures) and (b) in the hybrid work phase, in the aftermath of COVID-19 pandemic, when they transitioned to new work arrangements and were

redistributed across a more diversified set of work arrangements (i.e., post-measures).

We administered both network surveys online. The initial survey measured employees' social ties (i.e., advice-seeking, friendship, propinquity, and hindrance) from December 15 to 29 in 2019, one week before the outbreak of COVID-19 in China. A second (Time 2) survey was administered from May 19 to June 22, 2021, when COVID-19 restrictions were relaxed in China, and the organization had transitioned over to a hybrid mode of work. There was no organization-wide policy on how many days, or on which days, employees should work in offices. The second wave of the survey, like the first wave, measured employees' social ties, and additionally, it measured employees' perceptions of the ease of use of the primary communication technology, the frequency of use, emotional exhaustion, and turnover intention. We obtained from the organization personnel records of employees who participated in both waves of the survey, including demographic information (e.g., gender, age, and organizational tenure). In exchange for their participation, after each wave of the survey, we provided each respondent with a customized, confidential professional network report describing their networks and offering them interpretations and actionable insights based on their network metrics. We also provided an organizational report for the top management team, offering insights into the overall organizational networks and policy recommendations. We held a department-wide information session involving all the participants to report our findings.

Measures
Advice-seeking ties
To measure advice-seeking ties, we asked employees to indicate which of their colleagues they sought advice or help from in the past week during each of the two time periods. All participants were given a complete roster of their colleagues in the department, and they could select as many as they wanted to avoid biased recall in favor of strong ties in responses. Roster questionnaires are commonly used in organizational social network research (Borgatti & Molina, 2005). As the list of potential network partners was long, we added an autocomplete feature in the name nomination question, "Who do you go to for help or advice at work?" (Krackhardt, 1987). Participants could start typing the names or the team names. The entry box would prompt them with full name options from which they could autocomplete their selection. Along with this autocomplete feature, providing survey respondents with the roster is particularly appropriate for collecting network data in bounded organizational settings because it reduces the likelihood that respondents might forget important contacts (Wasserman & Faust, 1994).

From each network, we extracted all possible pairs of employees (i, j) and built a network matrix with binary dyadic entries. It takes a value of 1 if i reported a tie with j at time t and 0 if not. The advice-seeking networks at the two-time points represent our dependent variable.

Ease-of-use perceptions of the technology
We identified the primary communication technology employees were using by consulting with the top management team of the organization. The technology used by the employees was a widely used enterprise social media platform, Microsoft Teams. Ease-of-use perceptions were measured using items from the TAM instrument on a seven-point Likert scale from "Strongly disagree (1)" to "Strongly agree (7)". A sample item is "My interaction with Microsoft Teams is clear and understandable." The average value of the perceived ease of use was 5.74, with a standard deviation of 0.83.

Degree of remoteness
We measured the degree of remoteness by asking questions about the proportion of participants' time spent working from home. The questions were measured at five levels: 1 = entirely in the office, 2 = mostly in the office, 3 = about half at home, 4 = mostly at home, and 5 = entirely at home. Employees' average degree of remoteness was 2.18, with a standard deviation of 0.63.

Covariates and structural effects
At the individual level, we controlled demographic information, including *gender* (1 = Female; 0 = male), *organizational rank* (1 = Managerial position; 0 = individual contributor), and *organizational tenure* (i.e., the number of years one had worked in the organization). We also controlled individual-level variables that may affect work relations networks. Specifically, we controlled for *emotional exhaustion* using a five-item measure from the Maslach Burnout Inventory (MBI; Maslach et al., 1997). Respondents answered on seven-point scales (1 = never, 2 = a few times a year, 3 = once a month or less, 4 = a few times a month, 5 = once a week, 6 = a few times a week, 7 = every day). We chose to focus on emotional exhaustion in MBI because they are particularly relevant to the context (i.e., the COVID pandemic; Jo et al., 2021). We also controlled for *turnover intention* because previous literature has shown that thoughts of quitting predict tie dissolution with colleagues (Tröster et al., 2019). The turnover intention was measured by one survey question, "What is the probability that you will leave for another organization in the next 12 months?" (Vandenberg & Nelson, 1999).

We also included non-respondents by assigning to them *the number of outgoing ties indicated by respondents to non-respondents* (Robins et al., 2004). In doing so, we adopted Robins et al.'s (2004) approach, in which outgoing ties to non-respondents are included as an exogenous predictor. And, we controlled for *friendship* ties, physical *propinquity* in the office, and *hindrance* ties in our models predicting advice-seeking tie maintenance, as these ties could influence each other (Tröster et al., 2019). These dyadic covariate networks were measured by name generator questions in both survey waves. We asked, "Who do you consider a close personal friend?" (Kilduff, 1992) to measure friendship; "In a regular week, who is typically located nearby you?" to measure propinquity ties; and "Who makes it difficult for you to carry out your responsibilities?" (Sparrowe et al., 2001) to measure hindrance ties. We constructed binary network variables based on the responses to these questions.

Finally, the interdependent nature of social ties can create biased standard error estimates (Kilduff & Krackhardt, 1994), and therefore we control endogenous variables following the recommendations offered by Ripley et al. (2022). We control for *reciprocity*, *transitivity*, *three cycles*, *outdegree activity*, and *indegree popularity*. Social network researchers modeling network dynamics generally recommend incorporating these effects (Agneessens & Wittek, 2012; Ripley et al., 2022) because they capture important endogenous dynamics in advice networks. Reciprocity measures the focal individual's tendency to seek advice if someone else has previously

extended a tie to them. Transitive triplets and three-cycles measure dynamics in the local network structure (Ripley et al., 2022). Transitive triplets measure the tendency to ask advice from an advice provider's advisors. Three cycles measure the tendency for generalized exchanges in networks, such as the tendency for person i to seek advice from person j, person j to seek advice from person k, and person k to seek advice from person i. A positive tendency for three cycles in the advice network would suggest the absence of a hierarchy. Outdegree activity captures variations in employees' tendency to seek advice from others, and indegree popularity measures the tendency to seek advice from those who receive many other advice ties.

Statistical analysis

To test our hypotheses, we used stochastic actor-oriented modeling (SAOM) implemented in the SIENA 1.2-23 statistical package in R (Ripley et al., 2022; Snijders, 2001, 2005, 2017). This method provides a statistical architecture for modeling the coevolution in relationships (i.e., networks) and actor attributes (e.g., behaviors or attitudes). It models factors that explain ties sent to colleagues based on the focal person's (ego) attributes, colleagues' (alter) attributes, relationships between the attributes, or structural characteristics of the network.

SAOMs consider how a tie might be created, maintained, or dissolved at a future point in time as a function of other ties at a prior point in time. This endogenous feature might, for instance, allow advice-seeking ties from A to B and from B to C at one point in time, which increases the likelihood of an advice-seeking tie from A to C at a subsequent point in time. SAOM controls for these endogenous effects on network dynamics while also modeling how the attributes of actors (e.g., their perceptions of ease of use of technology) impact their creation, maintenance, or dissolution of advice-seeking ties. The simulation process is repeated until the model estimates parameters for actor preferences that best explain the change in the observed networks and attributes (i.e., that minimize the deviations between generated and observed values of the statistics) from Time 1 to Time 2 (Snijders, 2017). As our hypotheses focus on the maintenance versus the dissolution of ties, we used the endowment function to model the maintenance of advice-seeking ties at Time 1. See the Supplementary Materials for more on technical details, including steps we took to minimize the impact of non-respondents.

Between the Time 1 to Time 2 surveys, 43 employees left the department, and 13 employees joined the department. Changes in network composition can affect the structure of overall networks. To address this issue, we employed the method of joiners and leavers[1] in SIENA suggested by Ripley et al. (2022) and de la Haye et al. (2017) to account for composition change across waves. This approach incorporates specific information about when nodes join and leave their network—and the observed data on their ties while they are present—into the statistical model simulating temporal changes in the advice network.

Results

Table 1 indicates the means, standard deviation, and correlations among variables involved in our study.

Table 2 presents the Quadratic Assignment Procedure (QAP) tests of significance for the correlations between

network variables. These correlations measure whether having a tie to a specific colleague in one network (e.g., advice-seeking network) is correlated with a tie to the same colleague in another network (e.g., friendship network). QAP results indicate that the same work relations networks measured in T1 and T2 are closely related to each other, and there is a close association between different relationships measured in T1 and T2. Specifically, advice-seeking relationships are moderately related to friendship, proximity, and hindrance ties. There is no correlation between friendship and hindrance ties. We expected that advice-seeking networks and covariate networks would be correlated and therefore deemed it important to account for their interdependencies.

Table 3 shows the descriptive statistics of the two-wave advice-seeking networks and the difference between them. The results indicate that the number of advice-seeking ties in T1 was 1,928 and 1,256 in T2. 495 advice-seeking ties were created from T1 to T2, and 512 ties dissolved in this period. Overall, the advice-seeking network shrunk from T1 to T2, which suggests that it was overall less likely for employees to seek advice from each other in the hybrid workplace compared with the fully in-person workplace.

Hypotheses tests

To test the hypotheses, we present the results of SIENA models predicting advice-seeking tie maintenance in Table 4. Since we used the endowment function to predict tie maintenance in the SIENA models, a positive effect means that the likelihood of maintaining a tie is greater than dissolving it.

Model 1 includes, as a baseline control, structural effects and covariates, including endogenous network factors (e.g., reciprocity, transitivity), exogenous relationships (e.g., friendship ties), and actor attributes (e.g., gender). Model 2 adds a variable of advice seekers' perception of the primary communication technology. Results indicate that advice seekers' or advice providers' perceptions of the ease of use of the technology did not predict the maintenance of advice-seeking ties when the organization moved from fully in-person to hybrid. Model 3 includes the interaction term of the perceived ease of use of the advisor and seekers as covariates. We find no significant effect of the interaction term between advisors' and seekers' perceived ease of use of technologies. This suggests that dyads with similar ease-of-use perceptions of the technology are similarly likely to maintain their advice-seeking ties during hybrid work, compared with dyads with differential levels of ease-of-use perceptions.

Model 4 presents results to test H1. The results indicate that dissimilarity in perceived ease of use was negatively associated with the maintenance of advice-seeking ties ($\theta = -2.25$, $SE = 0.29$, $p < .001$). That is, the dissimilarity in perceived ease of use of technology was positively associated with the dissolution of advice-seeking ties when the organization moved from fully in-person to hybrid. Consistent with H1, the misalignment in ease-of-use perceptions between pairs of employees negatively predicted the maintenance of advice-seeking ties when the organization moved from fully remote to hybrid.

Model 5 and Model 6 present results testing H2a and H2b separately. Specifically, these models include interaction terms for the degree of remoteness and dissimilarity in perceived ease of use. Results of Model 5 support H2a. The parameter estimate is significantly negative for the interaction effect of advice seekers' degree of remoteness and dyadic dissimilarity in perceived ease of use on the likelihood of their maintenance of

Table 1. Mean, standard deviation, and correlations among variables

Variable	M	SD	1	2	3	4	5	6	7	8
1. Gender (Female)	0.87	0.34								
2. Organizational tenure	7.88	6.51	−0.03							
3. Organizational rank	0.09	0.29	−0.07	0.28**						
4. Turnover intention	1.75	1.12	0.01	−0.11	−0.13					
5. Emotional exhaustion	3.17	1.35	−0.04	−0.08	0.18	−0.09				
6. Degree of remoteness	2.18	0.63	−0.01	−0.02	−0.06	0.04	0.06			
7. Technology use	5.14	1.18	0.03	0.08	0.15	−0.06	0.18	−0.03		
8. Perceived ease of use	5.75	0.82	−0.07	−0.18	0.13	−0.07	0.10	0.07	0.10	
9. Outgoing advice-seeking ties to non-respondents	0.53	1.36	−0.08	0.09	0.01	0.21**	0.02	−0.03	0.05	−0.09

Note: M and SD are used to represent mean and standard deviation, respectively.
* $p < .05$;
** $p < .01$.

Table 2. QAP results of correlations between networks

Variable	1	2	3	4	5	6	7	8
1. Advice T1	0.06							
2. Advice T2	0.51**	0.04						
3. Friendship T1	0.33**	0.24**	0.02					
4. Friendship T2	0.35**	0.49**	0.41**	0.02				
5. Proximity T1	0.23**	0.20**	0.32**	0.30**	0.02			
6. Proximity T2	0.24**	0.30**	0.26**	0.37**	0.46**	0.02		
7. Hindrance T1	0.05**	0.03**	0.01	0.02	0.02**	0.02*	0.00	
8. Hindrance T2	0.06**	0.03**	−0.01	0.00	0.05**	0.04**	0.19**	0.00

Note: QAP: quadratic assignment procedure. Network densities report on the diagonal.
* $p < .05$;
** $p < .01$ (two-tailed).

Table 3. Advice-seeking ties created, maintained, and dissolved before and after the shift to a hybrid workplace

Tie count in T1	1,928
Tie count in T2	1,256
Created	495
Dissolved	512
Maintained	622
Jaccard index	0.38

Notes: The sum of advice-seeking ties dissolved and maintained does not equal to the tie count in Time 1 due to the change in network composition between Time 1 and Time 2.

advice-seeking ties ($\theta = -3.07$, $SE = 1.48$, $p < .05$). That is, advice seekers with a higher degree of remoteness in hybrid work and dyadic dissimilarity in ease-of-use perceptions were significantly more likely to dissolve their advice-seeking ties in the move from fully in-person to hybrid work. The interaction effect is depicted in Figure 1. It shows that advice seekers' high degree of remoteness strengthened the negative effect of dyadic dissimilarity in perceived ease of use on advice-seeking tie maintenance. However, contrary to H2b, the results of Model 6 indicate a nonsignificant effect of the interaction term between advice providers' degree of remoteness and dyadic dissimilarity in perceived ease of use on advice-seeking tie maintenance.

Model 7 presents the results of a full model that includes both interaction terms for testing H2a and H2b. The results show that the interaction terms between dissimilarity in the ease-of-use perceptions and advisors' or seekers' remoteness in Model 7 are not significant.

Table A1 in the Appendix provides the goodness of fit indicators for the models. The majority of the models demonstrate desirable goodness of fit in terms of indegree and outdegree distributions, with $p > .05$. The p-values of

goodness outdegree distribution for Models 1 and 2 are not ideal but remain acceptable.

Discussion

This study builds on existing literature on MMT to explain the change in organizational social structure in the transition from full in-person to hybrid work. Our empirical study focuses on the ease-of-use perceptions of the organization's most widely used communication technology, an enterprise social media platform named Microsoft Teams, and the dyadic interactions to explain the maintenance of advice-seeking ties. We hypothesize the misalignment in ease-of-use perceptions of the primary communication technology negatively predicts the maintenance of advice-seeking ties (H1). We further hypothesize advice seekers' (H2a) and advice providers' (H2b) degrees of remoteness moderate this association. We found support for H1 and H2a, but not for H2b.

Our findings suggest that the asymmetries in the perceptions of technologies between employees reconfigure advice networks within an organization in the move from fully in-person to hybrid work. Specifically, consistent with our first hypothesis, our analysis indicates advice seekers became more likely to maintain advice-seeking relationships when they had similar ease-of-use perceptions of the communication technology primarily used in the organization. This finding resonates with the reciprocal property of mediated communication. While advice seekers' perceptions could be important in the maintenance of information-sharing channels, the asymmetry in technology perceptions between a dyad significantly affected the advice-seeking relationship maintenance. The effect was particularly strong when the advice seekers spent more time working remotely in hybrid work. Advice providers'

Table 4. SIENA estimation results of advice-seeking tie maintenance

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Intercept							
Advice: outdegree (density)	−3.15***	−3.15***	−3.15***	−2.93***	−3.07***	−2.92***	−3.08***
	(0.12)	(0.12)	(0.11)	(0.15)	(0.27)	(0.15)	(0.26)
Control variables: Network							
Advice: reciprocity	0.87***	0.88***	0.88***	0.81***	0.86***	0.81***	0.86***
	(0.10)	(0.10)	(0.10)	(0.10)	(0.12)	(0.10)	(0.14)
Advice: transitive triplets	0.05***	0.06***	0.05***	0.05***	0.05***	0.05***	0.05***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Advice: 3-cycles	−0.12***	−0.12***	−0.12***	−0.10***	−0.11***	−0.10***	−0.10***
	(0.01)	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Advice: indegree—popularity	0.03***	0.03***	0.03***	0.04***	0.04***	0.04***	0.04***
	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Advice: outdegree—activity	0.04***	0.04***	0.04***	0.05***	0.06***	0.05***	0.06***
	0.00	0.00	0.00	(0.01)	(0.02)	(0.01)	(0.02)
Friendship tie	1.75***	1.75***	1.75***	1.76***	1.76***	1.76***	1.76***
	(0.12)	(0.11)	(0.13)	(0.13)	(0.12)	(0.12)	(0.13)
Hindrance tie	0.63	0.64	0.64*	0.51	0.57	0.51	0.58
	(0.34)	(0.34)	(0.31)	(0.40)	(0.40)	(0.39)	(0.41)
Proximity tie	1.19***	1.18***	1.18***	1.41***	1.70***	1.42***	1.71***
	(0.12)	(0.11)	(0.12)	(0.13)	(0.23)	(0.14)	(0.21)
Control variables							
Outgoing ties to non-respondents	−0.62***	−0.62***	−0.62***	−0.82***	−1.06***	−0.83***	−1.08*
	(0.08)	(0.08)	(0.08)	(0.13)	(0.34)	(0.13)	(0.47)
Female (seeker)	0.11	0.12	0.12	0.11	0.26	0.11	0.26
	(0.14)	(0.13)	(0.12)	(0.14)	(0.32)	(0.15)	(0.33)
Female (provider)	−0.51***	−0.51***	−0.51***	−0.49***	−0.57*	−0.50***	−0.57**
	(0.11)	(0.11)	(0.11)	(0.12)	(0.21)	(0.12)	(0.21)
Gender heterophily	−0.58***	−0.58***	−0.58***	−0.63***	−0.77***	−0.63***	−0.77***
	(0.12)	(0.11)	(0.11)	(0.12)	(0.19)	(0.13)	(0.19)
Tenure (seeker)	−0.04***	−0.04***	−0.04***	−0.05***	−0.06***	−0.05***	−0.06***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)	(0.02)
Organizational rank (provider)	0.16	0.16	0.16	0.14	0.15	0.13	0.16
	(0.08)	(0.09)	(0.08)	(0.10)	(0.11)	(0.10)	(0.14)
Turnover intention (seeker)	0.13***	0.13***	0.13***	0.15***	0.25**	0.15***	0.26
	(0.03)	(0.03)	(0.03)	(0.04)	(0.08)	(0.04)	(0.16)
Emotional exhaustion (seeker)	−0.16***	−0.15***	−0.15***	−0.27***	−0.29**	−0.27***	−0.30**
	(0.03)	(0.04)	(0.04)	(0.05)	(0.10)	(0.06)	(0.10)
Technology use (seeker)	0.27***	0.26***	0.26***	0.39***	0.50*	0.38***	0.5
	(0.05)	(0.05)	(0.05)	(0.07)	(0.22)	(0.06)	(0.27)
Independent variables							
Perceived ease of use (seeker)		0.13	0.13				
		(0.17)	(0.18)				
Perceived ease of use (alter)		0.01	0.02				
		(0.10)	(0.09)				
Perceived ease of use (seeker) X Perceived ease of use (alter)			0.14				
			(0.18)				
Perceived ease-of-use dissimilarity (H1)				−2.25***	−3.44**	−2.26***	−3.48**
				(0.29)	(1.06)	(0.33)	(1.35)
Degree of remoteness (seeker)					−1.12		−1.05
					(1.24)		(0.93)
Perceived ease-of-use dissimilarity X Degree of remoteness (seeker) (H2a)					−3.07*		−3.36
					(1.48)		(2.81)
Degree of remoteness (provider)						−0.2	−0.34
						(0.28)	(0.36)
Perceived ease-of-use dissimilarity X Degree of remoteness (provider) (H2b)						0.08	0.83
						(0.33)	(0.77)
Rate period	13.15***	13.20***	13.19***	12.85***	12.37***	12.82***	12.37***
	(0.54)	(0.56)	(0.54)	(0.51)	(0.94)	(0.55)	(0.68)
Iterations	3,751	3,888	3,944	3,815	3,944	3,944	4,084
Overall maximum convergence ratio	0.15	0.18	0.19	0.17	0.21	0.17	0.18

Notes: SIENA: simulation investigation for empirical network analysis. Standard errors reported in parentheses. A negative tie maintenance effect means that the likelihood of maintaining a tie is lower than dissolving it.
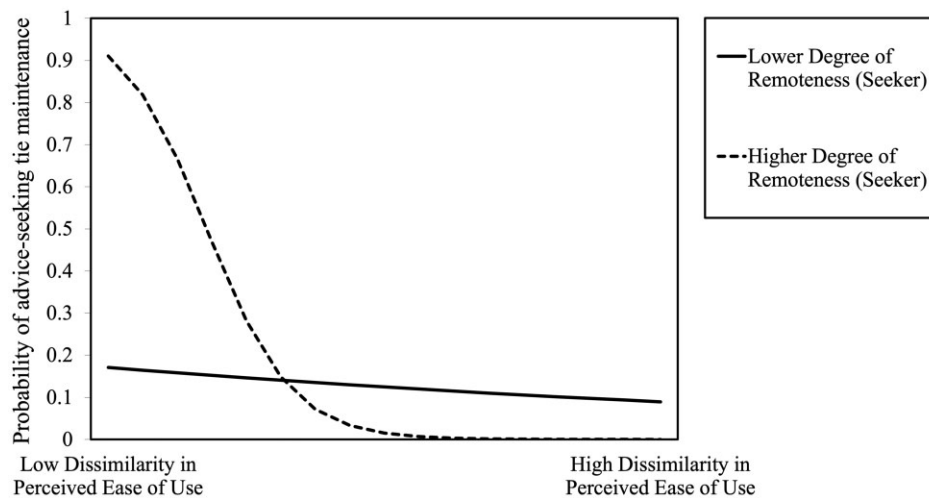*** $p < .001$;
** $p < .01$;
* $p < .05$.

Figure 1. Interaction plot predicting advice-seeking tie maintenance based on advice seekers' degree of remoteness and dyadic dissimilarity in perceived ease of use between advice seekers and advice providers.

remoteness does not have a similar effect as tested by H2b in Model 6. A potential explanation is that advice seekers take more agency in maintaining advice-seeking relationships and usually initiate conversations. If they have limited in-person interactions, either scheduled in-person meetings or unscheduled in-person encounters, then the advice-seeking relationships may naturally dissolve. The full model, Model 7, suggests that the effect of advice providers' and seekers' remoteness may cancel each other when including both in the model. These findings imply that even during hybrid work, dyads with established advice-seeking relationships before the pandemic and shared practices of technology use could switch their communication modality, but the in-person presence is still important in maintaining advice-seeking ties. In summary, the findings suggest that the asymmetry in the work arrangements between dyads with informal ties affects networks beyond the change in the work arrangement of the advisors or advice seekers *per se*.

This study advances our understanding of how perceptions of organizational communication technologies impact advice-seeking networks in the move from fully in-person to hybrid work modes. We noted the mismatch between the upsurge of hybrid work in organizations and the limited understanding of its dynamics and implications for organization-wide phenomena, e.g., technology-mediated communication networks. To address this mismatch, our research sought to understand how the organization-wide transition to a hybrid workplace influences advice-seeking relationships in an organization.

Our study provides empirical insights into how employees' perceptions of communication technologies affect how they maintain informal networks when moving to hybrid work. Our findings help to unveil disengagement, in the form of advice tie dissolution, when employees have different perceptions of the ease of use of communication technologies at work. Uncovering the micro-level mechanisms that explain the evolution of social networks in times of hybrid work has the potential to inform interventions in organizational design.

Theoretical and practical implications

This study extends the MMT in two directions. First, our finding challenges MMT in that we find a boundary condition for MMT, alignment in ease-of-use perceptions of the primary communication technology. MMT proposes that stronger ties are associated with the use of more media channels, including in-person, and that the number of media channels and tie strength influence each other. In other words, MMT posits that the use of multiple media platforms to communicate with partners is a function of tie strength or relational closeness. In our study, we consider advice-seeking ties as a type of strong ties in organizations. Our results suggest that it is not always the case that strong ties are associated with the use of multiple communication channels and that the association is moderated by the alignment in ease-of-use perceptions of communication technologies. We leverage TAM to inform this alignment moderation. While TAM focuses primarily on explaining technology adoption, and secondarily on the utilization of technologies, our focus is to explain how alignment in technology perceptions, as a socio-psychological factor, relates to relationship maintenance. Second, our study extends MMT to explain the dissolution of strong ties in CMC. MMT assumes that individuals choose to communicate through multiple channels because they have access to them. It explains how people use multiple media platforms to communicate and maintain interpersonal relationships, without explaining why and how communication dyads dissolve their relationships. Our study suggests that advice ties, as one type of strong tie in the workplace, dissolve given the misalignment in ease-of-use perceptions of communication technologies and advice seekers' high remoteness in the hybrid workplace. That is, strong ties can dissolve with the misalignment in the perceptions of digital media used.

The present study invites further theoretical development in CMC to explain network dynamics in a hybrid workplace. A hybrid workplace emphasizes an organizational-level phenomenon where employees have varying degrees of remoteness in their work arrangements. In contrast to *hybrid work*, which suggests that an individual employee spends some workdays away from home, not every employee in a *hybrid workplace* chooses to work in a hybrid mode. In other words, a hybrid workplace consists of a mix of work arrangements within an organizational unit, and this presents a new contextual condition where remote work does not affect all employees equally. Our study explores one aspect of social interactions that resulted from this shift to a hybrid

workplace. We have shown that extant theories in CMC have the potential to be extended to explain new opportunities and challenges in hybrid workplaces.

Our research also has practical implications for maintaining information-sharing channels in organizations. First, it is important to align expectations of communication technologies for advice-seeking pairs, such as mentor–mentee pairs in "water cooler programs" that benefit newcomer adaptation. As evidenced in this study, the misalignment in technology perceptions was associated with not maintaining advice-seeking relationships. But interventions can be taken from the technology design perspective. Technology developers and HCI practitioners should consider designing features or functions that cultivate emotional support that nurtures friendship-building and alleviates emotional exhaustion from the use of technology in hybrid work arrangements. At the organizational level, a top-down policy can encourage advice seekers to spend more time in the office, if possible, to facilitate information sharing. This is based on our research evidence that the degree of remoteness from the advice seekers' side strengthened the negative effect of asymmetry in technology perception on advice-seeking tie maintenance.

Limitations and future research

The findings should be interpreted in light of the study's limitations. First, this study conducted only two waves of the survey. This limited our ability to establish the coevolutionary relationship more definitively between the misalignment of technology perceptions and the maintenance of advice ties. Despite the natural experiment design we followed, we cannot rule out the endogenous possibility of social influence that dyads who have maintained their advice-seeking relationships from fully in-person to hybrid work tend to have very similar ease-of-use perceptions of the technologies. Further research should consider designing field experiments and collecting more than two waves of data to explore the role of misalignment in work arrangements in organizational network dynamics in the hybrid workplace.

We also acknowledge that the conditions of the natural experiment between fully in-person and hybrid work coincide exactly with pre- vs. pandemic workplaces. It is therefore analytically difficult for us to disambiguate whether our findings are related to the pre- vs. pandemic effect rather than the difference between fully in-person and hybrid work.

Second, since our data were collected in an HR department in an organization based in China, it limits generalizability across three dimensions: (a) The organization had strongly promoted a culture of using only one communication technology as the primary communication channel; compliance with this promoted culture may not generalize to other organizations, especially in the West. (b) All participants in this study were HR specialists, offering a service-oriented function in the organization. Our result may have limited generalizability to other units with a product-oriented function. (c) Related to the previous point, the gender composition of our sample skews to women, which aligns with the global statistics on HR specialists, but not other professionals in the workplace. Future research should also explore the effects of information filtered through media technologies on organizational networks in hybrid work. It would provide a higher resolution of the mechanism to identify the types of information that play a

crucial role in intra-organizational network dynamics in the context of CMC.

Third, we did not consider the different nuances associated with various tools (e.g., videoconferencing, file sharing, voice calls, private chat, and group chat) within Teams. Our current study looks at modes of communication broadly, namely Teams or in-person. Future research should examine whether certain features within Teams or other modes of communication might be consequential when it comes to maintaining network ties.

Conclusion

The COVID-19 pandemic prompted an abrupt transition to remote work. As a result of lessons learned from this transition, remote and hybrid work has expanded across the boundaries of jobs and industries where office work norms have been used for decades. The trend of increased flexibility in work locations will likely lead to a more heterogeneous work environment where employees with a mix of work arrangements co-exist. However, our limited knowledge of how technology and communication function in such a workplace requires new theorizing in CMC to describe and understand their implications for workplace dynamics. The insights we obtained from our study of an organization transitioning from traditionally fully in-person to hybrid work provide important evidence of the impact of the shift on information sharing as revealed in advice-seeking within organizations. Future CMC research should investigate the peculiarities of hybrid workplaces at the individual, dyadic, and organizational levels and shed further light on technology design and organizing.

Supplementary material

Supplementary material is available online at *Journal of Computer-Mediated Communication*.

Data availability

The data utilized in this article will be shared by the corresponding author consistent with the data use agreement signed with the organization providing the data.

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Notes

Details of the analytical approach and codes to run SIENA models are available in the Supplementary Material.

1. We acknowledge that the 43 leavers in the sample from T1 to T2 are considerably high. Based on our statistical analysis, the Jaccard Index between the first- and second-wave advice networks is higher than the threshold suggested by the SIENA literature (Ripley et al., 2022), which means the networks are stable enough for a reliable SIENA analysis. Moreover, the method of joiners and leavers can address this discrepancy in network composition. We code as missing values using the missing value code NA in the adjacency to

represent the network. In the estimation procedure, these missing values NA of the newcomers in T2 are regarded as 0 entries in T1, and the missing entries of the leavers or movers after T1 are fixed at their T1 values. This is different from the regular missing data treatment. This implementation not only combines properly with the SIENA goodness-of-fit function but also works properly with the endowment effect on the advice-seeking network.

Acknowledgments

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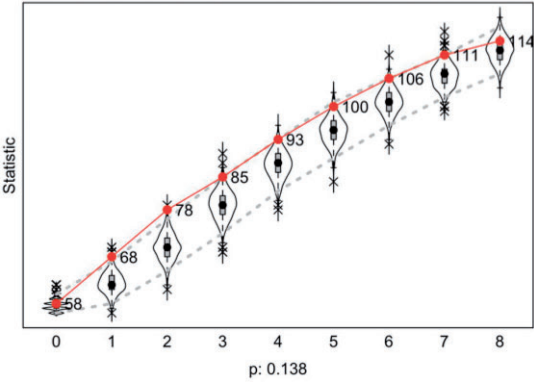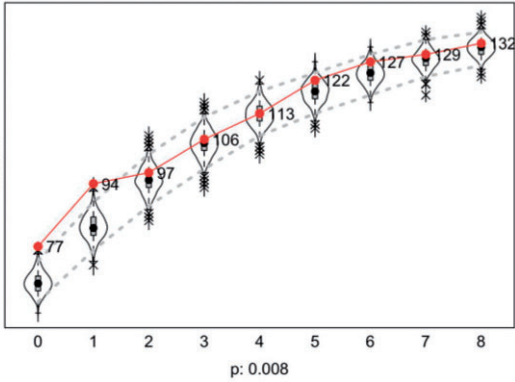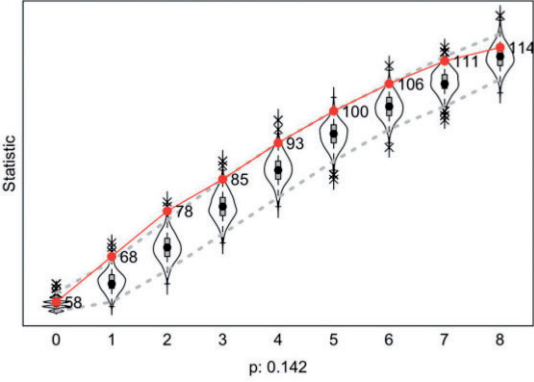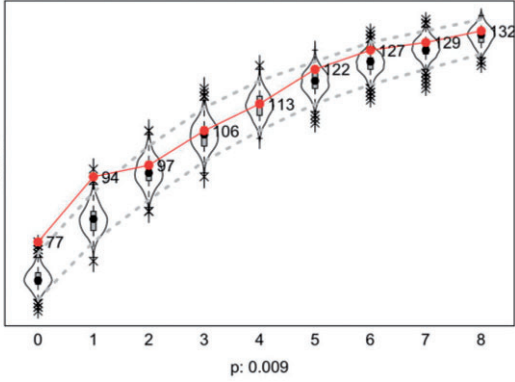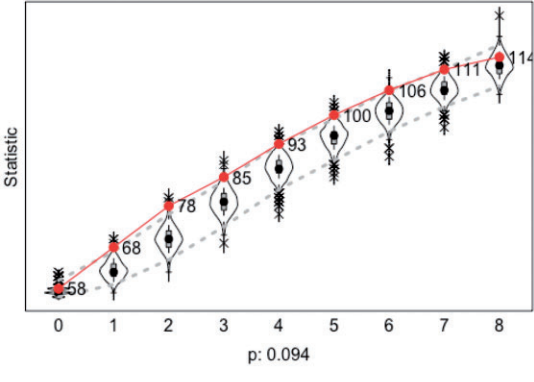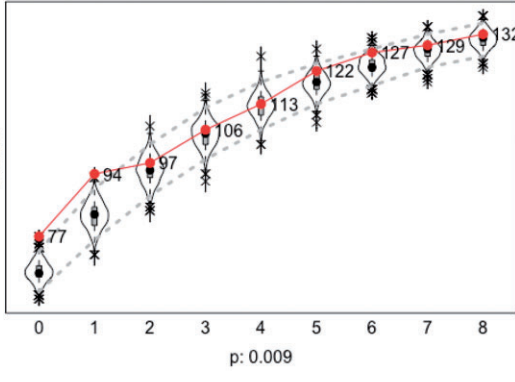
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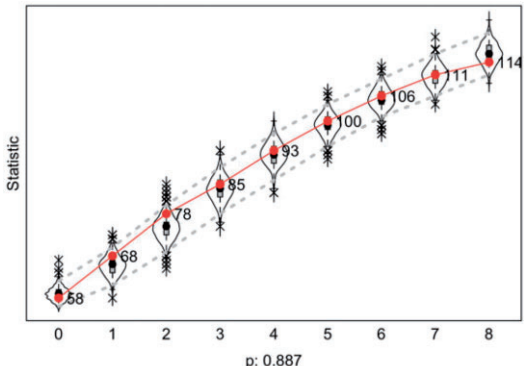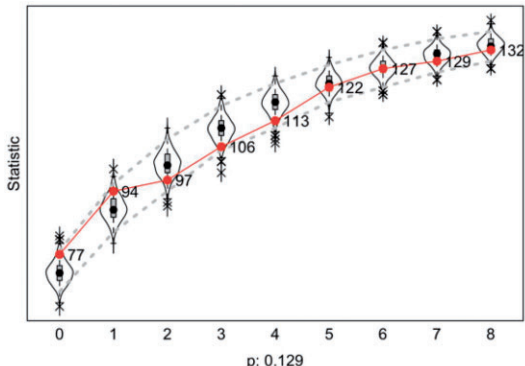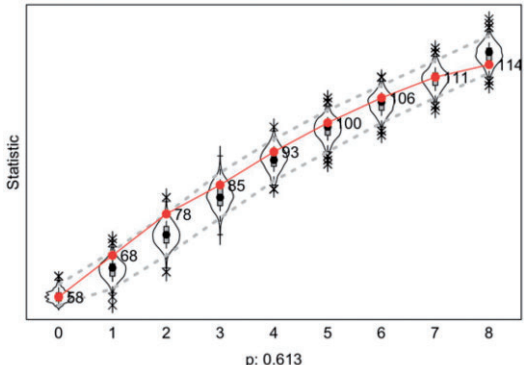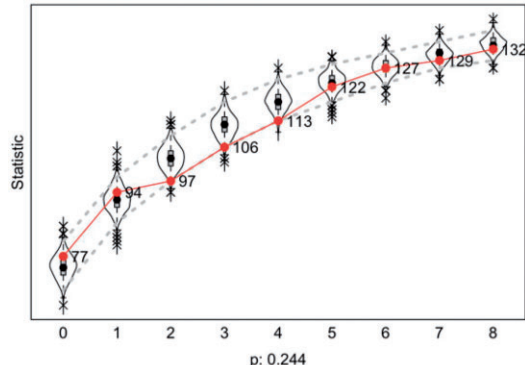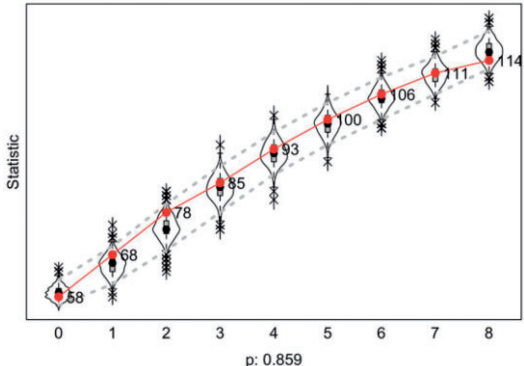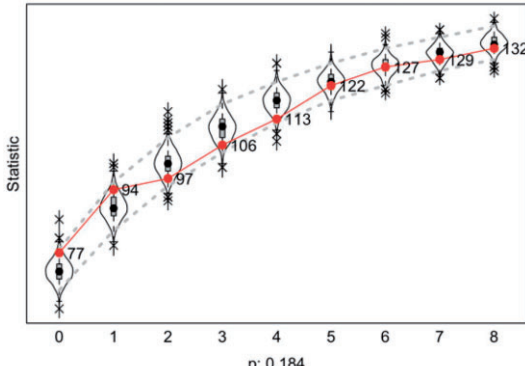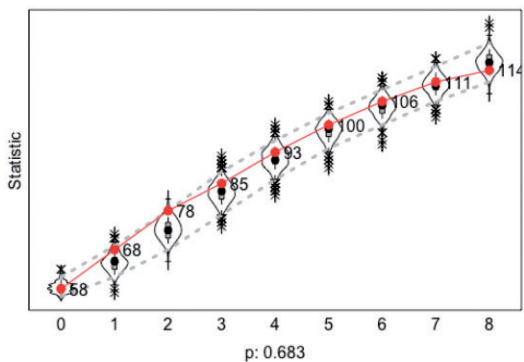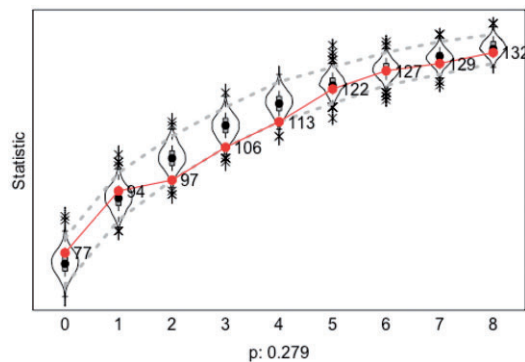
Appendix

Table A1. Goodness-of-fit (GoF) plots of SIENA models

Model No.	Goodness of fit with respect to indegree distribution	Goodness of fit with respect to outdegree Distribution
1		
2		
3		
4		

(continued)

Table A1. (continued)

Model No.	Goodness of fit with respect to indegree distribution	Goodness of fit with respect to outdegree Distribution

Notes: All the models demonstrate desirable GoF with *p*-values above .05, except for GoF with respect to outdegree distribution for the first three models. As the more variables are added to test H2a and H2b, the GoFs are improved to a desirable level ($p > .05$).