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Abstract

Do virtual, yet informal and synchronous, interactions affect individual performance outcomes of organizational newcomers? We report results from a randomized field experiment conducted at a large global organization that estimates the performance effects of "virtual water coolers" for remote interns participating in the firm's flagship summer internship program. Findings indicate that interns who had randomized opportunities to interact synchronously and informally with senior managers were significantly more likely to receive offers for full-time employment, achieved higher weekly performance ratings, and had more positive attitudes toward their remote internships. Further, we observed stronger results when the interns and senior managers were demographically similar. Secondary results also hint at a possible abductive explanation of the performance effects: virtual watercoolers between interns and senior managers may have facilitated knowledge and advice sharing. This study demonstrates that hosting brief virtual water cooler sessions with senior managers might have job and career benefits for organizational newcomers working in remote workplaces, an insight with immediate managerial relevance.

Keywords: remote work, virtual water coolers, social interactions, performance, careers, field experiment

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1. Introduction

The past two decades have witnessed a growing adoption of remote and distributed work (Gajendran and Harrison 2007, Hinds et al. 2002, Wiesenfeld et al. 1999). A more recent literature documents causal productivity gains from provisioning remote work (Bloom et al. 2015, Choudhury et al. 2020), and a recent working paper estimates that after the COVID-19 pandemic, 25% of work will be supplied by remote workers, compared with just 5% prior to the pandemic (Barrero et al. 2020). However, CEOs remain concerned with the widespread adoption of remote work—such as Arvind Krishna at IBM, who has said he expects 80% of the company's employees to work in a hybrid model after the pandemic—due to the reduced quality of informal interactions in the workplace (Ford and Chang 2021). These managerial concerns around informal interactions and onboarding workers in remote workplaces are echoed in prior organizational literature. In particular, researchers have theorized that the absence of face-to-face interactions between organizational newcomers working remotely and senior managers might negatively affect opportunities for remote workers to build relational ties with peers and supervisors (Golden 2006) and lead to remote newcomers missing out on mentoring opportunities and other forms of information exchange that might affect their performance (Cooper and Kurland 2002, Nardi and Whittaker 2002).

It is, however, important to point out that advances in communication technology such as Zoom, Microsoft Teams, Google Hangouts, etc., now allow for *virtual synchronous interactions*. This being said, we know little about how virtual, yet synchronous and informal, interactions between organizational newcomers and senior managers affect performance and career outcomes of remote workers. This leads to our research question: *Are informal, synchronous interactions in a remote workplace effective in shaping performance and career outcomes of organizational newcomers?* Answering this question has immediate managerial relevance given that global vaccine distribution timelines remain uncertain (O'Dowd and Hagan 2021) and a large number of workers are likely to be onboarded remotely in 2021.

To study this question, we report results from a field experiment on 1,370 remote new summer interns distributed across eight divisions and 16 program cities in a large global organization to measure the causal effects of virtual "water cooler" (WC) interactions on the interns' performance, career outcomes, and

attitudes toward their remote internship experience. The intervention, which focused on exogenously varying the interns' access to different types of opportunities for interactions with peers and/or senior managers, represents, to the best of our knowledge, the first experimental evidence showing whether and how randomly orchestrated "serendipitous" informal and synchronous interactions can improve job performance and career outcomes for organizational newcomers working remotely.

The experimental design allowed us to study the performance and career effects of different types of virtual interactions among workers. The interactions varied by the formality of the communication (informal versus formal) and synchronicity of communication (asynchronous versus synchronous). Whereas informal communication refers to interactions that are nonprescribed and social in nature, formal communication tends to be associated with work-related tasks, activities, and decision-making authority (Tushman and Romanelli 1983). The synchronicity of communication can be described as asynchronous versus synchronous, which refers to the extent to which the interactions are real-time and occur at the same place and time (i.e., synchronous) or across place and time (i.e., asynchronous) (Brown et al. 2010, Dennis et al. 2008). Whereas synchronous communication is often associated with voice (e.g., face-to-face, teleconference), asynchronous communication is more often associated with data (e.g., email, chat, discussion forum) (Rathnam et al. 1995). Along these two dimensions, serendipitous encounters—which are the kind of interactions people have with their colleagues outside of formal meetings and work activities—tend to be both *informal* and *synchronous* in nature (Fayard and Weeks 2007, Lane et al. 2020).

The main treatment intervention offered interns opportunities for remote informal and synchronous interactions via virtual water coolers (WCs) (i.e., teleconference) either: (1) with three or four other interns in the intern-only WCs or (2) with a senior manager and three or four other interns in the intern-senior manager WCs. In consultation with executives from the organization and to mitigate concerns related to Hawthorne effects, three control conditions were implemented. The first two control conditions were active controls (i.e., control conditions where the participants were engaging in an activity during the intervention period but not participating in a virtual water cooler). The first was an asynchronous question and answer (Q&A) discussion forum between interns and senior managers in which interns asked questions and were randomly selected to

receive a reply from a senior manager each week. The second active control was an intern group project, in which interns were randomly assigned to small groups of three to four interns that met each week to work on a research project together. The third control condition was a passive control (i.e., the "no intervention" control condition where the participants did not engage in any activity), which did not have prearranged opportunities for interactions of any kind with peers or managers.

A particularly attractive feature of the experimental design is the ability to measure a near-term, objective outcome. The main performance outcome corresponds to the interns' likelihood of receiving a full-time job offer at the end of the five-week internship program. We also complement this main career outcome measure with the interns' final performance ratings from their direct supervisors, and the interns' self-reported end-of-program attitudes toward their remote internship experience, which we collected using survey instruments. One noteworthy innovation of the experimental design is the implementation of a panel experiment structure that exogenously varied the WC treatment *dose* for each intern, by altering the frequency that the interns were invited to attend the WC sessions (Bojinov et al. 2020). Moreover, field experiments or randomized controlled trials (RCTs) provide one powerful method for ruling out rival hypotheses, making it a suitable method for our study, given the new and evolving nature of the remote work phenomenon (King et al. 2019, Mitchell and Tsui 2012).

Our main results show that that interns who were randomly assigned to informal and synchronous interactions in virtual intern-senior manager WCs with three to four other interns *and* senior managers were 4.7 and 7.3 percentage points (pp) more likely to receive full-time job offers at the end of the program compared to the asynchronous Q&A and intern group project active controls. Turning to performance outcomes, we find that the intern-senior manager WC condition received improved final performance ratings from their direct supervisors. It is important to note that the senior managers in the WC sessions did not include the interns' direct supervisors (who could be categorized as middle managers in the organization). We also find that compared to the other experimental conditions, the job outcome and final performance effects were strengthened to 9-13 pp for demographically similar intern-senior manager pairs and to 6-12 pp for interns who were exogenously assigned to a higher number of WC sessions.

We complement our performance and job offer results with survey measures of the interns' attitudes toward their remote internship experience at the end of the program to shed light into plausible mechanisms. The survey measures suggest that the virtual WCs may have facilitated information and advice sharing which possibly enabled the interns to improve their job performance and career outcomes.

In summary, our findings present the first experimental evidence on the effectiveness of virtual, informal and synchronous interactions in a remote workplace on performance and career outcomes among organizational newcomers. Whereas most studies on remote work—with a few exceptions (Bloom et al. 2015, Choudhury et al. 2020, Sherman 2020)—tend to focus on correlational patterns, which may raise questions about the generalizability of these findings to remote-only or hybrid-remote organizations, our study represents the first study (to the best of our knowledge) to experimentally test how informal interactions in a remote workplace can be engineered to yield causal benefits on career outcomes and performance. Our results suggest that virtual WCs among employees *across* hierarchical ranks can causally improve job performance and career outcomes for organizational newcomers.

2. Empirical Context: Remote Water Cooler Experiment at a Large Global Organization

2.1. Study Population

The field experiment was conducted at a large global organization. The organization we partnered with has more than 39,000 staff members across 67 offices and eight primary divisions. The organization codeveloped the opportunities for virtual social interactions in its internship program as part of a broader effort to create a virtual internship experience for the 2020 summer internship class due to the Covid-19 pandemic.

In a typical year, the organization's annual internship program brings together up to 3,000 undergraduate and MBA students for 8-10 weeks at one of the firm's locations. The program was a key pipeline of new talent for the firm, and as many 75% of the interns went on to accept offers to join the company after completing their studies. The internship program consisted of onboarding/training and then working alongside experienced firm employees via an apprenticeship model that relied on observation, hands-on learning, upskilling, as well as networking and social events. Throughout the program, managers assessed

the interns' weekly performance via an internal review system. At the close of the program, the firm extended job offers to interns based on their performance and firm head count needs.

Due to the Covid-19 pandemic, the firm decided to conduct the 2020 summer internship virtually over a shortened five-week internship. The internship experience would leverage new digital platforms and incorporate more structured networking and interactive opportunities into the interns' schedules. As firm executives worked to develop a virtual internship program, a key concern was ensuring access to socialization with other interns and senior managers. The firm was particularly concerned that interns would lose a sense of rapport and camaraderie with their cohort and miss out on opportunities for mentoring. We partnered with the firm to advise the design of a randomized controlled trial (RCT) that offered a range of different types of remote social interactions for interns. All 1,370 interns in the firm's North American internship program participated in the RCT during weeks 2-5 of their internship. There was no consent process for the study since the firm developed the experimental conditions as part of the internship program, executed the experiment and administered all surveys. The firm anonymized all experimental, demographic, and survey data before sharing the data with the researchers as observational data.

2.2. Intervention Details

The 1,370 interns were exogenously assigned to virtual WC treatments according to a block randomized design at the division level. The assignment probabilities were determined by the firm and based on senior manager availability (see Table A1 in the appendix). Figure 1 illustrates the experimental design and describes the assignment of interns to experimental conditions. The two treatment conditions, **intern-only WC** (N = 218 or 15.9%) and **intern-senior manager WC** (N = 219 or 16.0%), offered interns opportunities to attend 30-minute virtual WC sessions with either three to four other interns (intern-only WC) or three to four other interns and a senior manager (intern-senior manager WC). The interactions in these sessions were both informal and synchronous and facilitated via teleconference (i.e., Zoom), and the WC sessions were incorporated directly into the interns' weekly schedules as well as viewable on their interactive online learning and training platform.

Within the WC treatment conditions, the experimental design allowed for a panel experiment that exogenously varied the treatment *dose* for each intern by conducting a week-wise lottery (according to a Bernoulli distribution) that was based on a weekly quota of slots available,[2] to determine if the intern would be invited to a session in a given week (Bojinov et al. 2020). This meant that the week-wise lotteries were independent of each other, and an intern could be randomly assigned from zero to four WC sessions with different interns and/or senior managers during weeks 2-5 of the internship. Each week's assignment (0 or 1) was determined based on an independent draw from a Bernoulli random variable.

In addition to the two WC treatment conditions, there were three control conditions: two active controls, where the participants engaged in an activity during the intervention period but did not participate in the virtual WC, and one passive control condition, which was a no intervention control group where the participants did not engage in any activity. The first active control condition was an **asynchronous Q&A discussion forum** (N = 223 or 16.3%), where all interns were provided the opportunity at the end of each week of their internship to type and submit a question to senior management. The text was the same each week: *"Every week we will ask you to pose a question that you would ideally like to be answered by someone from [the firm]. The one question I would ideally like to be answered this week is…"* After submitting their question, interns in the asynchronous Q&A discussion forum condition were randomly selected (according to a Bernoulli distribution) to receive a typed response by a senior manager in their division during the following week (see Table A1 in appendix). Senior manager responses were posted on the discussion forum, and interns were not publicly acknowledged or notified that their question had been selected.

The second active control condition was an **intern group project** (N = 192 or 14.0%), where interns were randomly assigned to work on an "Intern Group Challenge" with other three to four other interns in their division. In weeks 2-5, the same group of interns met each week for 30 minutes to work and interact on a collaborative project. The important distinction between the two active control conditions is that while the interactions were informal and asynchronous in the Q&A discussion forum control, they were formal and

[2] The quota of slots each week was determined by the senior managers' availability.

synchronous in the intern group project. Therefore, only the WC treatments offered opportunities for informal *and* synchronous interactions.

The third, control condition was the **passive control** (N = 518 or 37.8%), or a "no intervention" condition where interns were not offered any additional informal or formal opportunities for synchronous or asynchronous interactions beyond the social networking activities that were provided to all interns (e.g., roundtables, speaker series, business spotlights). Put differently, the passive control condition offered the interns unstructured time, which they could use for scheduling one-on-ones with other firm personnel, engaging with their work group, or working on their projects. Table A2 in the appendix shows that the block randomization achieved balance across covariates.

[Figure 1 about here]

2.3. Dependent Variables

2.3.1. Job Offers

Our first main dependent variable is a dummy variable, *Job Offer*, which was coded as either 0 (no offer made) or 1 (offer made). Decisions to extend job offers to interns were based on the interns' performance and the division's hiring needs. 91.5% of interns received full-time offers to return, and of those extended an offer, 85.1% accepted. Given the high rate of offers made and accepted, we focus our main performance outcome analyses on the job offer decision.

2.3.2. Final Job Performance

Our second dependent variable, *Final Performance Rating*, captures the interns' performance during the final week (i.e., week 5) of the internship (M = 2.60, SD = 0.59). The ratings were given at the end of the week based on the intern's performance for the given week (1 = outstanding, 2 = good, 3 = needs improvement) by the interns' direct supervisors who did not participate in the intern-senior manager WC sessions. We received final performance ratings on 96.9% of the 1,370 interns. Chi-squared tests indicate there are no statistically significant differences in the missing performance data by WC treatment ($\chi^2(4,1370) = 0.623, p = 0.960$). Hence, we assume that the data are missing completely at random (Marini et al. 1980). We reverse coded the ratings prior to analysis.

2.3.3. Attitudinal Measures

We collaborated with the firm to design survey questions to measure different dimensions of the interns' attitudes towards their remote work experience and relationships with other employees at the end of the program. The content of the surveys was the same across the conditions and asked the interns to indicate how strongly they agreed with each statement, on a scale of 1-7. The questions used to examine the interns' attitudes towards their remote internship experience were: (1) "I can easily contact those I need who can help me when I need them" (M = 6.42, SD = 0.82), (2) "I do not feel left out of activities that could enhance my career" (M = 5.98, SD = 1.16), (3) "I have adequate opportunities to be mentored" (M = 6.21, SD = 0.98), and (4) "Overall, I am satisfied with remote work, based on this internship experience" (M = 6.13, SD = 1.08) (and were adapted from Golden et al. 2008).

2.4. Independent Variables

Our main independent variable is *WC Treatment*, a categorical variable corresponding to the intern's randomly assigned experimental condition: intern-senior manager WC, intern-only WC, asynchronous Q&A discussion forum, intern group project, and passive control.

We also estimate two alternate versions of the *WC Treatment* variable to examine heterogeneous treatment effects according to the demographic similarity between the interns and senior managers and treatment dose. First, we examine heterogeneous treatment effects between demographic-matched and unmatched intern-senior manager pairs, where a demographic match was defined in terms of both gender *and* ethnicity. Because an intern could be assigned to more than one virtual WC due to the panel experiment design, we defined a demographic match based on whether an intern was assigned to one or more virtual WCs where they shared a demographic match with their senior manager. 13.2% of the interns in the intern-senior manager condition were in the demographic match condition.[3]

Second, the panel experiment design exogenously varied the dose of the virtual WC treatments. Hence, we examine treatment dose effects by splitting the number of assigned WCs into low (0-2 WC) or

[3] Only 2.7% of the interns had more than one demographic match in the intern-senior manager WC condition.

high (3-4 WC) treatment dose. 19.6% of interns in the intern-senior manager WC were randomly assigned to a high treatment dose.

3. Statistical Analysis

For our baseline analysis, we use a block-specific difference-in-means (BDIM) approach that accounts for the block (i.e., organizational division) randomization structure to estimate overall treatment effects. The BDIM is the natural estimator for blocked randomized experiments as it is the weighted average (the weights depend on the blocks' size; see Table A3 in the appendix) of the within block treatment effects (Cox and Reid 2000). We analyze the data on an intent-to-treat basis, which means we analyze data from all participants randomized into a condition, regardless of whether they actually engaged in the activity or conversation (Lachin 2000). Our results are robust for employing saturated OLS models (Lin 2013) (see Tables A4-A18 for BDIM results and Tables A21-A37 for fully interacted OLS model results).

4. Results

4.1. Job Offer Results

The intern-senior manager WCs had a significant and positive effect on the interns' end of program job offers. We find that interns who were exogenously assigned to the intern-senior manager WCs were 4.7 pp more likely to receive an offer than the asynchronous Q&A control (BDIM = 0.047, $p = 0.053$), and 7.3pp more likely to receive an offer than the intern group project control condition (BDIM = 0.073, $p = 0.010$).

We also find heterogeneous treatment effects. As shown in Figure 2 (left), interns who were demographically similar to the senior managers in terms of gender *and* ethnicity were 9-13 pp more likely to receive an offer than any other condition: intern group project (BDIM = 0.126, $p < 0.001$); asynchronous Q&A (BDIM = 0.105, $p < 0.001$); passive control (BDIM = 0.087, $p < 0.001$); intern-only WC (BDIM = 0.095, $p < 0.001$). Although we find that the demographically dissimilar pairs had a positive effect on job offers, the difference was only significant compared to the intern group project (BDIM: 0.073, $p = 0.053$). Examining the treatment dose effects in Figure 2 (right), we find that interns who were assigned to a high dose (i.e., 3-4 WCs) of intern-senior manager WC sessions outperformed the other experimental conditions, and were 6–12 percentage points more likely to receive an offer: intern group project (BDIM = 0.117, $p <$

0.001); asynchronous Q&A (BDIM = 0.100, $p < 0.001$); passive control (BDIM = 0.062, $p = 0.004$); intern-only WC (BDIM = 0.073, $p = 0.004$). In contrast, we found weaker effects of a low dose of intern-senior manager WC sessions (intern group project: BDIM = 0.056, $p = 0.072$; asynchronous Q&A: BDIM = 0.027, $p = 0.317$; passive control: BDIM = 0.008, $p = 0.713$; intern-only WC: BDIM = 0.019, $p = 0.466$).

Overall, we find that the intern-senior manager WCs improved the likelihood of receiving a job offer, and the effects were strengthened among demographically similar pairs and interns with more opportunities to attend WC sessions. Results are robust for saturated OLS models (see appendix).

4.2. Final Job Performance Results

The intern-senior manager WCs had a significant and positive effect on the interns' final performance ratings, particularly when we examined heterogeneous treatment effects by demographic similarity and treatment dose. We observe that the intern-senior manager WC condition benefitted from improved final performance ratings, and that the difference was statistically significant compared to the intern group project condition (BDIM = 0.174, $p = 0.005$).

Turning to heterogeneous treatment effects, the job performance results in Figure 3 (left) illustrates that the intern-senior manager WC match condition significantly outperformed all other experimental conditions: intern group project (BDIM = 0.261, $p = 0.034$); asynchronous Q&A (BDIM = 0.185, $p = 0.103$); passive control (BDIM = 0.214, $p = 0.027$); intern-only WC (BDIM = 0.194, $p = 0.064$), which corresponds to a 7.2-10.4 percent improvement in final performance. In contrast, the intern-senior manager no-match condition only outperformed the intern group project condition (BDIM = 0.149, $p = 0.021$). Similarly, the treatment dose effects in Figure 3b (right) show that interns exogenously assigned to a high dose of intern-senior manager WC treatments outperformed all other conditions in the final week: intern group project (BDIM = 0.094, $p = 0.002$); asynchronous Q&A (BDIM = 0.079, $p = 0.002$); passive control (BDIM = 0.054, $p = 0.010$); intern-only WC (BDIM = 0.068, $p = 0.007$), corresponding to a 2.1-3.7 percent improvement in final performance. In contrast, the low dose intern-senior manager WC condition only outperformed compared to the intern group project (BDIM = 0.144, $p = 0.032$).

Taken together, the results suggest that the intern-senior manager WCs positively increased the interns' job performance, and that these effects were strengthened when the interns and senior managers shared a demographic match and when there were more opportunities to attend the WC sessions. Results are robust for saturated OLS models (see appendix).

4.3. Abductive Explanations: End of Internship Survey Results

In the spirit of generating abductive explanations (King et al. 2019)[4] of our main results, we leveraged interns' responses from an end-of-internship survey. This enables us to rule in one plausible mechanism, i.e., the performance enhancing benefits of sharing information and advice with organizational newcomers (e.g., Cooper and Kurland 2002). A detailed discussion is documented in the appendix (section 1.2 of appendix; Tables A14, A16, A25, A26).

We find that the intern-senior manager WC condition had directionally higher attitudes than the other conditions, and that the positive effect was significant compared to the asynchronous Q&A condition across all four attitudinal measures: ease of contacting others for help (BDIM = 0.162, $p = 0.037$), opportunities for career enhancement (BDIM = 0.270, $p = 0.026$) and mentorship (BDIM = 0.259, $p = 0.019$), as well as overall satisfaction with remote work (BDIM = 0.319, $p = 0.005$), corresponding to a 2.6-5.4 percent increase in attitudes. We also note there are heterogeneous treatment effects for the intern-senior manager WC match condition towards ease of asking others for help (intern group project: BDIM = 0.115, *ns*; asynchronous Q&A: BDIM = 0.367, $p = 0.008$; passive control: BDIM = 0.308, $p = 0.019$; intern-only WC: BDIM = 0.254, $p = 0.069$), as well as opportunities for career enhancement (intern group project: BDIM = 0.126, $p < 0.001$; asynchronous Q&A: BDIM = 0.105, $p < 0.001$; passive control: BDIM = 0.087, $p < 0.001$; intern-only WC: BDIM = 0.095, $p < 0.001$).

5. Discussion

Our study that leverages a field experiment testing the effects of virtual watercoolers on performance of remote interns offers important new theoretical and applied insights on the effectiveness of scheduling

[4] Abductive reasoning or explanations is a process of reasoning based on creating and testing hypotheses using the best information or evidence available to look for cause-and-effect relationships.

informal and synchronous virtual interactions among employees in the remote workplace. Given that less than 5% of the U.S. workforce was remote prior to the current Covid-19 pandemic (Barrero et al. 2020), there have been few opportunities in a field setting to study how and when informal and synchronous virtual interactions may enhance the performance of remote workers. Most studies have focused on either formal, work-related interactions among global or distributed teams (Cramton 2001, Hinds and Mortensen, 2005, Gibson and Gibbs 2006), changes to individual productivity after amendments to work-from-home (WFH) or work-from-anywhere (WFA) policies (Allen et al. 2015, Bloom et al. 2015, Choudhury et al. 2020, Sherman 2020), or the job performance, career-orientation, and psychological experiences of remote workers who have self-selected into these arrangements (Gajendran and Harrison 2007, Raghuram et al. 2019). Therefore, this paper represents the first causal evidence, to the best of our knowledge, of the relationship between informal and synchronous virtual interactions and performance of organizational newcomers working remotely.

This research sheds light on how the type of virtual interactions may enhance new organizational members' career outcomes, job performance and attitudes towards remote work. Our research shows that remote new hires in an organization can improve their career outcomes and performance through informal opportunities to interact with senior managers synchronously, particularly when interns and senior managers are demographically similar—suggesting homophily effects (Lazarsfeld and Merton 1954)—and when interns are offered more opportunities for informal and synchronous virtual interactions (i.e., higher treatment dose). Our survey measures examined the interns' attitudes towards remote work and shed light on a potential mechanism. They suggest that informal interactions with senior managers may have exposed the interns to information about the organization (such as norms and expected behaviors for help-seeking), and opportunities for mentoring and career advice; these practices have been shown in prior research to improve newcomer learning, socialization, job performance (Louis 1980, Morrison 1993, 2002, Reichers 1987), and career outcomes (Castilla and Rissing 2019, Fernandez and Fernandez-Mateo 2006). Interestingly, we observed mostly null effects of the intern-only WC treatment, which did not include senior managers.

At the same time, our findings suggest that there are several parallels between how to promote effective interactions in the remote and physical world. Prior work suggests that in a physical workplace,

informal interactions with senior organizational members can improve an employee's social assimilation and performance (Ancona and Caldwell 1992, Morrison 2002, Ostroff and Kozlowski 1992), while research on homophily indicates that employees prefer to form interpersonal and advice-seeking relations with demographically similar others within their organizations (Fernandez and Fernandez-Mateo 2006, Kleinbaum et al. 2013). However, we have no prior insights on the performance effects of informal social interactions in a remote workplace. Overall, our results are encouraging, as they suggest that opportunities for brief informal and synchronous interactions with senior members can enhance a new employee's socialization to the organization and improve their productivity in a short amount of time.

This work is not without limitations. First, we focused on a five-week internship experience, whereas the sharing of information and advice through informal interactions often depends on interpersonal trust and may require more time to develop (Levin and Cross 2004). Hence, future research should measure how WC treatments affect performance, career outcomes and knowledge/advice sharing over a longer duration. Second, while we focused on a completely virtual setting, where all employees were remote, it is likely that after the pandemic ends, firms will implement policies that embrace hybrid-remote work practices (Barrero et al. 2020). Therefore, future research should aim to examine what types of informal social interactions will be most likely to benefit workers who work partly in the office and partly remote, and/or remote workers in a hybrid remote workplace. Third, our research was conducted within a single organization which makes the context of our results specific to the organization. We also focused on newcomers to an organization—specifically interns, who may have different requirements and needs for social interactions, compared to existing employees who may have already established social capital (Sterling and Fernandez 2018, Sterling and Merluzzi 2021). That said, understanding how virtual interactions enhances performance for both newcomers and firm insiders is critical, particularly as organizations onboard new remote workers both during and beyond the pandemic.

In summary, our study, to the best of our knowledge, presents the first experimental evidence on whether informal interactions in a remote workplace improve performance outcomes among organizational newcomers. Our results suggest that informal and synchronous interactions with peers *and* senior

organizational members can be beneficial for improving career outcomes, job performance and attitudes toward remote work. Insights from our study are of immediate relevance as firms transition to all-remote and hybrid-remote work arrangements.

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Figure 1. Summary of Randomization of Participants by Division and Experimental Condition

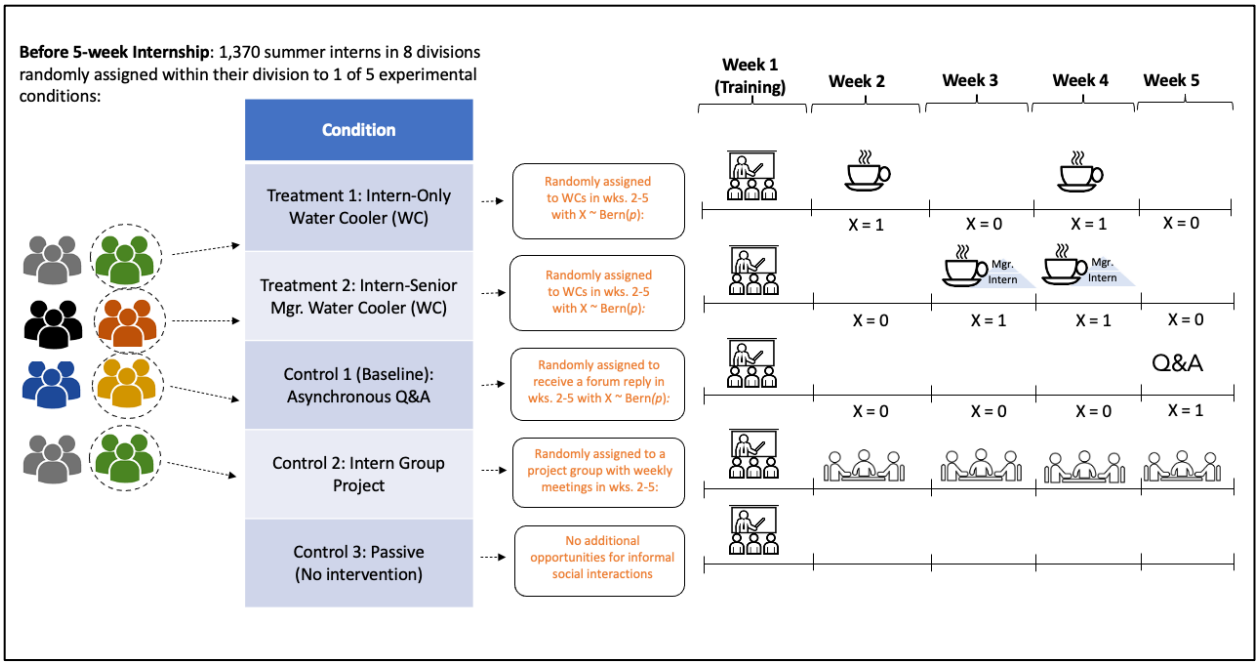
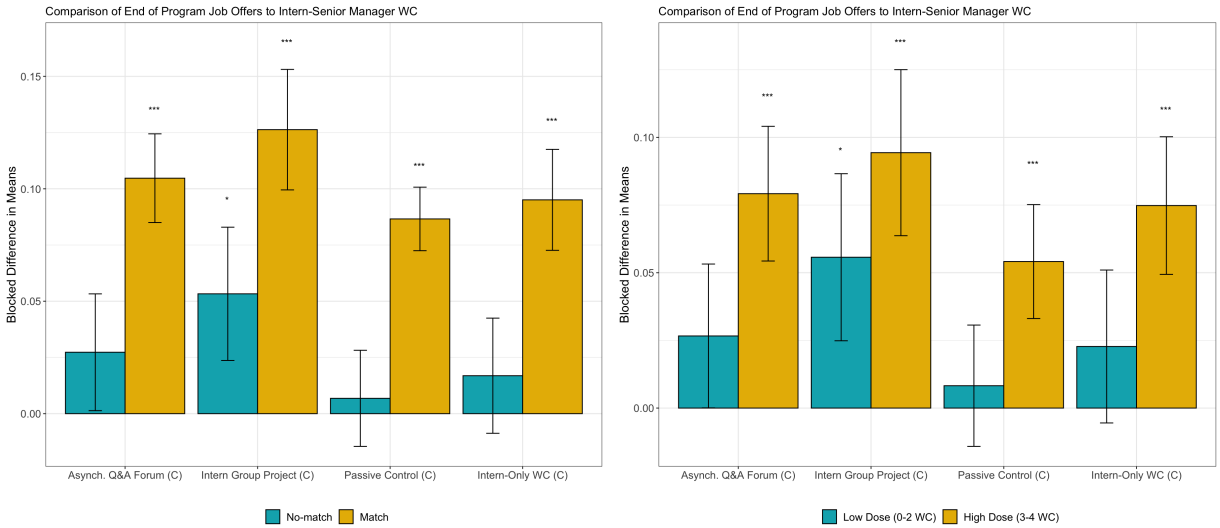
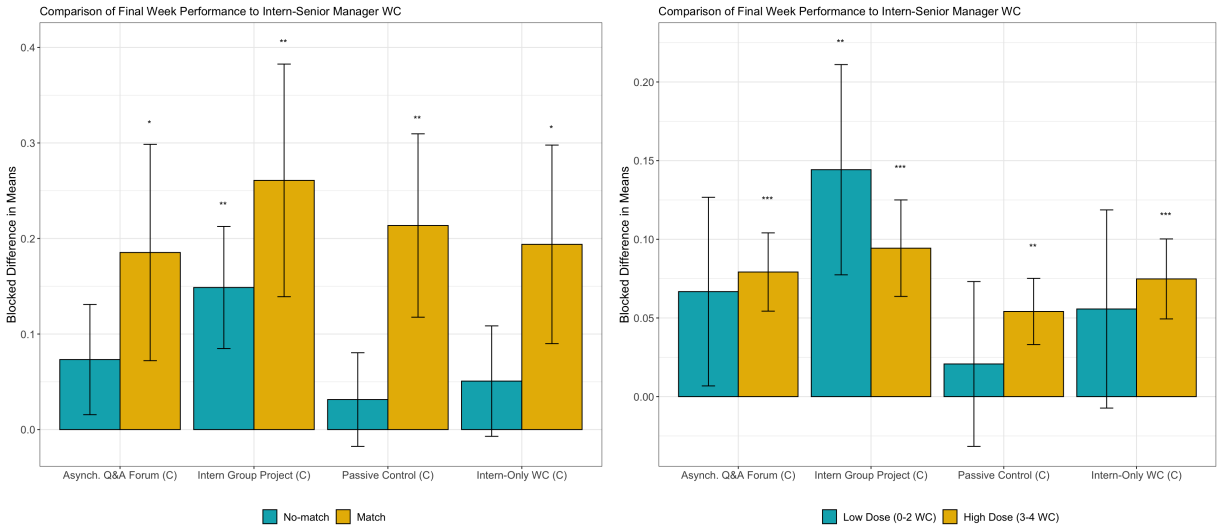


Figure 2. Comparison of Final Job Offer Outcomes Across Experimental Conditions By WC Treatment Match (left) and WC Treatment Dose (right) (Baseline = Intern-Senior Manager WC)



Note: Error bars are standard errors.

Figure 3. Comparison of Final Job Performance Across Experimental Conditions By WC Treatment Match (left) and WC Treatment Dose (right) (Baseline = Intern-Senior Manager WC)



Note: Error bars are standard errors.

Appendix for

Virtual Watercoolers: A Field Experiment on Virtual Synchronous Interactions and Performance of Remote Newcomers

1. Supplementary Text

1.1. Conceptual Design of Water Cooler (WC) Treatments

Our experimental design allowed us to study the performance and career effects of different types of virtual interactions among workers. As shown in Figure A1, the interactions varied by the formality of the communication (informal versus formal) and synchronicity of communication (asynchronous versus synchronous). Whereas informal communication refers to interactions that are nonprescribed and social in nature, formal communication tends to be associated with work-related tasks, activities, and decision-making authority (Tushman and Romanelli 1983). The synchronicity of communication can be described as asynchronous versus synchronous, which refers to the extent to which the interactions are real-time and occur at the same place and time (i.e., synchronous) or across place and time (i.e., asynchronous) (Brown et al. 2010, Dennis et al. 2008). Moreover, whereas synchronous communication is often associated with voice (e.g., face-to-face, teleconference), asynchronous communication is more often associated with data (e.g., email, chat, discussion forum) (Rathnam et al. 1995). Along these two dimensions, serendipitous encounters—which are the kind of interactions people have with their colleagues outside of formal meetings and work activities—tend to be both *informal* and *synchronous* in nature (Fayard and Weeks 2007, Lane et al. 2020).

As illustrated in Figure A1, our main treatment intervention offered interns opportunities for remote informal and synchronous interactions via virtual water coolers (WCs) (i.e., teleconference) either: (1) with three or four other interns in the intern-only WCs or (2) with a senior manager and three or four other interns in the intern-senior manager WCs. Although the interactions in the virtual WCs were planned ahead of time, interns and senior managers were randomly assigned to sessions, thereby emulating the serendipity of a chance encounter at the watercooler, lunch room, or hallway (Allen 1977, Fayard and Weeks 2007). It is important to point out that the senior manager the interns met during the watercooler session was *not* the direct supervisor of any of the interns in the watercooler session. In other words, the senior managers who

participated in the virtual watercoolers were *not* responsible for measuring interns' performance during their internship or deciding whether to offer the interns full-time employment at the end of the internship.

In consultation with executives from the organization and to mitigate concerns related to Hawthorne effects, we also designed and implemented three control conditions. The first two control conditions were active controls (i.e., control conditions where the participants were engaging in an activity during the intervention period but not participating in a virtual water cooler). The first was an asynchronous question and answer (Q&A) discussion forum between interns and senior managers in which interns asked questions and were randomly selected to receive a reply from a senior manager each week. Figure A1 illustrates that although the discussion forum offered interns opportunities for informal interactions, they were asynchronous in nature and, therefore, not in real time. The second active control was an intern group project, in which interns were randomly assigned to small groups of three to four interns that met each week to work on a research project together. As shown in Figure A1, although the intern group project offered interns opportunities for synchronous interactions via teleconference, their interactions were formal and focused on accomplishing a work task. The third control condition was a passive control (i.e., the "no intervention" control condition where the participants did not engage in any activity), which did not have prearranged opportunities for interactions of any kind with peers or managers. Put differently, this meant that the passive control condition was implicitly offered unstructured time as a placebo, which made them a poor baseline control condition because it likely meant that these interns had extra time to complete their work tasks.

1.2. Abductive Explanations for Plausible Mechanisms for WC Treatment Effects

We draw on prior theory to shed light on plausible explanations of our result that intern-senior manager WCs led to improved performance and career outcomes. We do so in the spirit of "red-state papers" (Mitchell and Tsui 2012), which use extant theory to understand more deeply an important empirical phenomenon, and recent calls to use abductive explanations to shed light on empirical patterns (King et al. 2019).[5] Building on prior theory, we identify two potential mechanisms that might be in play: (1) information

[5] To quote King et al. (2019:24), "research that uses abduction to develop plausible explanations is well suited to

and advice sharing with senior managers and other treated interns and (2) endorsements of treated interns by senior managers. Based on prior theory, we also abductively theorize how these two mechanisms might be particularly salient for demographically similar pairs of interns and senior managers.

First, prior work on organizational socialization of firm newcomers suggests that information sharing and advice seeking with peers and superiors positively affect job performance (Comer 1991, Cooper and Kurland 2002, Morrison 1993). Two types of information-seeking behaviors tend to have performance-enhancing effects on newcomers: "technical" knowledge, such as the skills, responsibilities, and demands that newcomers need to execute tasks competently, and "social" knowledge of the people, values, norms, and information about expected attitudes and behaviors (Comer 1991, Louis 1980, Morrison 1993). Prior research indicates that interactions with both peers and superiors can improve newcomers' socialization into their organization and positively affect their job performance (Comer 1991, Louis et al. 1983, Morrison 2002). Along with information acquisition, newcomers also need sufficient social and performance feedback to become appropriately acculturated into their organizations and to perform their job roles effectively (Ashford 1986, Louis 1980, Morrison 1993). Whereas peers tend to be critical sources of feedback on the social behavior of newcomers, senior organizational members are typically better informed to provide performance feedback (Morrison 1993). To this end, mentors are often an instrumental component of a new employee's socialization—offering feedback, coaching, counseling, and providing informal advice to mentees (Louis 1980, Morrison 1993, Ostroff and Kozlowski 1992, 1993). This can enable newcomers to identify problems in their task performance and make adjustments if needed (Ashford et al. 2003, Louis 1980).

Yet despite having the opportunity to acquire information and advice from their interactions, interns may differ in their propensity to make constructive use of feedback and advice (London and Smither 2002). We might expect that interns are more inclined to make use of feedback and adjust their behaviors when they identify closely with the senior managers in their virtual WCs and view them as potential role models (Allen and Meyer 1990, Bosma et al. 2012, Filstad 2004). A role model is someone who sets an example to be

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the management research setting…pre-specification is impractical for most research conducted on archival datasets." Mitchell and Tsui (2012:2) note that "The focus of red research is on the phenomenon while existing theory or theories provide a means by which to focus on and obtain an understanding of the phenomenon."

emulated by others and who may inspire other individuals to make certain decisions and achieve certain goals (Basow and Howe 1980). Prior research indicates that role models may improve an individual's sense of role identification, as well as their overall performance and persistence in their selected occupation or career (Bosma et al. 2012). Role models are particularly effective in motivating positive behaviors among individuals with whom they share demographic characteristics (e.g., gender, ethnicity, nationality) (Bettinger and Long 2005, Carrell et al. 2010, Del Carpio and Guadalupe 2018, Marx and Roman 2002, Walton and Cohen 2011). Hence, we might expect interns to identify closely with demographically similar senior managers and view them as role models, which may have additional positive effects on their performance and career outcomes.

To summarize, having the opportunity to engage in information sharing and advice seeking with other organizational members (i.e., both peers *and* superiors) is one potential mechanism that might explain the improved weekly job performance trends and/or career outcomes of interns in the intern-senior manager WCs. Moreover, we might expect that these effects are strengthened when the interns view the senior managers as potential role models whose behaviors they would like to emulate.

We also consider endorsements as a second potential mechanism that might explain the improved career outcomes of interns assigned to the intern-senior manager WCs. Endorsements are an informal practice whereby endorsers—often high-status or influential organizational members—advocate for particular candidates to affect organizational selection processes and decision making (Castilla and Rissing 2019, Ocasio et al. 2020). Often, an endorsement occurs when a senior organizational member takes a direct stake in a candidate's success by contacting the relevant organizational decision maker responsible for the selection decision—and encourages them to pay attention to the particular candidate (Baldiga and Coffman 2016, Castilla and Rissing 2019). Recent research indicates that endorsed candidates are more likely to receive job offers and other advantageous outcomes even though they may not necessarily be better qualified candidates for the job or role (Castilla and Rissing 2019). Hence, although an endorsement mechanism might be a plausible explanation for the improved career outcomes of interns in the intern-senior manager WCs, it is unlikely to explain any job performance improvements, which we have suggested might be explained by an information and advice-sharing mechanism.

To this end, the informal and synchronous interactions may have provided the senior managers with greater visibility into the candidates' actual attitudes and behaviors (Fernandez and Weinberg 1997, Sterling and Fernandez 2018, Sterling and Merluzzi 2021). Through direct contact with and observation of these interns, a senior manager might decide to endorse one or more of them and advocate on their behalf with their direct supervisors or hiring managers. Moreover, since homophily tends to be an important determinant of relationship formation in the workplace (Fernandez and Fernandez-Mateo 2006, Ibarra 1992, Kleinbaum et al. 2013), we might expect senior managers to be more likely to endorse demographically similar interns who were exogenously assigned to the same virtual WCs. To summarize, an endorsement mechanism might help explain why interns assigned to the intern-senior manager WCs were more likely to receive job offers.

To shed light on the mechanisms (developed through abductive theorizing) that might be driving our results, we investigate several empirical patterns. We examine heterogeneous treatment effects by the demographic similarity between the intern-senior manager pairs and treatment dose to better understand how homophilous interactions may have shaped the interns' job performance and career outcomes. First, we find some evidence that demographically similar intern-senior manager pairs outperformed demographically dissimilar pairs in the final week of the internship (see Tables A10-A11). Similarly, interns who attended a high dose of intern-senior manager WC sessions benefited from improved performance in the final week (see Tables A12-A13). Second, we find that the positive effect of the intern-senior manager WCs on job offers was strengthened to 9-13 percentage points when the interns shared a demographic match with their assigned senior manager (where a demographic match was defined on the basis of same gender *and* same ethnicity; see Table A6) and to 6-12 percentage points for interns assigned to a high dose of intern-senior manager WC sessions (see Table A8). In contrast, there were weaker effects of the intern-senior manager WCs on job offers for interns who were demographically dissimilar to the senior managers in their virtual WCs and interns assigned to a low dose of intern-senior manager WC sessions (see Tables A5 and A7). The heterogeneous treatment effects provide some evidence indicating that the information-sharing and advice mechanism was strengthened for interns who identified with their assigned senior managers as role models, and those who had more opportunities for virtual and synchronous interactions, which led to some positive

benefits on their job performance and career outcomes. At the same time, given that we find only weak evidence that the demographically similar intern-senior manager pairs were better performers, we cannot rule out that an endorsement mechanism might also be in play.

To further shed light on the interplay of the two plausible mechanisms, we also collected survey measures of the interns' attitudes toward their remote internship experience at the end of the program. Our survey spanned four distinct dimensions: (1) ease of asking others for help, (2) having adequate opportunities to be mentored, (3) having adequate opportunities for career advancement, and (4) overall satisfaction with remote work. Nearly all (1,186 or 86.6%) of the participants took the final survey at the end of the internship (see the Appendix for the complete list of survey instruments). A chi-squared test indicates that there are no statistically significant differences by experimental condition ($\chi^2(4,1370) = 0.968, p = 0.915$). Hence, we assume that the data were missing completely at random (Marini et al. 1980).

Our findings of the interns' attitudes toward their remote internship experience indicate that compared to the asynchronous Q&A discussion forum, interns participating in the intern-senior manager WCs were more likely to report higher attitudes across all four dimensions (Table A14). Moreover, we observe heterogeneous treatment effects by demographic similarity, where the interns' attitudes were strengthened for ease of asking others for help and having adequate opportunities for career advancement when the intern-senior manager pairs shared a demographic match (Table A16; results based on fully interacted OLS models are reported in Tables A25, A26). As interns in the intern-senior manager WC condition were more likely to report greater ease in asking others for help and having adequate opportunities to be mentored, both these findings provide further evidence of an information-sharing and advice mechanism. That said, the reported increase in career advancement opportunities in the intern-senior manager WC condition might be attributable to either a strengthened information-sharing and advice mechanism due to the role model effect of senior managers as an "aspirational self" (Lockwood et al. 2002) or an endorsement mechanism by a senior manager. Taken together, these survey findings suggest that while we can potentially rule *in* information sharing and advice as a plausible explanation for the treated interns' improved job performance and career outcomes, at the same time, we cannot rule *out* an endorsement mechanism as a potential explanation for their improved career

outcomes. Our final survey measure, satisfaction with remote work, indicates that having opportunities for informal and synchronous interactions with other interns and senior managers increased the interns' overall satisfaction with their remote work arrangements.

2. Analysis Strategy for Main Results

Our main method of analysis is the block-specific difference-in-means approach (BDIM) that accounts for the block (or division in this context) randomization structure to estimate overall treatment effects and analyze treatment effect differences depending on the demographic match (gender and ethnicity) between the intern and the senior manager in the intern-senior manager WCs. Table A2 shows that overall, the randomization achieved balance across covariates in each division and Table A3 shows the size of each division as well as the job offers made (%) and the mean final performance rating by division.

The BDIM is the natural estimator for blocked randomized experiments as it is the weighted average (the weights depend on the blocks' size) of the within block treatment effects (Cox and Reid 2000). For the analysis on treatment effect differences, we exclude divisions where there was insufficient sample size (i.e., there is a minimum threshold of 2 interns required to compute the variance) for the intern-senior manager WC treatment match/non-match and treatment low/high dose conditions. Tables A4-18 report the pairwise comparisons using BDIM for the end of program career outcomes (Tables A4-A8), final performance (Tables A9-A13) and attitudinal outcomes (Tables A14-A18).

2.1. Additional BDIM Results on Weekly Performance

We examine the interns' weekly performance (i.e., weeks 2-5) on *First WC Treatment*, which differentiates between the interns' weekly performance before and after they were assigned to their first virtual WC. Recall that due to the panel experiment design, this meant that the week of an intern's first WC treatment was exogenously determined, where an intern could be assigned to their virtual WC any time from week 2 to 5 of the internship. Hence, we use the variable, *First WC Treatment* to account for the periods before and after an intern was first assigned to a virtual WC. The variable, *First WC Treatment* has the following seven categories: intern-senior manager pre-WC, intern-senior manager post-WC, intern-only pre-WC, intern-only post-WC,

asynchronous Q&A discussion forum, intern group project, and passive control. The weekly performance results are presented in Table A19 (pre-WC comparisons) and Table A20 (post-WC comparisons).

3. Robustness Check: Fully Interacted Ordinary Least Squares (OLS) Models

As a robustness check of our main analyses using the BDIM approach, we use fully interacted or saturated ordinary least squares (OLS) models to causally estimate the WC treatment effects on the interns' job performance, career outcomes, and attitudes. According to Lin (2013), fully interacted models are important for obtaining unbiased estimates of treatment effects in block randomized designs when the treatment assignment probabilities are different across the block, which is the division in our setting (see Table A1 for assignment probabilities) (Lin 2013). We use the following model to estimate the causal effect of the WC treatment on the likelihood of receiving a job offer at the end of the program:

$$Job\ Offer_i = \beta_1(WC\ Treatment_i) + \beta_2(WC\ Treatment_i) \cdot \delta_i + \delta_i + \epsilon_i, \quad [1]$$

where $WC\ Treatment_i$ corresponds to the intern i's experimental condition, δ_i is the division fixed effects, and ϵ_i is the error term. We also estimate alternate versions of Equation [1] where we replace $WC\ Treatment_i$ with $WC\ Treatment\ Match_i$ to examine heterogeneous treatment effects by demographic similarity and with $WC\ Treatment\ Dose_i$ to examine heterogeneous treatment effects by treatment dose. We note that for the regressions examining heterogeneous treatment effects by demographic similarity and treatment dose, we perform the analyses on a subset of divisions that had a minimum number of two interns assigned to *both* the no-match and match conditions and low dose and high dose conditions, which is the minimum sample size needed to compute the variance of the point estimates. Lastly, we estimate alternate versions of Equation [1] where we replace $Job\ Offer_i$, the dependent variable in Equation [1] with $Performance_{i,t}$, which is the performance rating for intern i in week t (for t in weeks 2-5) as well as the four attitudinal measures corresponding to the different dimensions of the interns' satisfaction with their remote internship experience: $Satisfaction\ with\ Remote\ Work_i$, $Opportunities\ for\ Career\ Enhancement_i$, $Opportunities\ to\ be\ Mentored_i$, and $Ease\ of\ Asking\ Others\ for\ Help_i$. The results are presented in Tables A21-A37 and they are consistent with the BDIM approach.

Table A1. Assignment Probabilities to Experimental Conditions

Condition	Assignment probability by division	Response probability (Asynchronous Q&A only)
Asynchronous Q&A control	Division 3: 1/5 Division 6: 1/5 All other divisions: 17/100	Division 3: 4/5 Division 6: 4/5 All other divisions: 1/10
Passive control	Division 3: 1/5 Division 6: 1/10 All other divisions: 39/100	--
Intern group project control	Division 3: 1/5 Division 6: 1/5 All other divisions: 13/100	--
Intern-only WC treatment	Division 3: 1/5 Division 6: 1/4 All other divisions: 17/100	--
Intern-senior manager WC treatment	Division 3: 1/5 Division 6: 1/4 All other divisions: 16/100	--

Table A2. Randomization Check By Division (N = 1,370)

Covariate	**Division 1 (N = 196)**	**Division 2 (N = 318)**
Gender	$\chi^2(4) = 2.27,\ p = 0.69$	$\chi^2(4) = 3.23,\ p = 0.52$
Ethnicity	$\chi^2(16) = 14.71, p = 0.55$	$\chi^2(16) = 7.11, p = 0.9788$
Program city	$\chi^2(52) = 35.87, p = 0.96$	$\chi^2(8) = 14.70, p = 0.26$
Returning intern	$\chi^2(4) = 2.10, p = 0.72$	$\chi^2(4) = 1.12, p = 0.89$
Covariate	**Division 3 (N = 16)**	**Division 4 (N = 126)**
Gender	$\chi^2(4) = 0.36, p = 0.99$	$\chi^2(4) = 1.30, p = 0.86$
Ethnicity	$\chi^2(16) = 14.40, p = 0.57$	$\chi^2(12) = 9.74, p = 0.64$
Program city	--	$\chi^2(8) = 0.60, p = 0.38$
Returning intern	$\chi^2(4) = 3.97, p = 0.41$	$\chi^2(4) = 2.84, p = 0.59$
Covariate	**Division 5 (N = 259)**	**Division 6 (N = 20)**
Gender	$\chi^2(4) = 2.83,\ p = 0.59$	$\chi^2(4) = 5.30,\ p = 0.26$
Ethnicity	$\chi^2(16) = 16.35, p = 0.43$	$\chi^2(4) = 0.50, p = 0.97$
Program city	$\chi^2(52) = 35.58, p = 0.49$	$\chi^2(4) = 2.94, p = 0.57$
Returning intern	$\chi^2(4) = 4.35, p = 0.36$	--
Covariate	**Division 7 (N = 196)**	**Division 8 (N = 239)**
Gender	$\chi^2(4) = 0.76, p = 0.94$	$\chi^2(4) = 4.78, p = 0.31$
Ethnicity	$\chi^2(16) = 17.59, p = 0.35$	$\chi^2(16) = 11.63, p = 0.77$
Program city	$\chi^2(52) = 6.82, p = 0.87$	$\chi^2(8) = 4.64, p = 0.80$
Returning intern	$\chi^2(4) = 3.84, p = 0.43$	$\chi^2(4) = 8.42, p = 0.08$

Table A3. Division Level Summary Statistics

Division Number	Division Size (%)	Offer Made (%)	Final Performance
1	196 (14.31%)	83.2%	2.51 (0.66)
2	318 (23.21%)	91.8%	2.59 (0.60)
3	16 (1.17%)	100.00%	2.60 (0.63)
4	126 (9.20%)	88.10%	2.51 (0.67)
5	259 (18.91%)	95.4%	2.70 (0.50)
6	20 (1.46%)	55.0%	2.42 (0.90)
7	196 (14.31%)	95.4%	2.60 (0.54)
8	239 (17.45%)	94.6%	2.67 (0.53)
Total	1,370 (100.00%)	91.5%	2.60 (0.59)

Table A4. BDIM of Offers Made on WC Treatment

Comparison	Estimate	Std Error	t-value	P-value	CI Low	CI Upper	DF
Intern-Senior Manager WC vs. Asynchronous Q&A	0.047	0.024	1.940	0.053	-0.001	0.094	426
Intern-Senior Manager WC vs. Passive Control	0.020	0.020	1.025	0.306	-0.019	0.059	721
Intern-Senior Manager WC vs. Intern Group Project	0.073	0.028	2.598	0.010	0.018	0.129	395
Intern-Senior Manager WC vs. Intern-Only WC	0.029	0.024	1.196	0.232	-0.019	0.076	421
Passive Control vs. Asynchronous Q&A	0.024	0.023	1.055	0.292	-0.021	0.069	725
Intern Group Project vs. Asynchronous Q&A	-0.012	0.029	-0.419	0.676	-0.070	0.046	399
Intern-Only WC vs. Asynchronous Q&A	0.021	0.026	0.785	0.433	-0.031	0.072	425
Passive Control vs. Intern Group Project	0.042	0.026	1.618	0.106	-0.009	0.093	694
Passive Control vs. Intern-Only WC	-0.004	0.021	-0.175	0.861	-0.046	0.038	720
Intern-Only WC vs. Intern Group Project	0.046	0.030	1.520	0.129	-0.013	0.105	394

Table A5. BDIM of Offers Made on WC Treatment Match (No Match)

Comparison	Estimate	Std Error	t-value	P-value	CI Low	CI Upper	DF
Intern-Senior Manager WC vs. Asynchronous Q&A	0.047	0.027	0.026	1.052	0.294	-0.024	0.078
Intern-Senior Manager WC vs. Passive Control	0.020	0.007	0.021	0.319	0.750	-0.035	0.049
Intern-Senior Manager WC vs. Intern Group Project	0.073	0.053	0.030	1.799	0.073	-0.005	0.112
Intern-Senior Manager WC vs. Intern-Only WC	0.029	0.017	0.026	0.659	0.510	-0.033	0.067

Table A6. BDIM of Offers Made on WC Treatment Match (Match)

Comparison	Estimate	Std Error	t-value	P-value	CI Low	CI Upper	DF
Intern-Senior Manager WC vs. Asynchronous Q&A	0.105	0.020	5.307	0.000	0.066	0.144	195
Intern-Senior Manager WC vs. Passive Control	0.087	0.014	6.130	0.000	0.059	0.114	400
Intern-Senior Manager WC vs. Intern Group Project	0.126	0.027	4.714	0.000	0.073	0.179	155
Intern-Senior Manager WC vs. Intern-Only WC	0.095	0.022	4.234	0.000	0.051	0.139	185

Table A7. BDIM of Offers Made on WC Treatment Dose (Low)

Comparison	Estimate	Std Error	t-value	P-value	CI Low	CI Upper	DF
Intern-Senior Manager WC vs. Asynchronous Q&A	0.027	0.027	1.003	0.317	-0.026	0.079	377
Intern-Senior Manager WC vs. Passive Control	0.008	0.022	0.368	0.713	-0.036	0.052	672
Intern-Senior Manager WC vs. Intern Group Project	0.056	0.031	1.806	0.072	-0.005	0.116	342
Intern-Senior Manager WC vs. Intern-Only WC	0.019	0.027	0.729	0.466	-0.033	0.072	370

Table A8. BDIM of Offers Made on WC Treatment Dose (High)

Comparison	Estimate	Std Error	t-value	P-value	CI Low	CI Upper	DF
Intern-Senior Manager WC vs. Asynchronous Q&A	0.100	0.024	4.126	0.000	0.052	0.148	248
Intern-Senior Manager WC vs. Passive Control	0.062	0.021	2.915	0.004	0.020	0.103	544
Intern-Senior Manager WC vs. Intern Group Project	0.117	0.031	3.805	0.000	0.056	0.178	218
Intern-Senior Manager WC vs. Intern-Only WC	0.073	0.025	2.875	0.004	0.023	0.123	243

Table A9. BDIM of Final Performance on WC Treatment

Comparison	Estimate	Std Error	t-value	P-value	CI Low	CI Upper	DF
Intern-Senior Manager WC vs. Asynchronous Q&A	0.080	0.056	1.442	0.150	-0.029	0.189	407
Intern-Senior Manager WC vs. Passive Control	0.060	0.047	1.290	0.198	-0.031	0.152	698
Intern-Senior Manager WC vs. Intern Group Project	0.174	0.062	2.822	0.005	0.053	0.295	382
Intern-Senior Manager WC vs. Intern-Only WC	0.060	0.055	1.096	0.274	-0.047	0.167	406
Passive Control vs. Asynchronous Q&A	0.049	0.048	1.022	0.307	-0.045	0.144	700
Intern Group Project vs. Asynchronous Q&A	-0.069	0.063	-1.088	0.277	-0.193	0.056	380
Intern-Only WC vs. Asynchronous Q&A	0.022	0.057	0.380	0.704	-0.090	0.134	407
Passive Control vs. Intern Group Project	-0.103	0.055	-1.867	0.062	-0.212	0.005	674
Passive Control vs. Intern-Only WC	-0.007	0.047	-0.139	0.889	-0.100	0.087	698
Intern-Only WC vs. Intern Group Project	0.117	0.062	1.876	0.061	-0.006	0.239	382

Table A10. BDIM of Final Performance on WC Treatment Match (No Match)

Comparison	Estimate	Std Error	t-value	P-value	CI Low	CI Upper	DF
Intern-Senior Manager WC vs. Asynchronous Q&A	0.073	0.058	1.270	0.205	-0.040	0.187	382
Intern-Senior Manager WC vs. Passive Control	0.031	0.049	0.641	0.522	-0.065	0.128	668
Intern-Senior Manager WC vs. Intern Group Project	0.149	0.064	2.327	0.021	0.023	0.274	348
Intern-Senior Manager WC vs. Intern-Only WC	0.051	0.058	0.877	0.381	-0.063	0.164	375

Table A11. BDIM of Final Performance on WC Treatment Match (Match)

Comparison	Estimate	Std Error	t-value	P-value	CI Low	CI Upper	DF
Intern-Senior Manager WC vs. Asynchronous Q&A	0.185	0.113	1.637	0.103	-0.038	0.409	184
Intern-Senior Manager WC vs. Passive Control	0.214	0.096	2.225	0.027	0.025	0.402	386
Intern-Senior Manager WC vs. Intern Group Project	0.261	0.122	2.142	0.034	0.020	0.501	144
Intern-Senior Manager WC vs. Intern-Only WC	0.194	0.104	1.866	0.064	-0.011	0.399	175

Table A12. BDIM of Final Performance on WC Treatment Dose (Low)

Comparison	Estimate	Std Error	t-value	P-value	CI Low	CI Upper	DF
Intern-Senior Manager WC vs. Asynchronous Q&A	0.067	0.060	1.114	0.266	-0.051	0.185	365
Intern-Senior Manager WC vs. Passive Control	0.021	0.052	0.396	0.692	-0.082	0.124	652
Intern-Senior Manager WC vs. Intern Group Project	0.144	0.067	2.159	0.032	0.013	0.276	332
Intern-Senior Manager WC vs. Intern-Only WC	0.050	0.060	0.829	0.408	-0.069	0.169	358

Table A13. BDIM of Final Performance on WC Treatment Dose (High)

Comparison	Estimate	Std Error	t-value	P-value	CI Low	CI Upper	DF
Intern-Senior Manager WC vs. Asynchronous Q&A	0.079	0.025	3.184	0.002	0.030	0.128	244
Intern-Senior Manager WC vs. Passive Control	0.054	0.021	2.571	0.010	0.013	0.095	539
Intern-Senior Manager WC vs. Intern Group Project	0.094	0.031	3.077	0.002	0.034	0.155	209
Intern-Senior Manager WC vs. Intern-Only WC	0.068	0.025	2.698	0.007	0.018	0.117	237

Table A14. BDIM of End of Program Attitudes on WC Treatment

Comparison	Estimate	Std Error	t-value	P-value	CI Low	CI Upper	DF
			Ease Of Asking Others for Help				
Intern-Senior Manager WC vs. Asynchronous Q&A	0.162	0.077	2.093	0.037	0.010	0.314	364
Intern-Senior Manager WC vs. Passive Control	0.099	0.064	1.554	0.121	-0.026	0.224	621
Intern-Senior Manager WC vs. Intern Group Project	0.006	0.079	0.075	0.940	-0.149	0.160	339
Intern-Senior Manager WC vs. Intern-Only WC	0.048	0.071	0.670	0.503	-0.093	0.188	354
Passive Control vs. Asynchronous Q&A	0.076	0.075	1.018	0.309	-0.071	0.223	624
Intern Group Project vs. Asynchronous Q&A	0.143	0.086	1.655	0.099	-0.027	0.312	336
Intern-Only WC vs. Asynchronous Q&A	0.115	0.081	1.423	0.156	-0.044	0.275	356
Passive Control vs. Intern Group Project	0.051	0.073	0.692	0.489	-0.093	0.194	600
Passive Control vs. Intern-Only WC	0.041	0.063	0.653	0.514	-0.082	0.164	621
Intern-Only WC vs. Intern Group Project	-0.006	0.079	-0.070	0.945	-0.161	0.150	333
			Opportunities for Career Advancement				
Intern-Senior Manager WC vs. Asynchronous Q&A	0.270	0.121	2.235	0.026	0.032	0.508	364
Intern-Senior Manager WC vs. Passive Control	0.132	0.091	1.452	0.147	-0.046	0.310	622
Intern-Senior Manager WC vs. Intern Group Project	0.058	0.116	0.499	0.618	-0.171	0.287	340
Intern-Senior Manager WC vs. Intern-Only WC	0.083	0.105	0.791	0.430	-0.124	0.291	354
Passive Control vs. Asynchronous Q&A	0.141	0.117	1.205	0.229	-0.089	0.370	625
Intern Group Project vs. Asynchronous Q&A	0.221	0.133	1.661	0.098	-0.041	0.482	337
Intern-Only WC vs. Asynchronous Q&A	0.152	0.126	1.207	0.228	-0.096	0.400	356
Passive Control vs. Intern Group Project	0.057	0.102	0.555	0.579	-0.144	0.257	602
Passive Control vs. Intern-Only WC	0.030	0.094	0.316	0.752	-0.156	0.215	622
Intern-Only WC vs. Intern Group Project	-0.002	0.114	-0.015	0.988	-0.226	0.222	334
			Opportunities for Mentoring				
Intern-Senior Manager WC vs. Asynchronous Q&A	0.259	0.110	2.357	0.019	0.043	0.475	364
Intern-Senior Manager WC vs. Passive Control	0.071	0.077	0.923	0.356	-0.080	0.221	622
Intern-Senior Manager WC vs. Intern Group Project	-0.086	0.086	-0.998	0.319	-0.255	0.083	340
Intern-Senior Manager WC vs. Intern-Only WC	0.118	0.090	1.321	0.187	-0.058	0.295	354

Passive Control vs. Asynchronous Q&A	0.189	0.102	1.849	0.065	-0.012	0.390	625
Intern Group Project vs. Asynchronous Q&A	0.349	0.110	3.189	0.002	0.134	0.565	337
Intern-Only WC vs. Asynchronous Q&A	0.139	0.113	1.238	0.217	-0.082	0.361	356
Passive Control vs. Intern Group Project	0.121	0.076	1.588	0.113	-0.029	0.272	602
Passive Control vs. Intern-Only WC	-0.054	0.081	-0.669	0.504	-0.214	0.105	622
Intern-Only WC vs. Intern Group Project	-0.160	0.091	-1.753	0.081	-0.339	0.020	334
Satisfaction with Remote Internship							
Intern-Senior Manager WC vs. Asynchronous Q&A	0.319	0.113	2.812	0.005	0.096	0.542	364
Intern-Senior Manager WC vs. Passive Control	0.081	0.086	0.943	0.346	-0.088	0.251	622
Intern-Senior Manager WC vs. Intern Group Project	0.101	0.112	0.908	0.365	-0.118	0.321	341
Intern-Senior Manager WC vs. Intern-Only WC	0.118	0.099	1.198	0.232	-0.076	0.312	354
Passive Control vs. Asynchronous Q&A	0.173	0.099	1.749	0.081	-0.021	0.367	625
Intern Group Project vs. Asynchronous Q&A	0.199	0.117	1.709	0.088	-0.030	0.429	338
Intern-Only WC vs. Asynchronous Q&A	0.142	0.112	1.262	0.208	-0.079	0.362	356
Passive Control vs. Intern Group Project	-0.023	0.090	-0.251	0.802	-0.199	0.154	603
Passive Control vs. Intern-Only WC	-0.023	0.088	-0.262	0.793	-0.196	0.150	622
Intern-Only WC vs. Intern Group Project	0.030	0.108	0.283	0.777	-0.181	0.242	335

Table A15. BDIM of End of Program Attitudes on WC Treatment Match (No Match)

Comparison	Estimate	Std Error	t-value	P-value	CI Low	CI Upper	DF
Ease Of Asking Others for Help							
Intern-Senior Manager WC vs. Asynchronous Q&A	0.146	0.080	1.830	0.068	-0.011	0.304	340
Intern-Senior Manager WC vs. Passive Control	0.090	0.066	1.354	0.176	-0.040	0.220	596
Intern-Senior Manager WC vs. Intern Group Project	0.004	0.080	0.046	0.964	-0.153	0.161	308
Intern-Senior Manager WC vs. Intern-Only WC	0.042	0.072	0.584	0.560	-0.100	0.185	328
Opportunities for Career Advancement							
Intern-Senior Manager WC vs. Asynchronous Q&A	0.282	0.125	2.266	0.024	0.037	0.527	340
Intern-Senior Manager WC vs. Passive Control	0.157	0.094	1.662	0.097	-0.028	0.342	597
Intern-Senior Manager WC vs. Intern Group Project	0.081	0.116	0.699	0.485	-0.148	0.310	309
Intern-Senior Manager WC vs. Intern-Only WC	0.118	0.108	1.088	0.277	-0.095	0.331	328
Opportunities for Mentoring							
Intern-Senior Manager WC vs. Asynchronous Q&A	0.282	0.109	2.598	0.010	0.069	0.496	340
Intern-Senior Manager WC vs. Passive Control	0.098	0.074	1.321	0.187	-0.048	0.245	597
Intern-Senior Manager WC vs. Intern Group Project	-0.088	0.086	-1.029	0.304	-0.257	0.080	309
Intern-Senior Manager WC vs. Intern-Only WC	0.145	0.089	1.632	0.104	-0.030	0.320	328
Satisfaction with Remote Internship							
Intern-Senior Manager WC vs. Asynchronous Q&A	0.327	0.112	2.922	0.004	0.107	0.548	340
Intern-Senior Manager WC vs. Passive Control	0.095	0.088	1.085	0.278	-0.077	0.268	597
Intern-Senior Manager WC vs. Intern Group Project	0.093	0.106	0.874	0.383	-0.116	0.302	310
Intern-Senior Manager WC vs. Intern-Only WC	0.136	0.101	1.345	0.180	-0.063	0.335	328

Table A16. BDIM of End of Program Attitudes on WC Treatment Match (Match)

Comparison	Estimate	Std Error	t-value	P-value	CI Low	CI Upper	DF
Ease Of Asking Others for Help							
Intern-Senior Manager WC vs. Asynchronous Q&A	0.367	0.136	2.699	0.008	0.099	0.636	170
Intern-Senior Manager WC vs. Passive Control	0.308	0.130	2.363	0.019	0.052	0.564	345
Intern-Senior Manager WC vs. Intern Group Project	0.115	0.145	0.793	0.429	-0.172	0.402	134
Intern-Senior Manager WC vs. Intern-Only WC	0.254	0.139	1.830	0.069	-0.020	0.528	158
Opportunities for Career Advancement							
Intern-Senior Manager WC vs. Asynchronous Q&A	0.105	0.020	5.307	0.000	0.066	0.144	195
Intern-Senior Manager WC vs. Passive Control	0.087	0.014	6.130	0.000	0.059	0.114	400
Intern-Senior Manager WC vs. Intern Group Project	0.126	0.027	4.714	0.000	0.073	0.179	155
Intern-Senior Manager WC vs. Intern-Only WC	0.095	0.022	4.234	0.000	0.051	0.139	185
Opportunities for Mentoring							
Intern-Senior Manager WC vs. Asynchronous Q&A	0.257	0.306	0.841	0.402	-0.347	0.861	170
Intern-Senior Manager WC vs. Passive Control	0.037	0.299	0.124	0.901	-0.550	0.624	346
Intern-Senior Manager WC vs. Intern Group Project	-0.048	0.271	-0.176	0.861	-0.583	0.487	135
Intern-Senior Manager WC vs. Intern-Only WC	0.098	0.279	0.350	0.727	-0.454	0.650	158
Satisfaction with Remote Internship							
Intern-Senior Manager WC vs. Asynchronous Q&A	0.312	0.308	1.013	0.313	-0.296	0.919	170
Intern-Senior Manager WC vs. Passive Control	0.005	0.297	0.017	0.986	-0.578	0.589	346
Intern-Senior Manager WC vs. Intern Group Project	0.045	0.291	0.156	0.876	-0.531	0.621	136
Intern-Senior Manager WC vs. Intern-Only WC	0.118	0.280	0.421	0.674	-0.435	0.672	158

Table A17. BDIM of End of Program Attitudes on WC Treatment Dose (Low)

Comparison	Estimate	Std Error	t-value	P-value	CI Low	CI Upper	DF
Ease Of Asking Others for Help							
Intern-Senior Manager WC vs. Asynchronous Q&A	0.149	0.088	1.688	0.093	-0.025	0.323	277
Intern-Senior Manager WC vs. Passive Control	0.105	0.076	1.375	0.170	-0.045	0.255	537
Intern-Senior Manager WC vs. Intern Group Project	0.016	0.086	0.184	0.854	-0.154	0.186	246
Intern-Senior Manager WC vs. Intern-Only WC	0.092	0.096	0.952	0.342	-0.098	0.282	188
Opportunities for Career Advancement							
Intern-Senior Manager WC vs. Asynchronous Q&A	0.304	0.133	2.282	0.023	0.042	0.565	277
Intern-Senior Manager WC vs. Passive Control	0.205	0.108	1.903	0.058	-0.007	0.418	538
Intern-Senior Manager WC vs. Intern Group Project	0.109	0.130	0.838	0.403	-0.147	0.366	247
Intern-Senior Manager WC vs. Intern-Only WC	0.150	0.141	1.066	0.288	-0.128	0.428	188
Opportunities for Mentoring							
Intern-Senior Manager WC vs. Asynchronous Q&A	0.203	0.163	1.248	0.213	-0.117	0.524	277
Intern-Senior Manager WC vs. Passive Control	-0.002	0.146	-0.014	0.989	-0.289	0.285	538
Intern-Senior Manager WC vs. Intern Group Project	-0.179	0.137	-1.302	0.194	-0.450	0.092	247
Intern-Senior Manager WC vs. Intern-Only WC	0.132	0.146	0.903	0.368	-0.156	0.419	188
Satisfaction with Remote Internship							
Intern-Senior Manager WC vs. Asynchronous Q&A	0.191	0.167	1.146	0.253	-0.137	0.520	277
Intern-Senior Manager WC vs. Passive Control	-0.009	0.161	-0.055	0.956	-0.325	0.307	538
Intern-Senior Manager WC vs. Intern Group Project	-0.024	0.157	-0.150	0.881	-0.332	0.285	248
Intern-Senior Manager WC vs. Intern-Only WC	0.114	0.149	0.766	0.445	-0.180	0.409	188

Table A18. BDIM of End of Program Attitudes on WC Treatment Dose (High)

Comparison	Estimate	Std Error	t-value	P-value	CI Low	CI Upper	DF
Ease Of Asking Others for Help							
Intern-Senior Manager WC vs. Asynchronous Q&A	0.224	0.101	2.213	0.028	0.025	0.424	256
Intern-Senior Manager WC vs. Passive Control	0.129	0.089	1.440	0.150	-0.047	0.304	516
Intern-Senior Manager WC vs. Intern Group Project	0.069	0.103	0.671	0.503	-0.134	0.273	225
Intern-Senior Manager WC vs. Intern-Only WC	0.174	0.109	1.588	0.114	-0.042	0.390	167
Opportunities for Career Advancement							
Intern-Senior Manager WC vs. Asynchronous Q&A	0.047	0.030	1.564	0.119	-0.012	0.107	296
Intern-Senior Manager WC vs. Passive Control	0.019	0.027	0.720	0.472	-0.033	0.071	591
Intern-Senior Manager WC vs. Intern Group Project	0.057	0.033	1.718	0.087	-0.008	0.123	261
Intern-Senior Manager WC vs. Intern-Only WC	0.086	0.042	2.039	0.043	0.003	0.169	190
Opportunities for Mentoring							
Intern-Senior Manager WC vs. Asynchronous Q&A	0.382	0.125	3.061	0.002	0.136	0.627	256
Intern-Senior Manager WC vs. Passive Control	0.166	0.094	1.769	0.077	-0.018	0.351	517
Intern-Senior Manager WC vs. Intern Group Project	0.024	0.103	0.233	0.816	-0.179	0.227	226
Intern-Senior Manager WC vs. Intern-Only WC	0.376	0.141	2.668	0.008	0.098	0.655	167
Satisfaction with Remote Internship							
Intern-Senior Manager WC vs. Asynchronous Q&A	0.312	0.308	1.013	0.313	-0.296	0.919	170
Intern-Senior Manager WC vs. Passive Control	0.005	0.297	0.017	0.986	-0.578	0.589	346
Intern-Senior Manager WC vs. Intern Group Project	0.045	0.291	0.156	0.876	-0.531	0.621	136
Intern-Senior Manager WC vs. Intern-Only WC	0.118	0.280	0.421	0.674	-0.435	0.672	158

Table A19. BDIM of Weekly Performance on First WC Treatment (Pre-WC)

Comparison	Estimate	Std Error	t-value	P-value	CI Low	CI Upper	DF
		Week 2					
Intern-Senior Manager WC vs. Asynchronous Q&A	0.048	0.058	0.834	0.405	-0.066	0.163	316
Intern-Senior Manager WC vs. Passive Control	-0.032	0.054	-0.584	0.560	-0.139	0.075	594
Intern-Senior Manager WC vs. Intern Group Project	0.029	0.059	0.486	0.627	-0.088	0.146	285
Intern-Senior Manager WC vs. Intern-Only WC	-0.098	0.065	-1.496	0.136	-0.227	0.031	244
Passive Control vs. Asynchronous Q&A	0.082	0.041	2.001	0.046	0.002	0.163	675
Intern Group Project vs. Asynchronous Q&A	0.037	0.048	0.776	0.439	-0.057	0.132	370
Intern-Only WC vs. Asynchronous Q&A	0.154	0.059	2.627	0.009	0.039	0.269	323
Passive Control vs. Intern Group Project	-0.039	0.041	-0.932	0.352	-0.120	0.043	649
Passive Control vs. Intern-Only WC	0.067	0.053	1.255	0.210	-0.038	0.171	602
Intern-Only WC vs. Intern Group Project	0.122	0.058	2.110	0.036	0.008	0.235	293
		Week 3					
Intern-Senior Manager WC vs. Asynchronous Q&A	0.123	0.072	1.710	0.088	-0.019	0.265	285
Intern-Senior Manager WC vs. Passive Control	0.017	0.069	0.243	0.808	-0.119	0.153	570
Intern-Senior Manager WC vs. Intern Group Project	0.113	0.069	1.629	0.105	-0.024	0.250	248
Intern-Senior Manager WC vs. Intern-Only WC	0.061	0.077	0.789	0.431	-0.092	0.214	171
Passive Control vs. Asynchronous Q&A	0.100	0.045	2.219	0.027	0.012	0.188	691
Intern Group Project vs. Asynchronous Q&A	0.031	0.053	0.580	0.562	-0.073	0.134	369
Intern-Only WC vs. Asynchronous Q&A	0.038	0.064	0.599	0.550	-0.087	0.163	292
Passive Control vs. Intern Group Project	-0.060	0.043	-1.401	0.162	-0.145	0.024	654
Passive Control vs. Intern-Only WC	-0.073	0.057	-1.285	0.199	-0.186	0.039	577
Intern-Only WC vs. Intern Group Project	0.025	0.062	0.396	0.692	-0.098	0.148	255
		Week 4					
Intern-Senior Manager WC vs. Asynchronous Q&A	0.048	0.108	0.449	0.654	-0.164	0.261	247
Intern-Senior Manager WC vs. Passive Control	-0.018	0.113	-0.159	0.874	-0.239	0.203	527
Intern-Senior Manager WC vs. Intern Group Project	0.049	0.101	0.483	0.629	-0.151	0.249	214
Intern-Senior Manager WC vs. Intern-Only WC	0.086	0.108	0.797	0.427	-0.128	0.300	110

Passive Control vs. Asynchronous Q&A	0.042	0.049	0.857	0.392	-0.054	0.139	674
Intern Group Project vs. Asynchronous Q&A	0.007	0.060	0.119	0.905	-0.110	0.125	361
Intern-Only WC vs. Asynchronous Q&A	-0.019	0.094	-0.204	0.838	-0.204	0.166	236
Passive Control vs. Intern Group Project	-0.027	0.050	-0.530	0.596	-0.126	0.072	641
Passive Control vs. Intern-Only WC	-0.100	0.103	-0.973	0.331	-0.302	0.102	484
Intern-Only WC vs. Intern Group Project	-0.017	0.103	-0.161	0.872	-0.220	0.187	212
		Week 5					
Intern-Senior Manager WC vs. Asynchronous Q&A	0.023	0.110	0.211	0.833	-0.194	0.240	189
Intern-Senior Manager WC vs. Passive Control	-0.010	0.124	-0.078	0.938	-0.253	0.234	404
Intern-Senior Manager WC vs. Intern Group Project	0.176	0.126	1.394	0.165	-0.073	0.424	175
Intern-Senior Manager WC vs. Intern-Only WC	0.195	0.123	1.580	0.118	-0.051	0.440	80
Passive Control vs. Asynchronous Q&A	0.041	0.055	0.760	0.448	-0.066	0.149	513
Intern Group Project vs. Asynchronous Q&A	-0.146	0.073	-2.000	0.046	-0.290	-0.002	284
Intern-Only WC vs. Asynchronous Q&A	-0.241	0.129	-1.875	0.062	-0.495	0.013	189
Passive Control vs. Intern Group Project	-0.186	0.064	-2.920	0.004	-0.311	-0.061	499
Passive Control vs. Intern-Only WC	-0.308	0.148	-2.082	0.038	-0.599	-0.017	404
Intern-Only WC vs. Intern Group Project	-0.092	0.145	-0.632	0.528	-0.378	0.195	175

Table A20. BDIM of Weekly Performance on First WC Treatment (Post-WC)

Comparison	Estimate	Std Error	t-value	P-value	CI Low	CI Upper	DF
		Week 2					
Intern-Senior Manager WC vs. Asynchronous Q&A	0.152	0.071	2.127	0.034	0.011	0.293	268
Intern-Senior Manager WC vs. Passive Control	0.065	0.066	0.987	0.324	-0.065	0.196	547
Intern-Senior Manager WC vs. Intern Group Project	0.123	0.069	1.788	0.075	-0.012	0.258	242
Intern-Senior Manager WC vs. Intern-Only WC	0.114	0.085	1.347	0.180	-0.054	0.282	135
Passive Control vs. Asynchronous Q&A	0.082	0.041	2.001	0.046	0.002	0.163	675
Intern Group Project vs. Asynchronous Q&A	0.037	0.048	0.776	0.439	-0.057	0.132	370
Intern-Only WC vs. Asynchronous Q&A	0.069	0.077	0.898	0.370	-0.082	0.220	263
Passive Control vs. Intern Group Project	-0.039	0.041	-0.932	0.352	-0.120	0.043	649
Passive Control vs. Intern-Only WC	-0.015	0.071	-0.215	0.830	-0.154	0.124	542
Intern-Only WC vs. Intern Group Project	0.019	0.072	0.262	0.793	-0.122	0.160	237
		Week 3					
Intern-Senior Manager WC vs. Asynchronous Q&A	0.129	0.061	2.121	0.035	0.009	0.249	322
Intern-Senior Manager WC vs. Passive Control	0.035	0.054	0.647	0.518	-0.071	0.140	607
Intern-Senior Manager WC vs. Intern Group Project	0.099	0.059	1.669	0.096	-0.018	0.216	289
Intern-Senior Manager WC vs. Intern-Only WC	0.029	0.068	0.422	0.673	-0.106	0.163	227
Passive Control vs. Asynchronous Q&A	0.097	0.045	2.183	0.029	0.010	0.185	697
Intern Group Project vs. Asynchronous Q&A	0.034	0.052	0.657	0.512	-0.067	0.135	379
Intern-Only WC vs. Asynchronous Q&A	0.107	0.067	1.602	0.110	-0.024	0.239	317
Passive Control vs. Intern Group Project	-0.055	0.042	-1.292	0.197	-0.138	0.028	664
Passive Control vs. Intern-Only WC	0.011	0.058	0.180	0.857	-0.104	0.125	602
Intern-Only WC vs. Intern Group Project	0.069	0.064	1.079	0.282	-0.057	0.196	284
		Week 4					
Intern-Senior Manager WC vs. Asynchronous Q&A	0.078	0.060	1.294	0.196	-0.041	0.197	343
Intern-Senior Manager WC vs. Passive Control	0.063	0.052	1.211	0.226	-0.039	0.164	623
Intern-Senior Manager WC vs. Intern Group Project	0.074	0.062	1.202	0.230	-0.047	0.196	314
Intern-Senior Manager WC vs. Intern-Only WC	-0.005	0.065	-0.079	0.937	-0.133	0.123	272

Passive Control vs. Asynchronous Q&A	0.033	0.049	0.682	0.496	-0.062	0.129	680
Intern Group Project vs. Asynchronous Q&A	0.002	0.059	0.034	0.973	-0.114	0.119	371
Intern-Only WC vs. Asynchronous Q&A	0.077	0.065	1.200	0.231	-0.050	0.204	329
Passive Control vs. Intern Group Project	-0.020	0.050	-0.393	0.694	-0.117	0.078	651
Passive Control vs. Intern-Only WC	0.055	0.055	1.005	0.315	-0.053	0.163	609
Intern-Only WC vs. Intern Group Project	0.073	0.064	1.128	0.260	-0.054	0.199	300
		Week 5					
Intern-Senior Manager WC vs. Asynchronous Q&A	0.093	0.060	1.555	0.121	-0.025	0.210	362
Intern-Senior Manager WC vs. Passive Control	0.072	0.051	1.428	0.154	-0.027	0.172	653
Intern-Senior Manager WC vs. Intern Group Project	0.178	0.064	2.763	0.006	0.051	0.305	337
Intern-Senior Manager WC vs. Intern-Only WC	0.035	0.062	0.573	0.567	-0.086	0.157	312
Passive Control vs. Asynchronous Q&A	0.049	0.048	1.022	0.307	-0.045	0.144	700
Intern Group Project vs. Asynchronous Q&A	-0.069	0.063	-1.088	0.277	-0.193	0.056	380
Intern-Only WC vs. Asynchronous Q&A	0.060	0.062	0.964	0.336	-0.062	0.181	358
Passive Control vs. Intern Group Project	-0.103	0.055	-1.867	0.062	-0.212	0.005	674
Passive Control vs. Intern-Only WC	0.027	0.052	0.520	0.603	-0.075	0.129	649
Intern-Only WC vs. Intern Group Project	0.147	0.066	2.243	0.026	0.018	0.276	333

Table A21. Fully Interacted OLS Models of Job Offers on WC Treatment (Baseline = Asynchronous Q&A)

VARIABLES	Model 1 WC Treatment	Model 2 WC Treatment Match
Baseline = Asynchronous Q&A (C)		
Intern-senior mgr. WC (T)	0.049*	
	(0.025)	
Senior mgr. WC – no match (T)		0.020
		(0.028)
Senior mgr. WC – match (T)		0.083***
		(0.020)
Intern-only WC (T)	0.024	0.000
	(0.026)	(0.029)
Passive (C)	0.025	0.007
	(0.023)	(0.024)
Intern group project (C)	-0.017	-0.019
	(0.030)	(0.033)
Constant	0.895***	0.917***
	(0.019)	(0.020)
Division FE	Y	Y
Division FE x WC treatment	Y	Y
Observations	1,370	1,032
R-squared	0.087	0.059

Note. Model 2 excludes division 2 and Model 3 excludes divisions 2 and 3 due to insufficient sample size in the fully interacted models. Robust standard errors in parentheses; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A22. Fully Interacted OLS Models of Performance on WC Treatment and First WC Treatment (Baseline = Asynchronous Q&A)

	WC Treatment				First WC Treatment			
	Week 2	Week 3	Week 4	Week 5	Week 2	Week 3	Week 4	Week 5
VARIABLES	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Baseline = Asynchronous Q&A (C)								
Intern-senior mgr. (T)	0.102**	0.138***	0.087	0.119**				
	(0.050)	(0.052)	(0.056)	(0.056)				
Intern-senior mgr. pre-WC (T)					0.052	0.121	0.026	0.032
					(0.060)	(0.076)	(0.118)	(0.129)
Intern-senior mgr. post-WC (T)					0.137*	0.121*	0.104*	0.061
					(0.073)	(0.062)	(0.062)	(0.070)
Intern-only WC (T)	0.118**	0.096*	0.060	0.055				
	(0.049)	(0.052)	(0.057)	(0.056)				
Intern-only pre-WC (T)					0.144**	0.030	0.028	-0.265
					(0.058)	(0.065)	(0.098)	(0.151)
Intern-only post-WC (T)					0.070	0.098	0.091	0.041
					(0.078)	(0.070)	(0.066)	(0.072)
Passive (C)	0.083**	0.097**	0.028	0.053	0.084**	0.102**	0.044	0.032
	(0.041)	(0.044)	(0.048)	(0.048)	(0.041)	(0.045)	(0.049)	(0.129)
Intern group project (C)	0.040	0.034	0.007	-0.051	0.039	0.032	0.012	0.061
	(0.049)	(0.052)	(0.059)	(0.063)	(0.049)	(0.053)	(0.060)	(0.070)
Constant	2.213***	2.286***	2.443***	2.561***	2.216***	2.285***	2.435***	2.621***
	(0.034)	(0.038)	(0.041)	(0.040)	(0.034)	(0.038)	(0.042)	(0.046)
Division FE	Y	Y	Y	Y	Y	Y	Y	Y
Division x WC treatment FE	Y	Y	Y	Y	Y	Y	Y	Y
Observations	1,285	1,322	1,286	1,327	1,265	1,285	1,250	974
R-squared	0.036	0.034	0.064	0.052	0.037	0.060	0.065	0.044

Note. Model 5 excludes division 3, Models 6-7 exclude divisions 3 and 6, and Model 8 excludes divisions 3, 4, 6, and 7 due to insufficient sample size in the fully interacted models.
Robust standard errors in parentheses; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A23. Fully Interacted OLS Models of Performance on WC Treatment Match (Baseline = Asynchronous Q&A)

	WC Treatment Match			
	Week 2	Week 3	Week 4	Week 5
VARIABLES	Model 1	Model 2	Model 3	Model 4
Baseline = Asynchronous Q&A (C)				
Intern-senior mgr. WC – no match (T)	0.085	0.114*	0.085	0.082
	(0.061)	(0.063)	(0.065)	(0.064)
Intern-senior mgr. WC – match (T)	0.101	0.132	0.137	0.212*
	(0.108)	(0.123)	(0.123)	(0.109)
Intern-only WC (T)	0.125**	0.063	0.033	0.015
	(0.056)	(0.060)	(0.065)	(0.063)
Passive (C)	0.060	0.077	-0.002	0.017
	(0.048)	(0.052)	(0.053)	(0.053)
Intern group project (C)	0.015	-0.011	-0.008	-0.078
	(0.058)	(0.060)	(0.068)	(0.073)
Constant	2.231***	2.302***	2.462***	2.601***
	(0.040)	(0.044)	(0.045)	(0.044)
Division FE	Y	Y	Y	Y
Division x WC treatment FE	Y	Y	Y	Y
Observations	949	998	958	1,004
R-squared	0.045	0.069	0.064	0.052

Note. Models 1-4 exclude divisions 2 and 3 due to insufficient sample size in the fully interacted models.
Robust standard errors in parentheses; *** p < 0.01, ** p < 0.05, * p < 0.1.

Table A24. Fully Interacted OLS Models of Final Performance and Job Offers on WC Treatment Dose (Baseline = Asynchronous Q&A)

VARIABLES	Model 1 Final performance	Model 2 Job offers
Baseline = Asynchronous Q&A (C)		
Intern-senior mgr. WC – low dose (T)	0.071	0.029
	(0.062)	(0.027)
Intern-senior mgr. WC – high dose (T)	0.219**	0.077***
	(0.109)	(0.025)
Intern-only WC (T)	0.027	0.013
	(0.058)	(0.027)
Passive (C)	0.051	0.021
	(0.048)	(0.023)
Intern group project (C)	-0.065	-0.024
	(0.065)	(0.031)
Constant	2.578***	0.908***
	(0.041)	(0.020)
Division FE	Y	Y
Division FE x WC treatment	Y	Y
Observations	1,293	1,334
R-squared	0.037	0.048

Note. Models 1 and 2 exclude divisions 3 and 6 due to insufficient sample size in the treatment conditions after differentiating between low dose and high dose conditions in the fully interacted models.
Robust standard errors in parentheses; *** p < 0.01, ** p < 0.05, * p < 0.1.

Table A25. Fully Interacted OLS Models of End of Program Attitudes on WC Treatment and WC Treatment Match (Baseline = Asynchronous Q&A)

	WC Treatment				WC Treatment Match			
VARIABLES	Model 1 Ease of asking others for help	Model 2 Opp. to be mentored	Model 3 Opp. for career adv.	Model 4 Satisfaction w/remote work	Model 5 Ease of asking others for help	Model 6 Opp. to be mentored	Model 7 Opp. for career adv.	Model 8 Satisfaction w/remote work
Baseline = Asynchronous Q&A (C)								
Intern-senior mgr. WC (T)	0.181**	0.266**	0.285**	0.263**				
	(0.081)	(0.110)	(0.125)	(0.111)				
Intern-senior mgr. WC – no match (T)					0.139	0.365**	0.237*	0.393***
					(0.088)	(0.121)	(0.138)	(0.125)
Intern-senior mgr. WC – match (T)					0.390***	0.312	0.397*	0.297
					(0.141)	(0.305)	(0.236)	(0.305)
Intern-only WC (T)	0.115*	0.135	0.164	0.145	0.076	0.183	0.109	0.154
	(0.088)	(0.114)	(0.128)	(0.112)	(0.091)	(0.127)	(0.138)	(0.125)
Passive (C)	0.071	0.186*	0.133	0.171*	0.059	0.237**	0.115	0.270**
	(0.074)	(0.102)	(0.116)	(0.098)	(0.082)	(0.114)	(0.120)	(0.109)
Intern group project (C)	0.145*	0.340***	0.227	0.166	0.195**	0.422***	0.279**	0.254*
	(0.088)	(0.110)	(0.132)	(0.115)	(0.093)	(0.122)	(0.136)	(0.132)
Constant	6.339***	6.043***	5.838***	6.002***	6.328***	5.992***	5.846***	5.957***
	(0.064)	(0.091)	(0.102)	(0.085)	(0.069)	(0.101)	(0.102)	(0.095)
Division FE	Y	Y	Y	Y	Y	Y	Y	Y
Division FE x WC treatment	Y	Y	Y	Y	Y	Y	Y	Y
Observations	1,154	1,156	1,156	1,157	891	894	893	894
R-squared	0.042	0.035	0.041	0.052	0.054	0.053	0.054	0.068

Note. Models 5-8 exclude divisions 2, 3, and 6 due to insufficient sample size in the fully interacted models.
Robust standard errors in parentheses; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A26. Fully Interacted OLS Models of End of Program Attitudes on WC Treatment Dose (Baseline = Asynchronous Q&A)

VARIABLES	WC Treatment Dose			
	Model 1 Ease of asking others for help	Model 2 Opp. to be mentored	Model 3 Opp. for career adv.	Model 4 Satisfaction w/remote work
Baseline = Asynchronous Q&A (C)				
Intern-senior mgr. WC – low dose (T)	0.159*	0.240**	0.314**	0.189
	(0.089)	(0.117)	(0.126)	(0.124)
Intern-senior mgr. WC – high dose (T)	0.254*	0.388*	0.424**	0.584***
	(0.141)	(0.222)	(0.211)	(0.142)
Intern-only WC (T)	0.115*	0.135	0.164	0.145
	(0.088)	(0.114)	(0.128)	(0.112)
Passive (C)	0.071	0.186*	0.133	0.171*
	(0.074)	(0.102)	(0.116)	(0.098)
Intern group project (C)	0.145*	0.340***	0.227	0.166
	(0.088)	(0.110)	(0.132)	(0.115)
Constant	6.339***	6.043***	5.838***	6.002***
	(0.064)	(0.091)	(0.102)	(0.085)
Division FE	Y	Y	Y	Y
Division FE x WC treatment	Y	Y	Y	Y
Observations	1,154	1,156	1,156	1,157
R-squared	0.044	0.037	0.046	0.056

Note. Models 5-8 exclude divisions 2, 3, and 6 due to insufficient sample size in the fully interacted models.
Robust standard errors in parentheses; *** p < 0.01, ** p < 0.05, * p < 0.1.

Table A27. Fully Interacted OLS Models of Job Offers on WC Treatment (Baseline = Intern Group Project)

VARIABLES	Model 1 WC Treatment	Model 2 WC Treatment Match
Baseline = Intern Group Project (C)		
Intern-senior mgr. WC (T)	0.065**	
	(0.0249)	
Senior mgr. WC – no match (T)		0.039
		(0.033)
Senior mgr. WC – match (T)		0.102***
		(0.026)
Intern-only WC (T)	0.042	0.019
	(0.0263)	(0.033)
Passive (C)	0.042	0.025
	(0.026)	(0.030)
Asynchronous Q&A (C)	0.017	0.019
	(0.030)	(0.033)
Constant	0.878***	0.899***
	(0.023)	(0.026)
Division FE	Y	Y
Observations	1,370	1,032
R-squared	0.087	0.058

Note: Model 2 excludes division 2 and Model 3 excludes divisions 2 & 3 due to insufficient sample size in the fully interacted models. Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table A28. Fully Interacted OLS Models of Performance on WC Treatment and First WC Treatment (Baseline = Intern Group Project)

	WC Treatment				First WC Treatment			
	Week 2	Week 3	Week 4	Week 5	Week 2	Week 3	Week 4	Week 5
VARIABLES	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Baseline = Intern Group Project (C)								
Intern-senior mgr. (T)	0.06	0.104**	0.080	0.161***				
	(0.051)	(0.051)	(0.057)	(0.063)				
Intern-senior mgr. pre-WC (T)					0.013	0.088	0.013	0.178
					(0.061)	(0.075)	(0.119)	(0.134)
Intern-senior mgr. post-WC (T)					0.098	0.089	0.091	0.208***
					(0.073)	(0.061)	(0.063)	(0.078)
Intern-only WC (T)	0.078	0.062	0.053	0.097				
	(0.050)	(0.050)	(0.058)	(0.064)				
Intern-only pre-WC (T)					0.106*	-0.003	0.016	-0.119
					(0.059)	(0.063)	(0.098)	(0.155)
Intern-only post-WC (T)					0.032	0.066	0.079	0.188**
					(0.079)	(0.069)	(0.068)	(0.080)
Passive (C)	0.042	0.063	0.021	0.114**	0.045	0.069	0.032	0.187***
	(0.042)	(0.042)	(0.050)	(0.056)	(0.042)	(0.043)	(0.050)	(0.065)
Asynchronous Q&A (C)	-0.040	-0.034	-0.007	0.070	-0.039	-0.032	-0.012	0.147**
	(0.042)	(0.052)	(0.059)	(0.064)	(0.049)	(0.053)	(0.060)	(0.074)
Constant	2.253***	2.319***	2.450***	2.513***	2.255***	2.318***	2.448***	2.474***
	(0.035)	(0.036)	(0.043)	(0.050)	(0.035)	(0.036)	(0.044)	(0.0458)
Division FE	Y	Y	Y	Y	Y	Y	Y	Y
Division x WC Treatment FE	Y	Y	Y	Y	Y	Y	Y	Y
Observations	1,285	1,322	1,286	1,308	1,265	1,285	1,250	974
R-squared	0.036	0.063	0.064	0.038	0.037	0.060	0.065	0.044

Model 5 excludes division 3, Models 6-7 exclude divisions 3 and 6, and Model 8 excludes divisions 3, 4, 6 and 7
Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table A28. Fully Interacted OLS Models of Performance on WC Treatment Match (Baseline = Intern Group Project)

	WC Treatment Match			
	Week 2	Week 3	Week 4	Week 5
VARIABLES	Model 1	Model 2	Model 3	Model 4
Baseline = Intern Group Project (C)				
Intern-senior mgr. WC – no match (T)	0.070	0.125**	0.093	0.160
	(0.063)	(0.062)	(0.069)	(0.074)
Intern-senior mgr. WC – match (T)	0.125	0.143	0.144	0.289***
	(0.109)	(0.123)	(0.125)	(0.115)
Intern-only WC (T)	0.110*	0.074	0.041	0.092
	(0.061)	(0.058)	(0.068)	(0.073)
Passive (C)	0.045	0.087	0.006	0.095
	(0.050)	(0.050)	(0.058)	(0.065)
Asynchronous Q&A (C)	-0.015	0.011	0.008	0.078
	(0.058)	(0.060)	(0.068)	(0.073)
Constant	2.246***	2.291***	2.455***	2.524***
	(0.042)	(0.041)	(0.051)	(0.058)
Division FE	Y	Y	Y	Y
Division x WC Treatment FE	Y	Y	Y	Y
Observations	949	998	958	1,004
R-squared	0.045	0.069	0.085	0.052

Models 1-4 exclude divisions 2 & 3 due to insufficient sample size in the fully interacted models.
Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table A29. Fully Interacted OLS Models of Final Performance and Job Offers on WC Treatment Dose (Baseline = Intern Group Project)

VARIABLES	Model 1 Final performance	Model 2 Job offers
Baseline = Intern Group Project (C)		
Intern-senior mgr. WC – low dose (T)	0.136**	0.053*
	(0.068)	(0.031)
Intern-senior mgr. WC – high dose (T)	0.283**	0.100***
	(0.113)	(0.029)
Intern-only WC (T)	0.092	0.037
	(0.064)	(0.030)
Passive (C)	0.116**	0.044*
	(0.055)	(0.026)
Asynchronous Q&A (C)	0.065	0.024
	(0.065)	(0.031)
Constant	2.514***	0.884***
	(0.050)	(0.024)
Division FE	Y	Y
Division FE x WC treatment	Y	Y
Observations	1,293	1,334
R-squared	0.037	0.048

Note. Models 1 and 2 exclude divisions 3 and 6 due to insufficient sample size in the treatment conditions after differentiating between low dose and high dose conditions in the fully interacted models.
Robust standard errors in parentheses; *** p < 0.01, ** p < 0.05, * p < 0.1.

Table A30. Fully Interacted OLS Models of End of Program Attitudes on WC Treatment and WC Treatment Match (Baseline = Intern Group Project)

	WC Treatment				WC Treatment Match			
VARIABLES	Model 1 Ease of Asking Others for Help	Model 2 Opp. to be mentored	Model 3 Opp. for career adv.	Model 4 Satisfaction w/ remote work	Model 5 Ease of Asking Others for Help	Model 6 Opp. to be mentored	Model 7 Opp. for career adv.	Model 8 Satisfaction w/ remote work
Baseline = Intern Group Project (C)								
Intern-senior mgr. WC (T)	0.036	-0.074	0.058	0.097				
	(0.079)	(0.088)	(0.112)	(0.106)				
Intern-senior mgr. WC no match (T)					0.139	-0.057	-0.042	-0.057
					(0.088)	(0.297)	(0.129)	(0.084)
Intern-senior mgr. WC match (T)					0.390***	-0.110	0.118	0.195
					(0.141)	(0.297)	(0.231)	(0.139)
Intern-only WC (T)	-0.030	-0.205	-0.063	-0.021	0.076	-0.238	-0.170	-0.119
	(0.079)	(0.092)	(0.115)	(0.106)	(0.091)	(0.104)	(0.128)	(0.087)
Passive (C)	-0.074	-0.154**	-0.093	0.005	0.059	-0.185**	-0.164	-0.136
	(0.072)	(0.077)	(0.101)	(0.092)	(0.082)	(0.187)	(0.110)	(0.077)
Asynchronous Q&A (C)	-0.145*	-0.340***	-0.227	-0.166	0.195**	-0.422***	-0.279**	-0.195*
	(0.088)	(0.110)	(0.132)	(0.115)	(0.093)	(0.122)	(0.136)	(0.093)
Constant	6.484***	6.383***	6.065***	6.168***	6.328***	6.414***	6.126***	6.524***
	(0.061)	(0.062)	(0.085)	(0.078)	(0.069)	(0.068)	(0.089)	(0.063)
Division FE	Y	Y	Y	Y	Y	Y	Y	Y
Observations	1,154	1,156	1,156	1,157	891	894	893	894
R-squared	0.042	0.035	0.041	0.052	0.054	0.053	0.054	0.068

Note: Models 5-8 exclude divisions 2, 3 and 6 due to insufficient sample size in the fully interacted models.
Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table A31. Fully Interacted OLS Models of End of Program Attitudes on WC Treatment Dose (Baseline = Intern Group Project)

VARIABLES	WC Treatment Dose			
	Model 1 Ease of asking others for help	Model 2 Opp. to be mentored	Model 3 Opp. for career adv.	Model 4 Satisfaction w/remote work
Baseline = Intern Group Project (C)				
Intern-senior mgr. WC – low dose (T)	0.014	-0.010	0.087	0.024
	(0.087)	(0.096)	(0.113)	(0.119)
Intern-senior mgr. WC – high dose (T)	0.109	0.048	0.197	0.418***
	(0.140)	(0.211)	(0.203)	(0.138)
Intern-only WC (T)	-0.030	-0.205**	-0.063	-0.021
	(0.079)	(0.092)	(0.115)	(0.106)
Passive (C)	-0.074	-0.154**	-0.093	0.005
	(0.072)	(0.077)	(0.101)	(0.092)
Asynchronous Q&A (C)	-0.145*	-0.340***	-0.227	-0.166
	(0.088)	(0.110)	(0.132)	(0.115)
Constant	6.484***	6.383***	6.065***	6.168***
	(0.061)	(0.062)	(0.085)	(0.078)
Division FE	Y	Y	Y	Y
Division FE x WC treatment	Y	Y	Y	Y
Observations	1,154	1,156	1,156	1,157
R-squared	0.044	0.037	0.046	0.056

Note. Models 5-8 exclude divisions 2, 3, and 6 due to insufficient sample size in the fully interacted models.
Robust standard errors in parentheses; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A32. Fully Interacted OLS Models of Job Offers on WC Treatment (Baseline = Passive Control)

VARIABLES	Model 1 WC Treatment	Model 2 WC Treatment Match
Baseline = Passive Control (C)		
Intern-senior mgr. WC (T)	0.023	
	(0.020)	
Senior mgr. WC – no match (T)		0.013
		(0.024)
Senior mgr. WC – match (T)		0.076***
		(0.013)
Intern-only WC (T)	-0.001	-0.006
	(0.021)	(0.024)
Asynchronous Q&A (C)	-0.025	-0.007
	(0.023)	(0.024)
Intern group project (C)	-0.042	-0.025
	(0.026)	(0.030)
Constant	0.921***	0.924***
	(0.012)	(0.013)
Division FE	Y	Y
Observations	1,370	1,032
R-squared	0.087	0.058

Note: Model 2 excludes division 2 and Model 3 excludes divisions 2 & 3 due to insufficient sample size in the fully interacted models. Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table A33. Fully Interacted OLS Models of Performance on WC Treatment and First WC Treatment (Baseline = Passive Control)

	WC Treatment				First WC Treatment			
	Week 2	Week 3	Week 4	Week 5	Week 2	Week 3	Week 4	Week 5
VARIABLES	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Baseline = Passive Control (C)								
Intern-senior mgr. (T)	0.019	0.041	0.059	0.047				
	(0.043)	(0.044)	(0.045)	(0.046)				
Intern-senior mgr. pre-WC (T)					-0.032	0.019	-0.016	-0.008
					(0.055)	(0.069)	(0.092)	(0.124)
Intern-senior mgr. post-WC (T)					0.053	0.019	0.060	0.021
					(0.068)	(0.069)	(0.052)	(0.059)
Intern-only WC (T)	0.036	-0.006	0.033	-0.018				
	(0.043)	(0.041)	(0.047)	(0.047)				
Intern-only pre-WC (T)					0.060	-0.072	-0.016	-0.305
					(0.052)	(0.057)	(0.092)	(0.147)
Intern-only post-WC (T)					-0.014	-0.003	0.047	0.001
					(0.074)	(0.063)	(0.058)	(0.062)
Asynchronous Q&A (C)	-0.083	-0.097	-0.028	-0.044	-0.084	-0.102	-0.044	-0.040
	(0.041)	(0.044)	(0.048)	(0.048)	(0.042)	(0.044)	(0.049)	(0.005)
Intern group project (C)	-0.042							
	(0.042)							
Constant	2.295***	2.382***	2.471***	2.628***	2.300***	2.387***	2.479***	2.661***
	(0.0230)	(0.023)	(0.025)	(0.025)	(0.023)	(0.023)	(0.025)	(0.0283)
Division FE	Y	Y	Y	Y	Y	Y	Y	Y
Division x WC Treatment FE	Y	Y	Y	Y	Y	Y	Y	Y
Observations	1,285	1,321	1,286	1,308	1,265	1,285	1,250	974
R-squared	0.036	0.063	0.064	0.038	0.037	0.060	0.065	0.044

Model 5 excludes division 3, Models 6-7 exclude divisions 3 and 6, and Model 8 excludes divisions 3, 4, 6 and 7 due to insufficient sample size in the fully interacted models.
Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table A34. Fully Interacted OLS Models of Performance on WC Treatment Match (Baseline = Passive Control)

	WC Treatment Match			
	Week 2	Week 3	Week 4	Week 5
VARIABLES	Model 1	Model 2	Model 3	Model 4
Baseline = Passive Control (C)				
Intern-senior mgr. WC – no match (T)	0.025	0.037	0.087	0.065
	(0.054)	(0.053)	(0.050)	(0.055)
Intern-senior mgr. WC – match (T)	0.080	0.055	0.139	0.194*
	(0.104)	(0.119)	(0.118)	(0.103)
Intern-only WC (T)	0.065	-0.014	0.035	-0.002
	(0.052)	(0.049)	(0.053)	(0.053)
Asynchronous Q&A (C)	-0.060	-0.077	0.002	-0.017
	(0.048)	(0.052)	(0.053)	(0.053)
Intern group project (C)	-0.045	-0.087	-0.006	-0.095
	(0.050)	(0.050)	(0.059)	(0.065)
Constant	2.291***	2.379***	2.461***	2.618***
	(0.028)	(0.028)	(0.029)	(0.029)
Division FE	Y	Y	Y	Y
Division x WC Treatment FE	Y	Y	Y	Y
Observations	949	998	958	1,004
R-squared	0.045	0.069	0.085	0.052

Models 1-4 exclude divisions 2 & 3 due to insufficient sample size in the fully interacted models. Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table A35. Fully Interacted OLS Models of Final Performance and Job Offers on WC Treatment Dose (Baseline = Passive Control)

VARIABLES	Model 1 Final performance	Model 2 Job offers
Baseline = Passive Control (C)		
Intern-senior mgr. WC – low dose (T)	0.020	0.008
	(0.052)	(0.022)
Intern-senior mgr. WC – high dose (T)	0.168	0.056***
	(0.104)	(0.019)
Intern-only WC (T)	-0.024	-0.008
	(0.047)	(0.022)
Intern Group Project (C)	-0.116**	-0.044*
	(0.055)	(0.026)
Asynchronous Q&A (C)	-0.051	-0.021
	(0.048)	(0.023)
Constant	2.629***	0.928***
	(0.02)	(0.011)
Division FE	Y	Y
Division FE x WC treatment	Y	Y
Observations	1,293	1,334
R-squared	0.037	0.048

Note. Models 1 and 2 exclude divisions 3 and 6 due to insufficient sample size in the treatment conditions after differentiating between low dose and high dose conditions in the fully interacted models.
Robust standard errors in parentheses; *** p < 0.01, ** p < 0.05, * p < 0.1.

Table A36. Fully Interacted OLS Models of End of Program Attitudes on WC Treatment and WC Treatment Match (Baseline = Passive Control)

	WC Treatment				WC Treatment Match			
VARIABLES	Model 1 Ease of Asking Others for Help	Model 2 Opp. to be mentored	Model 3 Opp. for career adv.	Model 4 Satisfaction w/ remote work	Model 5 Ease of Asking Others for Help	Model 6 Opp. to be mentored	Model 7 Opp. for career adv.	Model 8 Satisfaction w/ remote work
Baseline = Passive Control (C)								
Intern-senior mgr. WC (T)	0.109*	0.080	0.152*	0.092				
	(0.063)	(0.077)	(0.091)	(0.087)				
Intern-senior mgr. WC no match (T)					0.079	0.128	0.122	0.123
					(0.072)	(0.085)	(0.112)	(0.097)
Intern-senior mgr. WC match (T)					0.331**	0.275	0.282	0.027
					(0.131)	(0.294)	(0.222)	(0.295)
Intern-only WC (T)	0.044	-0.051	0.030	-0.026	0.017	-0.053	-0.006	-0.116
	(0.063)	(0.082)	(0.096)	(0.088)	(0.075)	(0.095)	(0.112)	(0.098)
Asynchronous Q&A (C)	-0.071	-0.186*	-0.133	-0.171*	-0.059	-0.237**	-0.115	-0.270**
	(0.074)	(0.102)	(0.116)	(0.098)	(0.082)	(0.114)	(0.120)	(0.109)
Intern group project (C)	0.074	0.154**	0.093	-0.005	0.136*	0.185**	0.164	-0.016
	(0.072)	(0.077)	(0.101)	(0.092)	(0.077)	(0.087)	(0.110)	(0.107)
Constant	6.410***	6.229***	5.972***	6.173***	6.339***	6.229***	5.961***	6.226***
	(0.039)	(0.046)	(0.055)	(0.049)	(0.045)	(0.053)	(0.064)	(0.054)
Division FE	Y	Y	Y	Y	Y	Y	Y	Y
Observations	1,154	1,156	1,156	1,157	891	894	893	894
R-squared	0.042	0.035	0.041	0.052	0.054	0.053	0.054	0.068

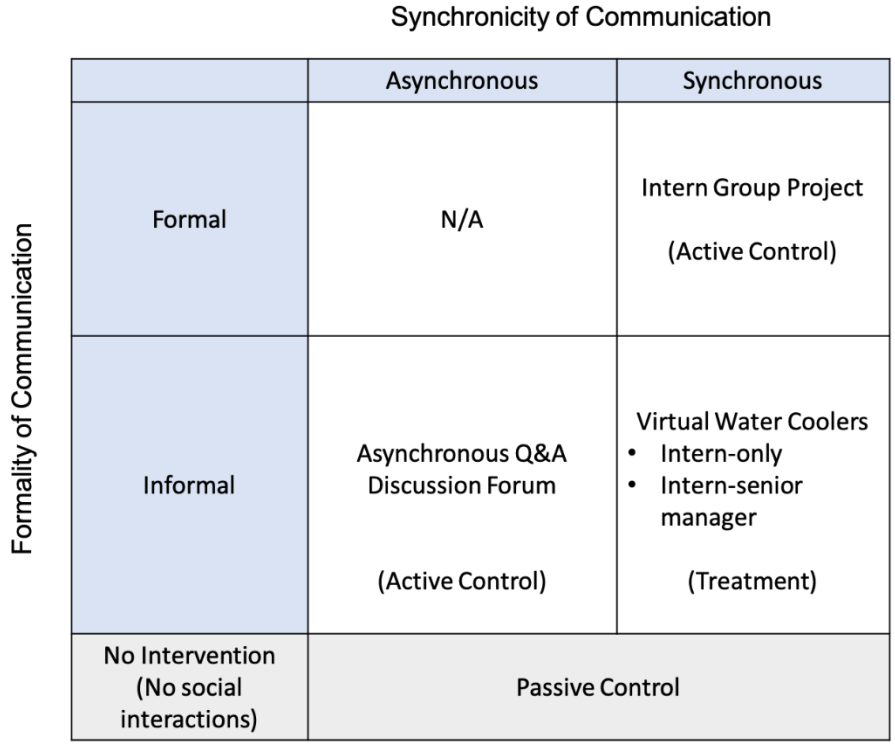
Note: Models 5-8 exclude divisions 2,3 and 6 due to insufficient sample size in the fully interacted models.
Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table A37. Fully Interacted OLS Models of End of Program Attitudes on WC Treatment Dose (Baseline = Passive Control)

VARIABLES	WC Treatment Dose			
	Model 1 Ease of asking others for help	Model 2 Opp. to be mentored	Model 3 Opp. for career adv.	Model 4 Satisfaction w/remote work
Baseline = Passive Control (C)				
Intern-senior mgr. WC – low dose (T)	0.088	0.054	0.181*	0.019
	(0.073)	(0.087)	(0.093)	(0.102)
Intern-senior mgr. WC – high dose (T)	0.182	0.202	0.291	0.413***
	(0.132)	(0.207)	(0.193)	(0.124)
Intern-only WC (T)	0.044	-0.051	0.03	-0.026
	(0.063)	(0.082)	(0.096)	(0.088)
Intern Group Project (C)	0.074	0.154**	0.093	-0.005
	(0.072)	(0.077)	(0.101)	(0.092)
Asynchronous Q&A (C)	-0.071	-0.186*	-0.133	-0.171*
	(0.074)	(0.102)	(0.116)	(0.098)
Constant	6.334***	6.229***	5.972***	6.173***
	(0.039)	(0.046)	(0.055)	(0.049)
Division FE	Y	Y	Y	Y
Division FE x WC treatment	Y	Y	Y	Y
Observations	1,154	1,156	1,156	1,157
R-squared	0.044	0.037	0.046	0.056

Note. Models 5-8 exclude divisions 2, 3, and 6 due to insufficient sample size in the fully interacted models.
Robust standard errors in parentheses; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Figure A1. Conceptual Figure of Experimental Condition Design by Communication Type and Channel



4. Survey Instruments

Weekly Question for Asynchronous Q&A Discussion Forum (Week 1-4)

1. Every week we will ask you to pose a question that you would ideally like to be answered by someone from GS. The one question I would ideally like to be answered this week is:

Weekly Surveys on Attitudes Towards Socialization Opportunities (Weeks 1-5) (Adapted from Golden 2007, Hackman and Oldham 1975, Raghuram et al. 2001)

Please indicate how strongly you agree with the following statements (1 = strongly disagree; 7 = strongly agree):

1. The social events in my virtual internship are adequate to build a sense of community.
2. I have friendly coworkers.
3. I wish I had more informal interactions with others. (R)
4. This week, I am satisfied with the socialization opportunities in this virtual internship.
5. Count of Professionals networked with.
6. Count of Interns networked with.

End of Program Attitudes Towards Remote Internship (Week 5) (Adapted from Golden et al. 2008)

Please indicate how strongly you agree with the following statements (1 = strongly disagree; 7 = strongly agree):

1. Overall, I am satisfied with remote work based on this internship experience.
2. I do not feel left out of activities and meetings that could enhance my career.
3. I have adequate opportunities to be mentored.
4. I can easily contact those who can help me when I need them.

End of Program Attitudes Towards Performance* (Week 5) (Adapted from Staples et al. 1999)

Please indicate how strongly you agree with the following statements (1 = strongly disagree; 7 = strongly agree):

1. I believe I am an effective intern.
2. Compared to other interns this year, I think I performed in the top 25%.
3. I am happy with the quality of my work output.
4. I work very efficiently.
5. I am a highly productive intern.
6. My manager believes I am an efficient intern.

End of Program Attitudes Towards Work Team* (Week 5) (Golden and Raghuram 2010)

Please indicate how strongly you agree with the following statements (1 = strongly disagree; 7 = strongly agree):

1. In my remote work team, we discuss work-related problems and solutions.
2. In my remote work team, we share work-related success and failure experiences.
3. I can get solutions to the problems from people who work from other locations.
4. I feel comfortable in seeking help from people on my team.

Frequency of Technology Use* (Week 5)

Please rate the usefulness of different technology you used throughout the internship (1 = extremely useless; 7 = extremely useful):

1. Outlook
2. Skype messenger
3. Jabber
4. Symphony
5. NovoEd
6. Zoom

End of Program Attitudes for Returning Interns Only (N = 90)* (Week 5)

Compared to your previous [Firm] internship experience, how would you rate your satisfaction with the following factors during this year's internship (1 = Much lower; 7 = Much higher):

1. Your productivity.

2. The work assigned to you.
3. Opportunities for collaboration.
4. Opportunities for exposure to senior leaders.
5. Your level of interaction with other interns.
6. Your level of interaction with members of your team.
7. Your level of interaction with Firm employees outside your team.
8. The overall internship experience.

* Included in end of internship program survey but not used in study.

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