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The Daily Dynamics of Informal Interactions and Psychological Safety: An Intensive Longitudinal Study of Hybrid Workers

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Abstract:	Despite the pervasiveness of hybrid work arrangements, little is known about how daily work locations predict employees' feelings of psychological safety. To address this question, we develop a measure of state psychological safety that captures hour-to-hour changes in psychological safety (Study 1; N=404, Obs=5433). Using this novel measure, we intensively survey hybrid employees for seven consecutive workdays and study how and why daily work location explains changes psychological safety (Study 2: N=324, Obs=4785). We show that hybrid workers experience higher momentary feelings of psychological safety on days when they are collocated with their primary team at the office. We identify a critical mechanism that explains why psychological safety is higher at the office: employees have a greater number of informal sensemaking interactions (unstructured and unplanned work-related interactions) when they work at the office versus remotely. This research challenges the traditional static conceptualization of psychological safety by providing evidence that psychological safety exhibits meaningful changes—not only over extended periods—but also within shorter timeframes. These findings offer guidance for evidence-based decision-making about hybrid work arrangements and open new avenues for temporally granular research about the dynamics of psychological safety.

The Daily Dynamics of Informal Interactions and Psychological Safety:

An Intensive Longitudinal Study of Hybrid Workers

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Contributions
All authors participated in the conceptualization of the project. D.W., R.S.Q., L.P., M.M. collected data for the pilot qualitative study. All authors analyzed the data for the pilot qualitative study. S.S.V and A.V.W designed and collected data for Study 1 and Study 2. S.S.V designed the analytic paradigm, cleaned the data, analyzed the data and produced all tables and figures. S.S.V and A.V.W wrote and edited the manuscript. D.W. and M.M. provided edits to the paper. All authors approved the manuscript.

Competing interests
D.W., R.S.Q. L.P. and M.M. were employees of Slack at the time that this research was conducted and have a financial interest in Slack.

Data and Code Availability
De-identified and preprocessed data necessary to reproduce all results, as well as all analytic code is on our anonymized OSF page: https://osf.io/6d95s/?view_only=0ba0cdf38650450ba0b96292df523eba to facilitate double-blind review.

Introduction

Hybrid work arrangements – typically defined as arrangements that allow employees to work remotely 2-3 days per week – have persisted in remote-capable jobs well after the end of the pandemic (Barrero et al. 2023). Questions related to the effectiveness of hybrid work have persisted as well. Proponents argue that hybrid work constitutes the "best of both worlds" because these models typically predict higher productivity *and* well-being (Bloom et al. 2024, Choudhury et al. 2024) for knowledge workers—employees engaged in creating and applying specialized knowledge and information (Drucker 1999). Yet, opponents argue that there are unavoidable losses in hybrid work, such as for employee creativity (Heskett 2023), that might be largely attributed to reduced socializing and face-to-face collaboration on remote days (see Appendix A6 in Bloom et al. 2024).

To optimize hybrid work, leaders need to understand the critical factors that facilitate successful collaboration during remote work periods. To this end, we examine *why* the remote component of hybrid work may undermine knowledge workers' daily experiences. We propose that remote work makes it more difficult for knowledge workers to have meaningful work-related informal interactions ("informal sensemaking interactions"), predicting lower feelings of psychological safety and negative self-reported work outcomes, including lower creativity and team performance. To test these predictions, across three studies, we build and formally test a conceptual model that bridges research on employees' work locations, their ability to have informal sensemaking interactions, and their psychological safety (Figure 2). In Study 1, we develop a novel measure of psychological safety and conduct a diary study to validate this measure by examining whether psychological safety exhibits meaningful variation over short time periods ranging from hours to days. Next, in a pilot qualitative study, we develop a taxonomy that describes the characteristics of meaningful sensemaking interactions among hybrid workers. In Study 2, we use this novel measure of psychological safety and the taxonomy of sensemaking interactions to examine how changes in knowledge workers' daily work locations are associated with changes in their patterns of informal sensemaking interactions, feelings of psychological safety, and self-reported work-related outcomes. Together, these findings contribute to the literature on psychological safety by illuminating how and why psychological safety varies dynamically based on work location for hybrid workers.

Hybrid Work: A Balancing Act

Employees in jobs that can be performed outside their primary or secondary workplaces ("remote-capable workers": Dingel and Neiman 2020) place considerable value on working remotely at least partially each week (Mas and Pallais 2020). Flexible work arrangements are valuable because they allow employees to avoid lengthy commutes and feel more effective with their time (Akan et al. 2024). As a result, hybrid workers are less likely to leave their jobs and report greater work-life balance (Bloom et al. 2024). Women and members who identify as members of marginalized groups are especially likely to report experiencing the benefits of hybrid work (Dowling et al. 2022).

Despite these benefits, there is considerable skepticism about remote work among leaders. Prominent industrial leaders, including the CEO of the popular video-conferencing technology Zoom, have encouraged employees to return to the office because they believe remote work stifles their employees' creativity and innovation (Telford 2023). These anecdotal opinions have some grounding in scientific evidence. In an illustrative large-scale data analysis of scientists and inventors, members of remote-only teams were less likely to integrate knowledge to generate off-the-cut, disruptive ideas as compared to members of in-person teams (Lin et al. 2023). Similarly, other research has found that hybrid employees who were unable to consistently physically co-locate in the office with co-workers had fewer innovative ideas (as assessed objectively by management) as compared to employees on more physically co-located teams (Gibbs et al. 2024). The widespread adoption of hybrid work policies has made it harder for team members to physically co-locate in the office (Raghuram et al. 2019). Building on this research, a key contribution of the current paper is to examine the relationship between hybrid employees' daily working locations and team co-location and their feelings of psychological safety, which serves as a crucial precursor for positive work-related outcomes.

Psychological Safety in Hybrid Teams

Decades of research suggest that feelings of psychological safety predict greater knowledge sharing (Collins and Smith 2006), innovation (Edmondson and Bransby 2023), and an enhanced ability to learn and iterate (see Frazier et al. 2017 for a foundational review). Yet, research suggests that psychological safety is harder to attain in hybrid work arrangements. Recent research has found that the dispersion of teams across physical locations, as compared to co-location in a smaller number

of unique places, predicts decreases in team psychological safety (Seeber et al. 2024, Tkalich et al. 2024). Similarly, according to managers who have led both remote and in-person teams, sustaining high levels of psychological safety on remote teams requires greater intentionality and a greater number of interactions with co-workers in comparison to in-person teams (Sjöblom et al. 2022).

Despite these initial results, most research about psychological safety on hybrid or remote teams has used one-time surveys to measure key constructs of interest. This is an important limitation because hybrid employees exhibit considerable day-to-day variability in their work locations, which cannot be adequately captured in one-time surveys. For instance, hybrid workers in the United States frequent the office an average of 2.6 days each week (Wigert et al. 2023). To directly address this limitation, the current paper aims to develop a deeper understanding of how psychological safety varies over more granular timeframes for employees engaged in knowledge work on hybrid teams.

Temporally Granular Measurements of Psychological Safety

To effectively study psychological safety in hybrid work arrangements, granular measurement approaches are required. Cross-sectional and long-term longitudinal studies, which collect data at intervals of months or years, cannot capture how daily work location changes are associated with changes in psychological safety. While several pioneering studies have examined psychological safety using multi-wave panel designs over extended periods (Bransby et al. 2024, Higgins et al. 2022), these studies have focused on industries with static work locations like education and healthcare (see Table 1). In contrast, in industries like finance and IT, employees' work locations vary frequently (Dingel and Neiman 2020). We propose that changes in daily work location—and the resultant opportunities for informal interactions—may explain changes in psychological safety, learning, and innovation. With one exception (Chernoglazova 2022), there has been no systematic investigation of day-to-day variation in psychological safety in hybrid work contexts.

Experience sampling methods are particularly valuable for capturing employees' lived experiences since these methods focus on collecting intensive data that are spaced by relatively brief durations of time that range from hours to days (Csikszentmihalyi & LeFevre 1989). Experience sampling methods have three distinct advantages over other longitudinal methods, such as multi-wave panels (Beal 2015, Beal & Weiss 2003). First, experience sampling routinely assesses employees

during the workday, which increases ecological validity (Sonnentag et al. 2024). Second, this method prioritizes measuring experiences as they occur, which reduces recall bias (Gabriel et al. 2017). Finally, this method captures employees' lived work experiences with temporal representativeness through strategically timed surveys (Beal 2015). Given this temporal granularity, experience sampling provides a unique opportunity to study "the shifting dynamics introduced by remote work" on employees' perceptions of psychological safety in hybrid work arrangements (Bresman et al. 2023).

The past two decades have witnessed a renewed interest in applying intensive longitudinal methods to study the dynamics of employees' work lives (Sonnentag et al. 2024). Based on our review of the literature, experience sampling methods have not yet been widely adopted in psychological safety research (see Table 1). This gap may be attributed to the lack of a psychometrically validated measure designed to assess short-term fluctuations in psychological safety (e.g., over hours or days). Indeed, the quality of intensive longitudinal data depends heavily on the psychometric properties of the measurement instruments used to collect it (Ohly et al. 2010). Thus, one of our key contributions is to adapt and validate a repeated *state level* measure of psychological safety that can measure short-term changes in the construct over hours and days.

Media Richness and Informal Sensemaking Interactions

Short-term fluctuations in psychological safety may be explained by the frequency of informal sensemaking interactions. Broadly speaking, informal interactions at work are commonly described using labels such as "watercooler chats", "casual conversations", and "sidebars." A common characteristic of these interactions is *spontaneity* – these interactions tend to happen in the absence of advanced planning (Hinds and Mortensen 2005) and typically do not have preset agendas – rather, they are characterized by their *fluid* and *ad hoc* nature (Mandhana 2022).

Past research has extensively documented the differences between formal and informal workplace communication (see Kraut et al. 2002 for a foundational review). In this research, we focus on a subset of informal workplace interactions that we label "informal sensemaking interactions." Following a rich tradition of sensemaking management research (Maitlis and Christianson 2014), we define informal sensemaking interactions by their explicit focus on work-related topics (e.g., how to use a new technology or accomplish a shared goal) instead of topics that do not pertain to work (e.g.,

what is happening in the personal lives of employees). Informal sensemaking interactions that are explicitly tied to work-related topics are associated with increases in the dissemination of project-oriented advice, learning, and skill development (Whillans et al. 2021) – behaviors that past research has concretely linked to increases in psychological safety (Frazier et al. 2017). Thus, for the purpose of our investigation, we focus on informal interactions related to work (versus personal) topics.

The theoretical literature has long recognized the fact that remote work impedes spontaneous, unstructured and ad hoc work communication – the types of interactions that typify informal sensemaking interactions (Cooper and Kurland 2002, Golden and Raghuram 2010, Hinds and Mortensen 2005, O'Leary and Mortensen 2010). Emerging empirical research supports these theoretical assertions (Waight et al. 2022). Hence, the inability of employees to be continuously co-present with their primary team members on remote workdays might hinder their ability to have informal sensemaking interactions, which could explain lower psychological safety on remote days.

Similarly, on remote days, employees are more reliant on digital communication channels to have sensemaking interactions. Digitally mediated interactions do not perfectly mimic the realism, synchronicity and ephemerality of face-to-face interactions. Different media channels vary in their ability to communicate complex messages along a continuum ranging from "less psychologically rich" media like non-personalized bulk emails to "richer" forms of media such as one-on-one video-conferencing (Daft and Lengel 1986, Kock 2004). Media channels like video conferencing are more synchronous (there is a non-existent or very small-time delay between the sender and the receivers' messages) and contain significantly more cues (such as visual indicators of body language) than less rich, asynchronous media channels and more closely mimic in-person interactions.

Digital technologies like virtual team rooms can facilitate informal interactions by remaining accessible throughout the workday (Whillans et al. 2021). However, without widespread adoption of these "always-on" tools that facilitate consistent connection (Trepte et al. 2020), even the most sophisticated synchronous communication channels likely fall short in supporting spontaneous and authentic informal exchanges that help teams make sense of their work (Begemann et al. 2024).

We propose that the inability of employees to engage in informal, spontaneous and free-flowing communication when they are working remotely could hinder their feelings of psychological

safety, which is a crucial precursor of desired work outcomes such as self-reported creativity, team trust, learning behaviors, and self-perceived team performance. The inability of employees to engage in informal, spontaneous and free-flowing communication when they are working remotely could arise from having to rely on digital communication channels that (1) require advance planning to facilitate interactions and naturally limit serendipitous interactions, (2) are less rich in transmitted cues and lower in synchronicity as compared to face-to-face interactions, limiting information transfer (Okdie et al. 2011) and (3) have higher recordability to promote accessibility (Carradini et al. 2024, Persson et al. 2021), which could reduce trust and subsequent knowledge sharing (Trepte et al. 2017). We propose that employees rely on informal, spontaneous and free-flowing communication to nurture their levels of psychological safety and that these interactions vary based on daily working location and the extent to which employees are physically co-located with their teams each day (Figure 2).

Theoretical and Methodological Contributions

This investigation makes two methodological contributions to the literature on psychological safety. First, we examine the extent to which psychological safety exhibits meaningful variation within and across working days. Our work empirically substantiates the notion that psychological safety is a construct that exhibits meaningful variation not only over long periods of time (e.g., months and years; Bransby et al. 2024) but also over shorter periods of time (i.e., hours and days).

Second, we examine the psychometric properties of a novel repeated measure instrument for psychological safety and five self-reported work outcomes (team learning, primary team trust, work engagement, work creativity and team performance). In doing so, we provide empirical guidance about how to measure psychological safety and self-reported work outcomes over granular timeframes ranging from hours to days. This innovation offers a novel measure for studying the links between work location, team co-location, and psychological safety – which now has greater potential to vary within and across days in modern workplaces given the rise of hybrid work arrangements.

Our research offers three theoretical advances to the field of psychological safety. First, we examine how everyday work behaviors predict increases in psychological safety. Whereas past research has largely focused on examining psychological constructs, such as perceptions of peer collegiality (Nembhard and Edmondson 2006), we focus on behavioral antecedents – such as

employees' frequency of informal sensemaking interactions and the interaction partners involved. Our research therefore contributes to a behaviorally informed understanding of how peer support and leader interactions predict psychological safety by examining day-to-day changes in work-related interactions that are crucial for establishing these psychological perceptions. Broadly, our work explicitly tests the idea that the "microdynamics of conversations" are a key factor that explains the link between psychological safety and work-relevant outcomes (Edmondson and Bransby 2023).

Second, by examining momentary variations in psychological safety and self-reported work outcomes, we provide novel evidence that psychological safety predicts positive outcomes over shorter time periods (hours and days) at the within-person level. How psychological safety is constructed, maintained, and eroded over time remains yet to be fully understood (Edmondson and Bransby 2023). Our research addresses this gap by examining short-term fluctuations in psychological safety. Our findings suggest that psychological safety should be reconceptualized as a dynamic rather than a static psychological construct.

Finally, our research examines the dynamics of psychological safety in hybrid work environments – an important setting given the rising popularity of these work arrangements. Past theoretical work has recognized that psychological safety in hybrid work is challenging to maintain (Edmondson and Lei 2014) given that managers have to find ways to coordinate with employees who cannot be expected to be physically co-located regularly (Edmondson and Mortensen 2021). Here, we investigate whether collaborating via specific "psychologically rich" digital media technologies (i.e., video conferencing as compared to texting) helps to alleviate these coordination challenges.

As an auxiliary contribution, we conduct a qualitative pilot diary study to construct a taxonomy that captures the essential dimensions of everyday sensemaking interactions in hybrid work – including formality, medium, and interaction partner (see Web Appendix A). Past research on sensemaking is abundant (Maitlis and Christianson 2014), but to the best of our knowledge, research has not yet described the dimensions along which everyday sensemaking interactions differ from each other in contemporary hybrid work settings. While a comprehensive contribution to the sensemaking literature is beyond the scope of this paper, we rely on our derived taxonomy (described below) to study informal sensemaking interactions in hybrid work. We contribute to the theoretical foundations

of the sensemaking literature by (1) examining the day-to-day dynamics of sensemaking interactions, (2) describing different types of sensemaking interactions, and (3) situating research on sensemaking interactions in the context of contemporary hybrid workplaces and the psychological safety literature.

Study Overview and Hypotheses

First, following gold standard methodological guidance in management research (Gabriel et al. 2019), we develop and assess the psychometric properties of a novel state-level instrument that measures variation in psychological safety over hours and days. We then use this instrument in an intensive longitudinal study to measure the hourly and daily dynamics of psychological safety. We establish the suitability of this novel instrument for intensive longitudinal research by testing the predictive validity of this state-level psychological safety measure (Figure 2).

In the absence of past research on short-term variability in psychological safety, we assume that the predictive validity of psychological safety at the within-person level will be identical to the predictive validity of psychological safety at the between-person level (McCormick et al. 2020). We argue that similarity in the predictive validity of psychological safety at the within and between-person levels is a *preferred outcome* because it implies that the adapted within-person instrument measures the same underlying construct as the well-studied between-person instrument (Chen et al. 2005, Tay et al. 2014). Based on this reasoning, we propose hypotheses (see Figure 1) that examine the within-person relationships between psychological safety and related constructs, drawing from two foundational meta-analyses of between-person research (Frazier et al. 2017, Newman et al. 2017).

> **Hypothesis 1:** The construct of *state psychological safety* will show high construct validity by demonstrating that increases in (a) neuroticism and (b) openness will predict increases in psychological safety.
> **Hypothesis 2:** The construct of *state psychological safety* will show high predictive validity by demonstrating a positive association with future *state-level* self-reported work outcomes including (a) team learning, (b) primary team trust, (c) work engagement, (d) work creativity and (e) team performance.
> **Hypothesis 3:** The construct of *state psychological safety* will exhibit meaningful variation within respondents.

Next, we conduct a pilot qualitative diary study to examine employees' everyday sensemaking interactions in the hybrid workplace. Motivated by past research (Koch and Denner 2022, Lane et al. 2024, Whillans et al. 2021), we theorize that everyday sensemaking interactions for

hybrid employees could vary along several psychologically-relevant dimensions such as interaction channel (i.e., what digital media tools were being used to communicate) and the formality of the interaction (i.e., the extent to which the interaction was pre-planned and structured versus spontaneous). We analyze the data collected from this pilot qualitative diary study to construct a taxonomy of hybrid employees' sensemaking interactions which is presented in Web Appendix A.

Finally, we conduct a study to validate our core conceptual model using this psychometrically robust measure of state psychological safety and our taxonomy of sensemaking interactions. In this model (Figure 2), employees' daily work location predicts changes in their team co-location, which subsequently predicts the frequency of informal sensemaking interactions at work. The frequency of informal sensemaking interactions predicts changes in psychological safety, which we hypothesize will predict increases in self-reported work outcomes such as team learning, primary team trust, work engagement, work creativity and team performance.

Based on past research (Biron et al. 2021, Chernoglazova 2022), we predict that employees will experience greater psychological safety at the office when they have more frequent informal sensemaking interactions with their team members. When employees are physically co-located with their co-workers, there is a greater opportunity for engaging in serendipitous interactions that are exemplary of informal sensemaking. Moreover, informal sensemaking interactions should be more frequent during in-person (vs. remote) days because of the lower use of technology that reduces fluid and candid interactions (Lechner and Tobias Mortlock 2022, Moffett et al. 2024, Rockmann and Northcraft 2008). Given our synthesis of the past literature, we propose the following hypotheses:

> **Hypothesis 4:** Employees will perceive greater levels of psychological safety on days when they work in-person at the office as compared to when they work remotely. This relationship will be partially mediated by the frequency of informal sensemaking interactions. We also predict that: (a) employees will report increased primary team co-location on office days as compared to remote days, (b) increased team co-location will be associated with more frequent informal sensemaking interactions, (c) an increase in informal sensemaking interactions will be associated with increased psychological safety.
> **Hypothesis 5:** In turn, higher psychological safety will predict increased self-reported (a) team performance, (b) work creativity, (c) work engagement, (d) primary team trust, and (e) primary team learning.

Finally, motivated by the findings of our pilot qualitative study and media richness theory, we test the extent to which the use of media channels that vary in their (1) richness of cues, (2)

synchronicity, and (3) recordability predicts differences in perceptions of psychological safety across 3-hour intervals. We predict that employees will indicate greater psychological safety after having sensemaking interactions through media channels that are (1) rich in audiovisual cues and (2) are less likely to leave accessible persistent records.

> **Hypothesis 6:** Hybrid employees will perceive greater psychological safety after having sensemaking interactions on media channels that are (a) more synchronous, (b) cue-rich, and (c) unlikely to leave persistent recordable traces that are accessible to others.

Most digital media channels can be used synchronously or asynchronously. For instance, employees may have a rapid exchange on a traditionally asynchronous media channel such as email. Thus, in addition to Hypothesis 6, we expected that regardless of the digital media channel used for sensemaking interactions, interactions that occur with minimal delay – wherein message receivers reply and receive replies with low latency – will predict increased psychological safety:

> **Hypothesis 7:** Hybrid employees will perceive greater psychological safety after having synchronous sensemaking interactions, wherein (a) they reply to interaction partners with minimal delay and (b) interaction partners reply to them with minimal delay.

De-identified data, preprocessing code, and analytical code used to generate the results are available on OSF: https://osf.io/6d95s/?view_only=0ba0cdf38650450ba0b96292df523eba.

Study 1: Modelling The Dynamics of Psychological Safety

Study 1 had two interrelated aims. First, we adapted a cross-sectional psychological safety measure (Edmondson and Mogelof 2005) to assess short-term fluctuations (hour-to-hour, day-to-day) in psychological safety. We then examined the construct validity of this adapted measure by administering it multiple times a day over seven workdays (Hypothesis 1). Second, to establish predictive validity, we investigated whether within-person variations in psychological safety were meaningfully related to key outcomes (Hypotheses 2 and 3).

Methods

Respondents and Procedures

We conducted an intensive longitudinal study. Respondents completed three short questionnaires (ranging from 5-to-7 minutes) each day for seven consecutive workdays. We recruited full-time employees through Prolific using a multistage screening process. The complete screening criteria used to determine eligible employees is outlined in Web Appendix B.

After completing the screener and baseline surveys, eligible respondents completed a diary study. For seven consecutive working days (excluding weekends and federal holidays), respondents received three notifications on their personal email addresses and phone numbers that prompted them to complete a 5-minute or 7-minute survey. The first notification for a 5-minute survey was sent at noon local time, the second at 3 PM local time, and the third at 6 PM local time. Respondents were told that they had 3 hours to complete each survey after receiving it and within 1 hour after starting a specific survey. At the end of the diary survey component, all respondents were invited to complete an endline survey. This approach is consistent with gold-standard guidance from experience sampling management researchers (Gabriel et al. 2019). To ensure that employees could anticipate and plan to complete the surveys, we did not randomize survey timing. Following paradigmatic guidance, we created a compensation scheme that selectively rewarded respondents with an 80% and 90% response rate, with managers earning a greater bonus given their higher value of time (Gabriel et al., 2019).

Data Cleaning. We implemented data cleaning procedures (Web Appendix C) to retain high-quality observations. These data-cleaning procedures resulted in a final sample of 346 respondents (5908 observations). The overall response rate was 78.6 % (5908/7518 observations completed). This response rate is comparable to past research (Bredehorst et al. 2024, Breevaart and Bakker 2018).

Demographic Variables and Cross-Sectional Measures

During the screener and the baseline survey, we assessed employees' gender, age, ethnicity, industry, tenure and seniority. We also assessed employees' dispositional levels of perceived psychological safety using a well-established measure (Edmondson 1999). Table 3 documents the descriptive statistics of the demographic composition of the sample.

Repeated Measures

Consistent with gold-standard guidance regarding the design of intensive longitudinal research in management (e.g., Beal 2015, Fisher and To 2012, Gabriel et al. 2017), we used multiple-item measures to ensure maximum validity for each construct of interest. Unless noted otherwise, we computed average scores across items for each of the instruments reported below. For instruments that were administered three times a day (12 PM, 3 PM and 6 PM), the prompt asked respondents to "reflect on their workday so far" (for the noon survey) or "reflect on their experiences at work since

their last report" (for the 3 PM and 6 PM survey). For instruments that were only administered at the end of the workday, the prompt asked respondents to "reflect on their workday as a whole." Table 2 documents the descriptive statistics of the repeated measure variables, including the within and between subject reliability for all instruments used in the daily survey. Employees indicated their daily work location and team co-location in the 6 PM daily diary survey.

Psychological Safety. To measure psychological safety within and across days, we adapted the 5-item instrument from Edmondson and Mogelof (2005). We adapted this instrument because it had been used in previous longitudinal designs. Since we expected that each of the five scale items would exhibit meaningful variation within and across workdays, this instrument was administered during each of the three daily surveys. Responses were obtained through a Likert scale ranging from 1 (*Never or almost never)* to 4 (*Almost or always almost*).

Team Performance. This measure was adapted from Edmondson (1999) and administered three times a day. Responses ranged from 1 (*Very inaccurate)* to 7 (*Very accurate*).[i]

Team Learning. We adapted a multidimensional 28-item instrument from Savelsbergh et al., (2009). Given the length and construction of the instrument, we administered the survey once at the end of each workday. Responses ranged from 1 (*Completely disagree*) to 5 (*Completely agree*).

Team Trust. We administered a widely-used 5-item instrument (De Jong and Elfring 2010) three times a day. Responses ranged from 1 (*Completely disagree*) to 5 (*Completely agree*).

Work Engagement. We administered a validated 9-item instrument (e.g., Bakker 2014, Breevaart et al. 2012) that was designed specifically for intensive longitudinal research three times a day. Responses ranged from 0 (*Strongly disagree*) to 6 (*Strongly agree*).

Work Creativity. We administered a validated 8-item instrument designed for use in longitudinal research (e.g., Binnewies and Wörnlein 2011, Tierney et al. 1999) three times a day. Responses ranged from 1 (*Not at all*) to 7 (*Extremely*).

Personality States. Respondents' personality states were measured three times a day using a modified version of a validated repeated measure instrument corresponding to the Big Five traits (Fleeson 2001). This measure focused on neuroticism and openness (Soto and John 2017) , given that

past research has linked these traits to feelings of psychological safety (Frazier et al., 2017). Responses ranged from 1 (*Not well at all*) to 5 (*Extremely well*).

Work Location. In the last survey of the day, respondents indicated whether they worked from a (primary/secondary) company office, a client/customer office, their homes or a different location (e.g., café) using a measure adapted from past research (Bloom et al. 2022). Across all experience sampling reports, 59.5% of employees indicated working from the office. The remaining experience sampling reports were collected when employees indicated working remotely.

Team Co-Location. In the last survey of the day, respondents reported their team co-location. Given the lack of a well-validated instrument, we designed our own. We used a proximity-based approach to team colocation that emphasized physical co-presence (Carmody et al. 2022). Specifically, respondents indicated how many people they saw *in person* from their primary team on any given day using a scale ranging from "No one on my team" to "Everyone on my team."

Analytic Plan

Following guidance on the construction of psychometric instruments that measure short-term changes (Gabriel et al. 2019, Horstmann and Ziegler 2020), we examined (1) the between and within-person reliability estimates of psychological safety (Horstmann and Ziegler 2020, Nezlek 2017), (2) the construct and predictive validity of our instrument (Hypothesis 2) and (3) the extent to which psychological safety exhibited meaningful variation over time (Hypothesis 3).

We computed between and within-person reliability estimates using a multilevel confirmatory factor analysis (see Web Appendix H) (Geldhof et al. 2014). To assess construct and predictive validity, we examined whether the antecedents and consequences of psychological safety (Frazier et al. 2017) replicated at the within-person level over hours[ii] (Figure 2). Construct validity was assessed by examining whether state-level psychological safety could be predicted by theoretically relevant predictors (openness and neuroticism states: Hypotheses 1). Predictive validity was assessed by examining whether state-level psychological safety predicted changes in self-reported work outcomes (Hypotheses 2). To examine whether repeated measures of psychological safety exhibited meaningful variation over time, we tested whether a two-level autoregressive model of psychological safety, with random slopes and intercepts, explained more variance than a one-level, intercepts-only model

autoregressive model (Antonakis et al. 2021) through a likelihood ratio test (Vuong 1989) (Hypothesis 3).

Results

Construct and Predictive Validity

Tables 2 and 3 provide descriptive statistics for the repeated and one-time measures. We first assessed the construct and predictive validity of *state psychological safety* (Hypothesis 1 and 2). Attesting to the validity of this novel measure, dynamic structural equation models revealed several significant associations between psychological safety and its antecedents (construct validity) and consequences (predictive validity) (Table 4). Replicating between-person research examining trait psychological safety (Frazier et al. 2017), *state psychological safety* in the moment was predicted by an increased expression of openness in the past 3 hours (B=0.049, 95% CI=[0.014, 0.077]). Replicating between-person findings (Frazier et al., 2017), increased psychological safety in the past 3 hours predicted increases in self-reported team learning behaviors (B=0.247, 95% CI=[0.199, 0.300]), primary team trust (B=0.216, 95% CI=[0.187, 0.243]), work engagement (B=0.129, 95% CI=[0.096, 0.158]), work creativity (B=0.161, 95% CI=[0.126, 0.193]), and team performance (reverse-coded: B=-0.051, 95%CI=[-0.086, -0.016]). Except for one sub-hypothesis from Hypothesis 1 that was not supported (hypothesizing that an increase in neuroticism in the past 3 hours would predict an increase in psychological safety), these analyses supported all other sub-hypotheses related to the within-person nomological network of state psychological safety (see Figure 1). Given that the nomological network for trait and state-level psychological safety was largely comparable, we can confidently assert that our adapted instrument of state-level psychological safety measures the same underlying construct as trait-level psychological safety (Morgeson and Hofmann 1999, Rousseau 1985).

Variation in Psychological Safety Over Time

Next, we tested Hypothesis 3 by examining whether state-level psychological safety exhibited meaningful variation over short periods of time ranging from hours to days. First, we analyzed whether psychological safety varied within people over time versus across people. Analysis revealed that 53.3% of the variance in psychological safety was attributed to between-person factors and 46.7% was attributed to within-person factors (see Web Appendix H). Given that nearly half of the variance

in psychological safety was at the within-person level, we examined whether state psychological safety exhibited meaningful variation over short time periods (Antonakis et al. 2021). Specifically, we examined the relationship between momentary psychological safety and lagged psychological safety. In one model, we tested whether the relationship between momentary psychological safety and lagged psychological safety differed across employees. In another model, we tested whether this relationship exhibited greater variation over time for individual employees. Analyses indicated that a two-level multilevel model (the within-person model) for psychological safety, including random slopes and intercepts for each employee, fit the data better χ^2 (2) = 89.406, $p < 0.001$ in comparison to the random-intercepts model. Thus, psychological safety exhibited greater variation within people and over time (see Web Appendix H) in comparison to across people, validating Hypotheses 3.

Pilot Qualitative Study

After validating our novel measure of psychological safety at the within-person level, we set out to develop a taxonomy of work-related sensemaking interactions in the hybrid workplace. To do so, we conducted a pilot qualitative diary study with 38 remote-capable workers who were physically located in the United States. During a conventional workweek (7 consecutive days including the weekend), respondents were sent short surveys to complete twice a day in the morning and afternoon. These surveys captured key characteristics of representative sensemaking interactions (see Web Appendix A for information about the design and implementation of the survey instrument).

This pilot study revealed five critical dimensions of workplace sensemaking interactions: medium (the platform or communication venue), formality (the extent to which interactions were structured), synchronicity (the extent to which interaction partners communicated in real-time), interaction partners (the extent to which the interaction consisted of managers, peers or direct reports) and location (the extent to which interaction partners were co-located). In Study 2, we directly tested the importance of each of these dimensions in explaining the association between psychological safety and hybrid workers' daily work locations.

Study 2: Informal sensemaking interactions and psychological safety

Having constructed a descriptive taxonomy of everyday sensemaking interactions for hybrid workers, we tested our core conceptual model (Figure 2). As outlined in Hypotheses 4-6, we were

interested in testing the link between daily work location, daily team co-location, frequency of informal sensemaking interactions, feelings of psychological safety, and self-reported work outcomes.

Methods

Respondents

Our screening criteria for Study 2 were identical to Study 1. The data cleaning steps in Study 2 were identical to those used in Study 1. The final dataset used for all analyses was based on 290 respondents (4936 observations). The response rate was 81.1% (4936 observations of 6090).

Procedure

The procedure for Study 2 was identical to Study 1, with a slight difference in compensation. We increased the base compensation (before bonuses) to $12/hour to increase the response rate. We also increased the bonus levels. See Web Appendix B for full compensation details.

Measures

All demographic and survey measures were identical to Study 1. We included repeated measure instruments for psychological safety, team performance, work creativity, work engagement, team learning, and primary team trust to measure the association between state psychological safety and positive self-reported work-related outcomes (Hypothesis 4). We developed new measures to assess informal sensemaking interactions and included well-being measures in all three daily surveys.

Building on our pilot results, we distinguished between three types of sensemaking interactions: formal interactions (that are structured, pre-planned meetings), semi-formal sensemaking interactions (that occur as a sidebar against the backdrop of formal meetings) and informal sensemaking interactions (interactions that are spontaneous and unstructured).

Properties of sensemaking interactions. Respondents indicated the number of formal, informal and semi-formal sensemaking interactions that they had engaged in since the start of their workday or since their last report based on the timing of the experience sampling survey.

Sensemaking interactions were defined as “interactions that helped employees gain a new perspective on their projects, coworkers, role, or organization.” Formal sensemaking interactions were defined as interactions that took place during a planned meeting or event. Informal sensemaking interactions were defined as interactions that happened in passing (e.g., hallway conversations, water-

cooler conversations). Semi-formal sensemaking interactions were defined as interactions that occurred in a "sidebar" alongside formal, planned meetings or events. To reduce the complexity of the models, and because semi-formal and informal interactions both occurred in unplanned ways, we combined these interactions into a single category called "informal sensemaking interactions."

Respondents indicated the estimated duration of their sensemaking interaction, as well as the number of people who were involved. Respondents also indicated their interaction partners using a multiple-choice question. Example response options included "peer(s) from my primary team" and "manager(s) from outside of my primary team." The response choices focused on capturing whether the interaction partners were primary team members and peers or senior colleagues. The complete survey is available on OSF: https://osf.io/6d95s/?view_only=0ba0cdf38650450ba0b96292df523eba. Finally, respondents indicated if the interaction occurred virtually or in person and if relevant, they completed a sub-branch that was specific to online interactions.

Two-way Synchronicity. We developed a new measure that asked respondents to report their perceptions of (1) how fast they replied ("reply") and (2) how fast they received a reply ("receipt"). Employees responded to the "reply" question using a 7-point scale ranging from 1 (*Delayed communication - there was a noticeable delay between my interaction partners communicating with me and my reply*) to 7 (*Real-time communication - there was little or no delay between my interaction partner(s) communicating with me and my reply*). Employees responded to the "receipt" question using a 7-point Likert scale that ranged from 1 (*Delayed communication - there was a noticeable delay between receiving a reply after communicating with my interaction partner(s)*) to 7 (*Real-time communication - there was little or no delay between receiving a reply after communicating with my interaction partner(s)*). This question was designed to directly operationalize the key facets of media synchronicity discussed in prior management research (Dennis et al. 1998).

Virtual Interaction Channel. Respondents indicated the channel of the virtual sensemaking interaction using a multiple-choice question that contained an exhaustive set of options ranging from texting video chatting to personalized and bulk emails (Roshanaei et al. 2024).

Recordability and accessibility of virtual interaction channel. We collected data using a novel 1-item instrument where respondents could indicate whether their target sensemaking

interaction was recorded and stored on a company computer and was accessible by other employees. This custom survey item was inspired by theoretical work on privacy calculus, which measures consumer attitudes toward the privacy affordances of different technologies (Trepte et al. 2020).

Results

Key descriptive statistics for the repeated and cross-sectional measures are documented in Tables 2 and 3. On average, employees reported having 2.19 informal interactions and 1.98 formal interactions within each measurement interval (ranging from 10 minutes to 3 hours) on days they worked remotely. On average, employees reported having 6.16 informal interactions and 2.6 formal interactions within each measurement interval (ranging from 10 minutes to 3 hours) on days they worked from the office. These descriptive statistics corroborate past research, showing that informal interactions are more frequent during in-person versus remote work days (Kraut et al. 2002). Employees were co-located with members of their primary teams more on office days (M=3.44, SD=1.21) than on remote days (M=1.01, SD=0.16), making it a possibility that the increased frequency of informal sensemaking interactions could be explained by increased physical co-presence.

Next, we examined how employees' daily work location predicted differences in the digital media channels used for informal sensemaking interactions. The greatest difference across remote and office days was for personalized emails – whereas only 11% of informal sensemaking interactions occurred via personalized emails on remote days, this number increased to 19% on office days.

Across both remote and office days, employees most frequently had informal sensemaking interactions with peers (M_{office}= 64%, M_{Remote}= 68%), followed by managers (M_{office}= 24%, M_{Remote}= 25%) on their primary teams and peers from outside their primary team (M_{office}= 21%, M_{Remote}= 26%). Across both work arrangements, informal sensemaking interactions occurred least frequently with customers/clients (M_{office}= 3%, M_{Remote}= 4%). See Table 2 for the full descriptive statistics.

Conceptual Model Validation

To test Hypothesis 4, we ran four multilevel models. In Model 1, we tested the association between daily work location and daily team co-location. In Model 2, we examined whether team co-location predicted greater frequency of informal sensemaking interactions. In Model 3, we examined

the association between the frequency of informal sensemaking interactions and psychological safety. Model 4 was implemented through a dynamic structural equation framework at the hourly level in MPlus (Asparouhov et al. 2018), which allowed us to test lagged effects at the time scale of the previous 3 hours. Guided by past research (Singh, 2020), our model included age, sex, seniority, team interdependence, team size, organizational tenure and trait psychological safety as control variables. For a detailed description of how we selected appropriate control variables, see Web Appendix E. All findings were robust to the inclusion/exclusion of control variables (see Appendix G). Models 1-3 also included industry as an additional control variable since these analyses were run in R using the more flexible approach of multilevel modeling, which could tolerate this complex categorical variable.

Validating Hypothesis 4a, on average, employees reported a greater level of team co-location on days when they worked from the office versus other locations (Model 1: B=1.40, 95% CI= [0.60, 2.21]). Validating Hypothesis 4b, employees reported a greater frequency of informal sensemaking interactions on days when team co-location was high (Model 2: β=0.20[iii], 95% CI =[0.18, 0.22], p<0.05). Consistent with Hypothesis 4c, more frequent informal sensemaking interactions predicted higher momentary perceptions of psychological safety (Model 3: B=0.06, 95% CI=[0.02, 0.11]). Finally, in accordance with Hypotheses 5a-5e, higher perceptions of state-level psychological safety were associated with self-reported increases in team performance (Model 4: B=0.093, 95% CI=[0.058, 0.131*]), p*<0.001), primary team trust (Model 4: B=0.223, 95% CI=[0.183, 0.267], p<0.001), work engagement (Model 4: B=0.223, 95% CI=[0.183, 0.267], p<0.001), work creativity (Model 4: B=0.219, 95%CI=[0.167, 0.280], p<0.001), and learning behaviors (Model 4: B=0.296, 95% CI=[0.173, 0.381], p<0.001). In sum, we found evidence supporting each connection of our core conceptual model (see Figure 2).

Within-Person Mediation

Next, we examined whether the relationship between work location and psychological safety was mediated by the frequency of informal sensemaking interactions (Hypothesis 4). To test this hypothesis, we conducted a random intercept within-person mediation model (1-1-1 mediation:

Preacher et al. 2010). These analyses occurred at the day level, given that we measured daily work location only once each day. Results were robust to the exclusion of control variables (Appendix G).

Results supported our hypotheses (Table S8; Figure 3). When employees worked from the office, they had a greater frequency of informal sensemaking interactions (Path A: B=2.430, 95%CI = [1.490, 3.171], p<0.001). In turn, an increased frequency of informal sensemaking interactions was associated with increased feelings of state-level psychological safety (Path B: B=0.004, 95%CI=[0.001, 0.007], p<0.001). At the within-person level, the indirect effect[iv] of work location on psychological safety had a confidence interval that did not cross zero (IDE=0.010, 95%CI=[0.004, 0.022]). This result suggests that the relationship between daily work location and psychological safety was explained in part through the mediating pathway of the frequency of informal social interactions. These results validate Hypothesis 2e, which predicted that the relationship between work location and psychological safety would be partially mediated by the frequency of informal sensemaking interactions. The complete mediation results are presented in Web Appendix I.

Characteristics of High-Psychological Safety Interactions

Finally, we examined Hypotheses 5-7 and tested the features of sensemaking interactions that predicted state-level psychological safety. In the first model, we examined the association between the use of specific digital media channels during informal sensemaking interactions and perceptions of psychological safety. In the second model, we explored the role of interaction partners in predicting the beneficial role of informal sensemaking interactions for state-level psychological safety. In the third model, we examined whether the synchronicity of informal sensemaking interactions was associated with increased psychological safety. In all models, we controlled for tenure, age, sex (1=female/0=male), seniority, team interdependence, team size, industry and dispositional psychological safety. In all analyses where the dependent variable was state psychological safety, we controlled for trait psychological safety measures measured during the baseline survey. Finally, for all variables where respondents had the option of selecting multiple responses (number of digital media channels used in the interaction, number of interaction partners), we controlled for the total number of responses they selected. All findings were robust to the exclusion of these control variables (see Web Appendix G).

Regarding communication channels (Hypotheses 6a and 6b), sensemaking interactions that involved productivity app-based audio calls (e.g., Microsoft Teams) were associated with modest decreases in psychological safety as compared to interactions that occurred in all other channels (*B*=-0.060, 95%CI= [-0.110, -0.010]). Episodes with instant messaging interactions were associated with decreases in psychological safety (*B*=-0.107, 95%CI= [-0.180, -0.030]) as compared to interactions that occurred on all other channels, though these effects became non-significant without control variables (Web Appendix G). These findings partially support Hypotheses 6a and 6b, suggesting that work-relevant sensemaking interactions occurring through more synchronous, cue-rich channels like audio calls were associated with smaller decreases in momentary psychological safety as compared to less rich platforms. We found no significant relationship between interaction recordability and psychological safety (Hypothesis 6c). Supporting Hypothesis 7a, employees reported higher psychological safety during interactions where they received synchronous replies from interaction partners (B=0.075, 95% CI= [0.027, 0.123]). The synchronicity of employees' own responses showed no significant relationship with psychological safety levels, failing to support Hypothesis 7b.

In exploratory analyses, we examined whether interaction partners predicted short-term changes in psychological safety. Our main model showed no significant associations between partner relationships (e.g., peers, managers) and psychological safety. However, supplementary analyses without control variables revealed that informal sensemaking interactions that involved primary team managers and peers were associated with increased state psychological safety (for instance, interactions with primary team peers were associated with higher state psychological safety in comparison to interactions with other types of employees: see Web Appendix G for details).

General Discussion

In Study 1, we followed gold standard guidance and tested the psychometric properties of a novel measure designed to capture daily fluctuations in psychological safety (Gabriel et al. 2019). This measure showed excellent within-person reliability and high predictive validity, illustrating the robustness of this measure as a new tool for conducting intensive longitudinal research on the topic of psychological safety in dynamic workplace environments. Study 1 also provided evidence that psychological safety exhibits meaningful variation over short time periods – a finding that merits a

reconceptualization of the role that psychological safety plays in employees' everyday working lives. In Study 3, employees' daily work locations predicted variability in perceptions of psychological safety, which explained changes in self-reported work outcomes such as team learning, performance, and creativity. The physical location of employees relative to their team members, as well as the communication channels that employees used to have sensemaking interactions (e.g., audio calls and text messages), played a critical role in explaining employees' state-level feelings of psychological safety and their self-reported work outcomes. Together, these studies make several contributions to research that seeks to understand the experience of psychological safety in hybrid workplaces.

Theoretical Contributions

A key strength of our research is the reconceptualization of psychological safety as a dynamic construct that fluctuates based on contextual factors – including recent interactions with primary team members and managers. This perspective complements the paradigmatic static view of psychological safety and opens new avenues for more temporally granular research. We highlight three specific contributions that this work makes to the literature on psychological safety and hybrid work.

Notably, our findings highlight the critical role that workplace interactions and digital media affordances play in shaping feelings of psychological safety among hybrid workers. We show that increased physical co-location is associated with more frequent informal sensemaking interactions, which in turn predict higher levels of psychological safety. Conversely, remote work appears to constrain these informal interactions, undermining psychological safety. From an affordance theory perspective (Fayard and Weeks 2007), these results suggest that the technological and spatial features of hybrid work environments enable and constrain different forms of social interaction and interpersonal exchange. Specifically, the affordances of co-located, face-to-face work - such as serendipitous encounters, spontaneous conversations, and shared context - appear to be important for cultivating the feelings of interpersonal trust and mutual respect that comprise psychological safety. In contrast, the affordances of remote, technology-mediated work - such as reduced visibility, asynchronous communication, and lack of shared context - may hamper these interpersonal processes. Our findings reveal that to theorize about the dynamics of psychological safety, one must account for the affordances of employees' co-located and remote work environment. These insights have

important implications for how organizations design and manage their hybrid work environments. Leaders should carefully consider how to leverage the unique affordances of both co-located and remote work to optimize opportunities for the informal sensemaking interactions that are crucial for maintaining psychological safety and supporting positive work outcomes.

Second, our findings offer empirical support for recent calls to expand research on the dynamics of psychological safety (Edmondson and Bransby 2023). We exploit the temporal richness of our data to paint a dynamic portrait of the antecedents and consequences of psychological safety in everyday work life. Research on the antecedents and outcomes of nurturing psychological safety over the short term remains relatively scarce as compared to research that has examined long-term shifts in psychological safety (Edmondson and Bransby 2023) or that has treated it as a static construct (Frazier et al., 2017). Here, we directly address this limitation by finding empirical support that informal sensemaking interactions can serve as a key variable for increasing psychological safety, *especially over short time frames ranging from hours to days*. Similarly, increased psychological safety can predict increases in self-reported work outcomes, such as creativity and team performance, over the span of a few hours. This research therefore sheds light on the antecedents and consequences of increasing psychological safety and provides evidence that these antecedents and consequences operate over considerably more granular timeframes than previously proposed in the literature. Hence, future theoretical models of psychological safety must make concrete claims about the time frame in which hypothesized nomological networks emerge instead of treating time as a less relevant variable.

Third, our findings make an important contribution to the theoretical understanding of psychological safety by situating it within an interactionist framework of organizational behavior. Specifically, we conceptualize psychological safety at the level of individuals as a construct that captures employee perceptions of organizational climate. This conceptualization of psychological safety is in line with paradigmatic guidance about operationalizing the construct in constantly changing environments such as hybrid work (Edmondson and Bransby 2023). First, it moves beyond static, decontextualized conceptualizations of psychological safety to capture its inherently dynamic and situated nature. Our results show that psychological safety is not a stable, person-level trait but rather a state that fluctuates in response to changes in the work environment and employees' social

interactions Our findings highlight the critical intersection between context and behavior in shaping psychological safety. We show that the physical context of the workplace (co-located vs. remote) influences the frequency of informal sensemaking interactions, which in turn predict fluctuations in psychological safety. This suggests that psychological safety emerges from the interplay between organizational structures/affordances and employees' interpersonal behaviors rather than being determined by one factor alone. Finally, by examining these dynamic, within-person processes, our research bridges psychological safety theory with the well-established tradition of person-environment interaction research in organizational psychology. This interactionist lens provides a more holistic and contextualized understanding of how psychological safety manifests in contemporary hybrid work environments.

Policy Implications and Organizational Recommendations

Our findings have potential implications for hybrid workplace policy. Most importantly, findings from this paper, as well as past research on interactions in remote work, (Fayard and Weeks 2007, McAlpine 2018) suggest that organizations might benefit from the adoption of novel communication technologies that provide higher fidelity audiovisual interactions and are “always-on.” Our research suggests that informal interactions that occur through conventional tools such as video conferencing and instant messaging are not meaningfully associated with increases in psychological safety—even when these tools facilitate sensemaking interactions. This is likely because even though these channels are richer in cues and more synchronous than other channels like text messaging, they are not “always-on” in that meeting via them requires advanced planning and coordination. As a result, our findings suggest that organizations may need to implement novel technologies that better facilitate spontaneous cross-location interactions – such as "digital corridors" that connect remote workers to on-site common areas through always-on video portals. This suggestion builds on and extends research on spatial design for collaboration (Fayard & Weeks 2011) and virtual co-presence (Cramton 2001). New startup companies (such as Tonari[v]) now provide innovative digital media tools that provide low-latency, high-resolution and always-on “teleportation windows” (e.g., life-size digital screens) that hybrid workers can use to interact with co-workers from different locations. Our

research suggests that leaders who are concerned about psychological safety in remote work may benefit from implementing these novel technologies to facilitate learning, creativity, and connection.

One of our core findings is that employees have fewer informal sensemaking interactions when they work remotely. To alleviate this workplace interaction deficit, managers could consider implementing "interaction equity policies" to ensure that remote workers are not disadvantaged in terms of informal communication opportunities. Project kickoff meetings could be architected to include structured informal interaction time, regardless of whether these meetings are conducted in-person or virtually (see also Bojinov et al. 2021). This recommendation addresses concerns raised in the literature about the potential for hybrid work to create "second-class" organizational citizens out of employees who spend more time working remotely than from the office (Bartel et al. 2012).

Given that psychological safety is more variable in hybrid work arrangements (it fluctuates based on an employee's daily work location), we propose that organizations should consider implementing temporally granular "psychological safety audits" as a regular practice. These audits would assess not only overall levels of psychological safety but also its distribution across different work arrangements and employee demographics. This recommendation builds on recent work by Edmondson and Mortensen (2021) on psychological safety in remote work but extends it by proposing a systematic, organization-wide approach implemented with high frequency to account for the fact that psychological safety dynamically varies within hours and days based on location.

Limitations and Future Directions

As with any research, our work has limitations that suggest fruitful areas for future research. While our repeated measures design captures temporal dynamics of psychological safety, further research could strengthen causal inference through field experiments. Future studies could build on our findings by implementing adaptive interventions (Zhu et al. 2023) that systematically alter remote employees' informal sensemaking interactions or their team co-location patterns (Choudhury et al. 2024). Such interventions could help to further establish causal relationships between daily work location, sensemaking interactions, and psychological safety (Podsakoff and Podsakoff 2019).

Second, the focus of the current research on granular time domains ranging from hours to days prevents us from generalizing our findings to longer-term trends that have been studied in past

research (Bransby et al. 2024). It is possible that the positive relationship between informal sensemaking interactions and psychological safety changes in valence (e.g., positive or negative) and magnitude (e.g., size of the association) when allowed to slowly accumulate over longer time periods. Future research could adopt a combination of intensive longitudinal and panel data methodologies wherein the same group of respondents are surveyed for short bursts of time over multiple years (Beal and Ghandour 2011, Nesselroade 1991) to assess the differences in these results across time periods.

Third, another limitation of our research is a focus on individual employees as a unit of analysis instead of teams of employees. However, we note that psychological safety research at the level of individual employees is on the rise (Edmondson and Lei 2014) and that our core contribution is precisely an investigation of *within-person* variability (Howard and Hoffman 2018) in psychological safety, which is an understudied phenomenon. An interesting open question is whether and how team-level state psychological safety arises as an emergent property (Fyhn et al. 2023) from the state psychological safety of individual employees. Future research could study this question in collaboration with companies where all team members are sampled using intensive longitudinal methods. This research could look at team-level variability in psychological safety and how it varies based on location and communication channels to directly extend the findings of the current paper.

Finally, with advances in ubiquitous computing technologies (Vaid et al. 2021), organizational scholars could embrace the unprecedented potential of mobile sensors to tap into an objective stream of behavioral data (Chaffin et al. 2017), which we were unable to capture here, given our focus on the use of self-reported measures. For instance, data collected from employees' smartphones (e.g., Bluetooth, microphones) could be used to determine instances when they were having informal interactions at work. Similarly, data collected from smartphone-based GPS sensors could be used to assess employees' daily work location, especially when combined with event-triggered notifications that imbue behavioral traces with subjective self-reports (van Berkel et al. 2017). That being said, experience sampling data has its own set of advantages, such as the ability to capture subjective psychological states that cannot be objectively measured (Chan 2009). Future research could supplement employee self-reports with objectively assessed work outcomes (e.g., team

performance: number of patents produced, profit margin, achievement of key performance indicators) to offer a more comprehensive understanding of psychological safety and work-related outcomes.

Conclusion

This paper provides three primary contributions to the literature on psychological safety. First, we validate a repeated measure instrument for state-level psychological safety that can be used to examine short-term, within-person fluctuations. Second, we use this instrument to test the hypothesis that psychological safety exhibits meaningful changes not only over months and years (Bransby et al. 2024) but also over hours and days, meriting a theoretical extension to classical conceptualizations of psychological safety as a trait-level static construct. Third and most importantly, we link short-term variability in psychological safety to hybrid employees' everyday workplace experiences, finding that work location changes the frequency of informal sensemaking interactions with implications for feelings of psychological safety, and in turn, for self-reported primary team trust, creativity, work engagement, team performance, and learning behaviors. As organizations continue to navigate the complexities of hybrid work, our findings provide a robust foundation for evidence-based decision-making and policy development. Future research building on this work has the potential to further refine our understanding of these critical organizational processes and inform the development of more effective hybrid work strategies.

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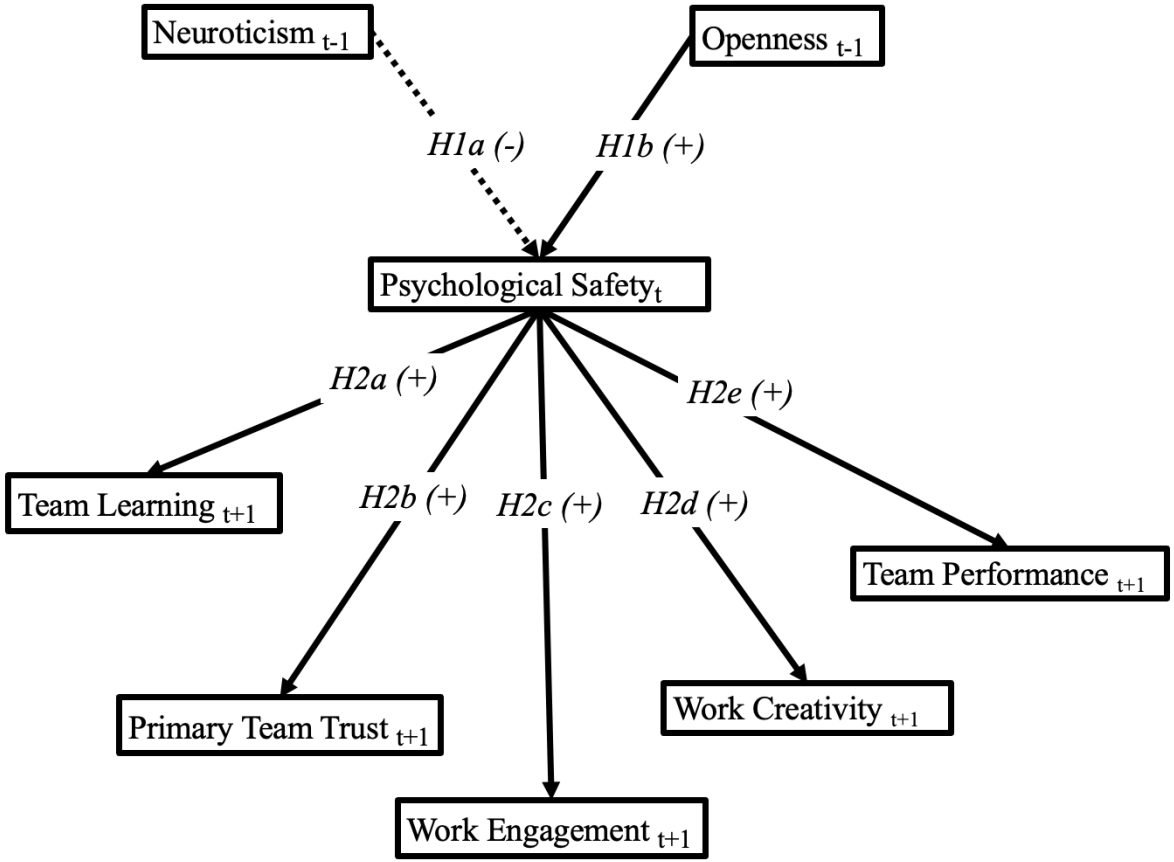
Table 1. Past Longitudinal Research on Psychological Safety

Reference	Measurement Interval	Study Time Frame	Organizational Unit of Analysis	Industry	*N*	k	Covariates
Chernoglazova (2022)	Every 1 day	10 days	Employees	Multi-industry	50	10	Work Location, Work Outcomes
Cole et al., (2022)	Every 1 month	5 months	Students / Teams	Education/Engineering	268 (60)	5	Short-Term Trends, Engineering Teams
Biron et al., (2021)	Every 3-6 months	12 months	Employees	Multi-industry	275	3	Psychological Demands, Presenteeism
Schulte et al., (2012)	Every 5 months	10 months	Employees / Teams	Community Service	834 (66)	3	Network Ties
Higgins et al., (2022)	Every 12 months	36 months	Schools	Education	545	3	Team Performance
Bransby et al., (2024)	Every 24 months	48 months	Employees	Healthcare	10,000	3	-

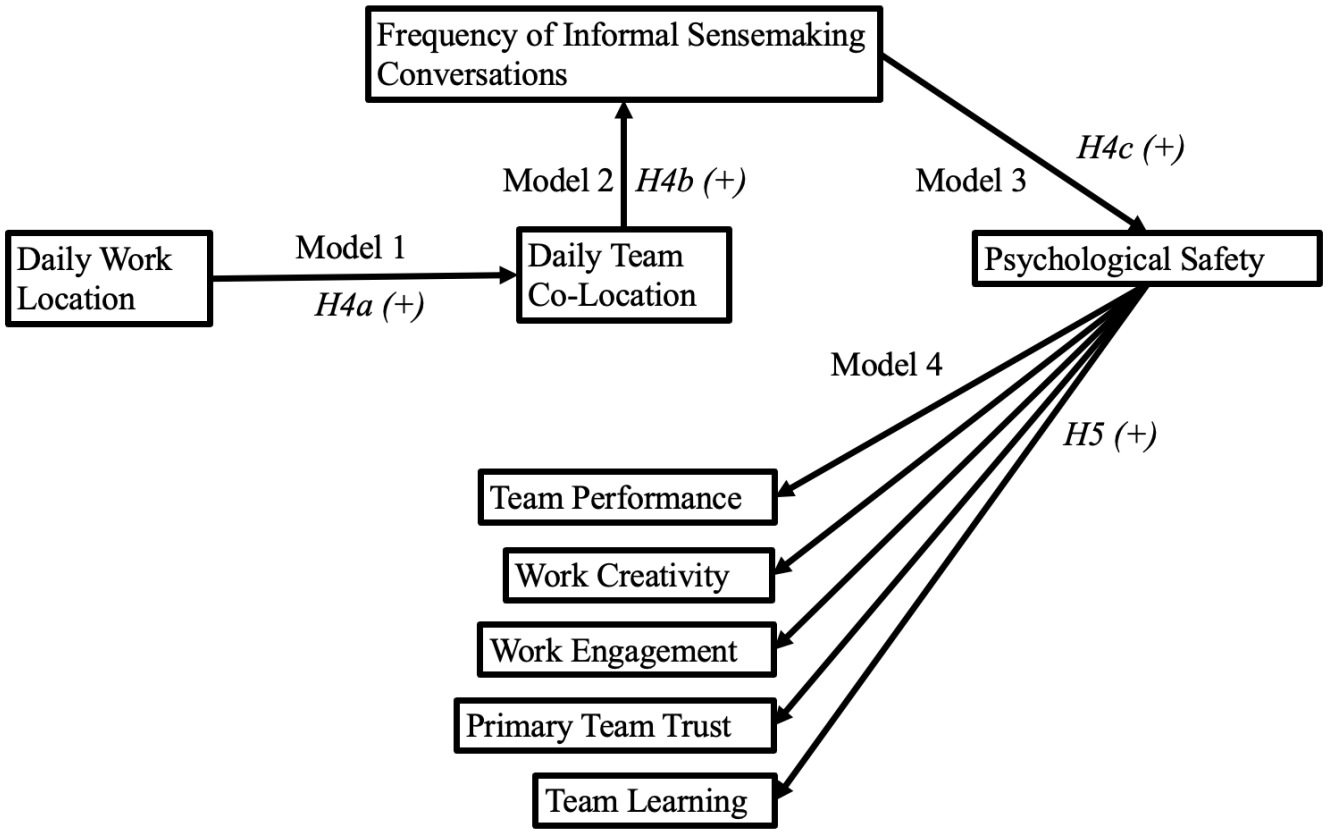
Note: Measurement interval refers to the frequency psychological safety was assessed amongst respondents. A measurement interval of 1 month indicates that psychological safety was measured every 1 month. The study time frame refers to the total duration of the study. A study duration of 5 months indicates that respondents were sampled for a total of 5 months. The organizational unit column indicates the primary unit of analysis of the study. For instance, if the primary units of analysis were "employees" then the study was primarily concerned with the psychological safety scores of individual employees. If the organizational unit was "teams," then the study was primarily concerned with the aggregated psychological safety of teams instead of individual employees. The "*N*" column refers to the total sample size of the study in terms of respondents. The number in brackets denotes the number of teams that were analyzed. The "*k*" column refers to the number of measurements per respondent in the study. For instance, *k*=5 suggests that each respondent was asked 5 times for the duration of the study. Finally, the covariates column captures other relevant variables that were examined in relation to psychological safety.

Figure 1. Hypothesized within-person nomological network for psychological safety



Note: Theoretically expected connections in the nomological network that were replicated at the within-person level are indicated in solid lines. Theoretically expected connections that we did not replicate are indicated using dotted lines. The (+/-) signs in the parentheses indicate the theoretically expected valence of the observed connections in the nomological network. The subscript indicates the lagged associations between the variables. All variables were modeled simultaneously using dynamic structural equation modeling.

Figure 2. Conceptual model that links daily work location to psychological safety and self-reported work outcomes



Note: The (+/-) signs in the parentheses indicate the theoretically expected valence of the observed connections in the nomological network.

Table 2. Descriptive Statistics for Repeated Measures

	Study 1						Study 2					
	N_{obs}	**Mean (SD) $_{Remote}$**	**Mean(SD) $_{Office}$**	**Range**	**ω_W**	**ω_B**	**N_{obs}**	**Mean (SD) $_{Remote}$**	**Mean(SD) $_{Office}$**	**Range**	**ω_W**	**ω_B**
Study 1												
Psychological Safety	5403	3.08 (0.7)	3.08 (0.68)	3	0.719	0.933	4785	2.96 (0.78)	3.14 (0.72)	3	0.815	0.951
Team Performance	4562	1.41 (0.75)	1.43 (0.8)	4	0.707	0.854	4200	1.55 (0.8)	1.59 (0.85)	4	0.693	0.858
Primary Team Trust	5408	4.41 (0.68)	4.49 (0.66)	4	0.748	0.954	3720	4.43 (1)	4.48 (0.97)	4	0.922	0.981
Work Engagement	5411	4.34 (1.16)	4.46 (1.15)	5.62	0.734	0.953	1451	3.15 (0.71)	3.26 (0.63)	4	0.774	0.94
Work Creativity	5133	3.39 (1.19)	3.61 (1.19)	5	0.837	0.977	1472	3.4 (1.23)	3.72 (1.19)	5	0.845	0.978
Team Learning	1398	3.71 (0.83)	3.82 (0.76)	4	0.949	0.988	272	2.66 (1.06)	2.7 (1.05)	4	0.942	0.99
Team Co-location	3553	2.97 (1.31)	3.67 (1.18)	4	-	-	4482	1.01 (0.16)	3.44 (1.21)	4	-	-
Extraversion	5399	2.84 (1.24)	2.91 (1.31)	4	-	-	-	-	-	-	-	-
Openness	5359	3.21 (1.17)	3.39 (1.22)	4	-	-	-	-	-	-	-	-
Sensemaking Interaction Frequency	-	-	-	-								
Informal Interactions	-	-	-	-			4844	2.19 (2.33)	6.16 (6.41)	25	-	-
Semiformal Interactions	-	-	-	-			4844	1.98 (2.08)	2.5 (2.85)	16	-	-
Formal Interactions	-	-	-	-			4844	1.98 (1.96)	2.6 (2.83)	17	-	-
Interaction Channel	-	-	-	-								
Phone Call	-	-	-	-			1339	0.14 (0.35)	0.21 (0.41)	1	-	-
Text Message	-	-	-	-			1339	0.07 (0.26)	0.12 (0.33)	1	-	-
Instant Messaging on Productivity Apps	-	-	-	-			1339	0.48 (0.5)	0.4 (0.49)	1	-	-
Instant Messaging on Social Media Platforms	-	-	-	-			1339	0.02 (0.14)	0.07 (0.25)	1	-	-
Video Chatting on Productivity Apps	-	-	-	-			1339	0.31 (0.46)	0.31 (0.46)	1	-	-
Video Chatting on Social Media Platforms	-	-	-	-			1339	0.01 (0.11)	0.06 (0.24)	1	-	-
Audio Call on Productivity Apps	-	-	-	-			1339	0.13 (0.33)	0.14 (0.35)	1	-	-
Audio Call on Social Media	-	-	-	-			1339	0.01 (0.09)	0.05 (0.21)	1	-	-
Personalized Email	-	-	-	-			1339	0.11 (0.31)	0.19 (0.39)	1	-	-
Bulk Email	-	-	-	-			1339	0.03 (0.18)	0.05 (0.21)	1	-	-
Interaction Partners	-	-	-	-								
Primary Team Peers	-	-	-	-			2887	0.64 (0.48)	0.66 (0.47)	1	-	-
Non-Primary Team Peers	-	-	-	-			2887	0.21 (0.41)	0.26 (0.44)	1	-	-
Primary Team Manager	-	-	-	-			2887	0.23 (0.42)	0.25 (0.43)	1	-	-
Non-Primary Team Manager	-	-	-	-			2887	0.08 (0.26)	0.09 (0.28)	1	-	-
Customer/Client	-	-	-	-			2887	0.03 (0.17)	0.04 (0.2)	1	-	-
Tech Specialist	-	-	-	-			2887	0.02 (0.12)	0.04 (0.19)	1	-	-
Primary Team Direct Reports	-	-	-	-			2887	0.12 (0.32)	0.12 (0.33)	1	-	-
Non-Primary Direct Reports	-	-	-	-			2887	0 (0.06)	0.01 (0.08)	1	-	-

***Note**:* Each variable was aggregated across observations to compute means, standard deviation and range values. Composite within-person reliability (**ω_{WP}**) and between-person reliability (**ω_{BP}**) was computed via multilevel confirmatory factor analysis for all multi-item repeated measure variables that were assessed multiple times a day. Since personality was assessed using single-item measures and because team co-location was only measured once a day, **ω_{WP}** and **ω_{BP}** was not computed for these variables. Repeated measure variables were averaged across observations and respondents. Team learning was only assessed once a day for all respondents, which explains the lower number of observations. Interaction channel and interaction partner variables were dummy coded and were non-independent since these data were obtained from "Select all that apply" question. Mean values for these dummy variables should be interpreted as "average proportions" – for instance, the average proportion of sensemaking interactions that occurred via instant messaging on productivity apps was 46%.

Table 3: Descriptive Statistics for Cross-Sectional Measures

	Study 1					Study 2				
	N	**Mean**	**SD**	**Range**	**Cronbach's α**	**N**	**Mean**	**SD**	**Range**	**Cronbach's α**
Sex	399	0.45	0.5	1	-	321	0.44	0.5	1	-
Age	404	39.09	10.33	52	-	324	37.19	10.01	49	-
Organizational Tenure	404	7.67	6.16	28.84	-	323	6.36	6.03	44.56	
Trait Psychological Safety	404	5.65	0.95	5.71	0.72	324	5.56	0.89	5.14	0.71
Team Size	401	8.38	7.44	101	-	316	10.16	28.64	499	-
Team Interdependence	401	3.21	0.58	2.67	0.82	315	3.72	0.58	4	0.78
Race	402				-	316				
White		78.5%	-	-	-		64.9%	-	-	-
Asian		10.4%	-	-	-		11.7%	-	-	-
Black		8.2%	-	-	-		11.4%	-	-	-
Hispanic		0.7%	-	-	-		3.8%	-	-	-
Native American		0.7%	-	-			0.9%	-	-	
Multiracial		1.5%			-		7.3%			-
Industry	404					324				-
Information Technology (Hardware, Software, Services)		19.46%	-	-	-		24.1%	-	-	-
Financial Services & Insurance		13.79%	-	-	-		14.8%	-	-	-
Education		8.37%	-	-	-		9.3%	-	-	-
Healthcare and Pharmaceutical		11.82%	-	-	-		8.3%	-	-	-
Government & Public Sector		7.88%	-	-	-		7.7%	-	-	-
Professional Services (e.g., Legal, Consulting)		7.64%	-	-	-		5.9%	-	-	-
Other		6.65%	-	-	-		5.6%	-	-	-
Manufacturing & Industrial Equipment		8.87%	-	-	-		5.2%	-	-	-
Not-for-profit organization (Non-profit, NGO, and/or Charity)		2.46%	-	-	-		3.7%	-	-	-
Energy and utilities		1.97%	-	-	-		2.8%	-	-	-
Media, Entertainment and Arts		1.97%	-	-	-		2.2%	-	-	-
Retail		1.97%	-	-	-		2.2%	-	-	-
Communications, Marketing and PR		0.25%	-	-	-		1.9%	-	-	-
Logistics		0.74%	-	-	-		1.5%	-	-	-
Telecommunications		0.74%	-	-	-		1.5%	-	-	-
Real Estate		1.23%	-	-	-		0.9%	-	-	-
Transportation		1.23%	-	-	-		0.9%	-	-	-
Consumer Goods		0.49%	-	-	-		0.6%	-	-	-
Travel, Tourism & Hospitality		0.99%	-	-	-		0.6%	-	-	-
Mining & Materials		0.25%	-	-	-		0.3%	-	-	-
Agriculture		0.74%	-	-	-		0.0%	-	-	-
Commercial Services		0.49%	-	-	-		0.0%	-	-	-

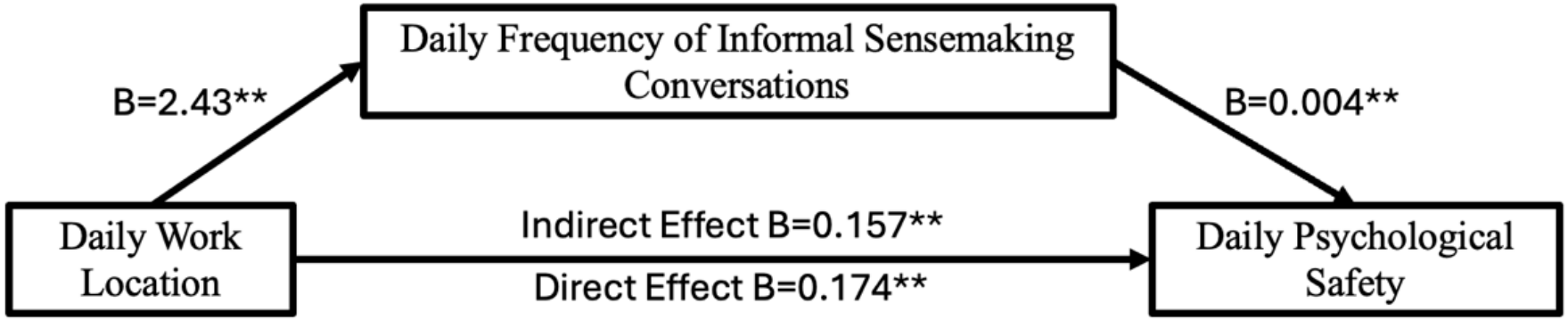
Note: Sex was measured such that females were coded as 1 and males were coded as 0. Organizational Tenure was measured in years. Race and industry values depict the percentage of respondents from the entire sample that indicated being in the target category.

Table 4. Predictive Validity Results for State Psychological Safety (Study 1)

	B	Pos. SD	95% CI	*p*	R^2
Psychological Safety $_{t-1}$→ Psychological Safety $_t$	**0.298**	0.015	[0.271, 0.326]	<0.01	0.274
Openness $_{t-1}$→ Psychological Safety $_t$	**0.049**	0.017	[0.014, 0.077]	<0.01	0.137
Neuroticism $_{t-1}$ →Psychological Safety $_t$	-0.029	0.019	[-0.070, 0.008]	0.067	0.105
Psychological Safety $_{t-1}$ → Team Performance $_t$	**-0.051**	0.017	[-0.086, -0.016]	<0.01	0.144
Psychological Safety $_{t-1}$ → Primary Team Trust $_t$	**0.216**	0.014	[0.187, 0.243]	<0.01	0.180
Psychological Safety $_{t-1}$ → Work Engagement $_t$	**0.129**	0.016	[0.096, 0.158]	<0.01	0.096
Psychological Safety $_{t-1}$ → Work Creativity $_t$	**0.161**	0.016	[0.126, 0.193]	<0.01	0.090
Psychological Safety $_{t-1}$ →Team Learning $_t$	**0.247**	0.025	[0.199, 0.300]	<0.01	0.159

Note: All variables were latent mean centered prior to computation. Lagged associations correspond to the association between psychological states measured within the past 3 hours and outcomes assessed *in-the-moment*. For instance, one can interpret the finding pertaining to lagged state psychological safety and primary team trust as "the association between state psychological safety from the past three hours and momentary primary team trust." Team performance was reverse coded such that lower values indicate greater team performance. R^2 values correspond to the average within-person variance explained by the lagged predictor in the outcome measure. The final dataset that was analyzed consisted of 23,655 observations collected from 346 respondents.

Figure 3: Theoretical Model Tested Via Within-Respondents Mediation



Note: The within-person relationship between daily work location and daily psychological safety is partially mediated by the frequency of employees' daily frequency of informal sensemaking conversations. The direct effect denotes the relationship between daily work location and daily psychological safety without the mediator variable (daily frequency of informal sensemaking conversations). The indirect effect denotes the relationship between daily work location and psychological safety that is mediated by the daily frequency of informal sensemaking conversations.

Table 5: Results of Staged Multilevel Modeling (Study 2)

	N_{ppt} (N_{obs})	B	SE	95% CI	Conditional/ Marginal R^2
Model 1: Work Location$_t$ → Team Colocation$_t$	262 (1495)	**0.64**	0.023	[0.59, 0.68]	0.854/0.379
Model 2: Team Colocation$_t$ → Frequency of Informal Social Interactions$_t$	262 (1495)	**0.20***	0.011	[0.18, 0.22]	0.858/0.162
Model 3: Frequency of Informal Social Interactions$_t$ → Psychological Safety$_t$	273 (4530)	**0.09**	0.045	[0.06, 0.13]	0.631/0.216
Model 4: Psychological Safety$_{t-1}$ → Team Performance$_t$	290 (17,609)	**-0.09**	0.016	[-0.13, -0.06]	0.009
Model 4: Psychological Safety$_{t-1}$ → Team Learning Behaviors$_t$		**0.30**	0.054	[0.17, 0.39]	0.087
Model 4: Psychological Safety$_{t-1}$ → Work Creativity$_t$		**0.22**	0.029	[0.17. 0.28]	0.048
Model 4: Psychological Safety$_{t-1}$ → Work Engagement$_t$		**0.18**	0.029	[0.12, 0.23]	0.031
Model 4: Psychological Safety$_{t-1}$ → Primary Team Trust$_t$		**0.22**	0.021	[0.18, 0.27]	0.050

Note: Model 2 was computed using a multilevel Poisson regression, therefore *raw estimates are reported I place of standardized estimates. The *modelsummary* package (Arel-Bundock 2022) was used to obtain R^2 values for Model 1 and Model 3. The *performance* package (Lüdecke et al. 2021) was used to obtain R^2 values for Model 2. Model 4 was computed using dynamic structural equation modelling in MPlus. As a result, for Model 4, the standard deviation of posterior estimates is reported in place of standard error and the average within-person R^2 value is reported in place of conditional and marginal R^2 values. The larger number of observations in Model 4 are attributed to the temporal scaling procedure that was used to meaningful interpret lagged coefficients. Conditional R^2 values accounts for variance explained by both fixed and random effects whereas Marginal R^2 values account for variance explained only by fixed effects.

Table 7: Properties of High-Psychological Safety Sensemaking Interactions (Study 2)

	N_{ppt} (N_{obs})	*B*	Std. Error	95%CI	Conditional R^2 / Marginal R^2
Channel Characteristics	207 (1009)				0.64/0.21
Recordability		0.067	0.123	[-0.174,0.309]	
Synchronicity of Message Receival		**0.075**	**0.025**	**[0.027,0.123]**	
Synchronicity of Message Transmission		-0.043	0.025	[-0.091,0.006]	
Modalities	222 (1261)				0.65/0.188
Phone Call		-0.046	0.028	[-0.1,0.01]	
Texting on the Phone		0.001	0.025	[-0.05,0.05]	
Instant Messaging on Productivity Apps		**-0.107**	**0.039**	**[-0.18,-0.03]**	
Instant Messaging on Social Media		-0.039	0.021	[-0.08,0.00]	
Video Chatting on Productivity Apps		-0.034	0.039	[-0.11,0.04]	
Video Chatting on Social Media		-0.018	0.021	[-0.06,0.02]	
Audio Calling on Productivity Apps		**-0.064**	**0.028**	**[-0.12,-0.01]**	
Audio Calling on Social Media		-0.008	0.020	[-0.05,0.03]	
Personalized Email		-0.028	0.026	[-0.08,0.02]	
Non-Personalized Bulk Email		-0.034	0.022	[-0.08,0.01]	
Interaction Partners	209 (2682)				0.64/0.20
Primary Team Peer		0.040	0.045	[-0.05,0.13]	
Non-Primary Team Peer		0.004	0.043	[-0.08,0.09]	
Primary Team Manager		0.038	0.043	[-0.05,0.12]	
Non-Primary Team Manager		-0.005	0.031	[-0.06,0.05]	
Customer/Client		-0.009	0.220	[-0.05,0.03]	
Technology Specialist		-0.017	0.021	[-0.06,0.02]	
Primary Team Direct Reports		-0.008	0.029	[-0.06,0.05]	
Non-Primary Team Direct Reports		0.014	0.014	[-0.01,0.04]	

Note: Significant estimates are in bold. Channel characteristics, modalities and interaction partners were modelled separately as specified in the analytic plan in Web Appendix E. Conditional R^2 values accounts for variance explained by both fixed and random effects whereas Marginal R^2 values account for variance explained only by fixed effects. The *modelsummary* package (Arel-Bundock 2022) was used to obtain R^2 values for all models.

[i] Due to a human error, the upper scale response option was set as “6 (Accurate)” instead of “7(Very Accurate)”.
[ii] We assumed that if the predictive validity of our instrument of psychological safety was robust at the hourly level it would also be robust at the less granular daily level.
[iii] We specified Multilevel Poisson Regression models wherein conventional standardization processes are not necessary (see Web Appendix E).
[iv] The total effect of an independent variable on a dependent variable can be decomposed into a direct effect and indirect effect. The direct effect is the association between the independent variable and the dependent variable in the absence of the mediator. The indirect effect is the association between the independent variable and dependent variable that is explained via the mediating pathway. A larger indirect effect suggests that a greater proportion of the relationship between the independent and dependent variable is explained via the mediator.
[v] https://tonari.no/

Web Appendix

This Web Appendix provides supplementary materials and analyses that support and extend the findings from the main manuscript. The studies and analyses presented here offer a comprehensive test of the relationship between hybrid employees' work location, their team co-location, informal sensemaking interactions and psychological safety. The Web Appendix consists of the following sections:

1. **Web Appendix A** (Pilot Qualitative Study): We conducted a qualitative diary study with US-based remote-eligible employees (N=38) to induce a taxonomy of sensemaking interactions.
2. **Web Appendix B** (Eligibility Criteria and Compensation Scheme for Study 1 and Study 2): The complete set of criteria that were used to determine eligibility for Study 1 and 2 along with key details of the compensation scheme for each study.
3. **Web Appendix C** (Data Preprocessing for Study 1 and Study 2): A detailed description of the data preprocessing of the diary study data collected in Study 1 and Study 2.
4. **Web Appendix D** (Respondent Attrition): We provide a detailed description of respondent attrition across five different stages of Studies 1 and 2: (1) the screener survey, (2) the baseline survey, (3) the diary survey and (4) the endline survey. We provide an additional description of how many respondents were filtered out during the data preprocessing of the diary survey.
5. **Web Appendix E** (Detailed Analytic Plan): A comprehensive description of the analytic plans for Study 1 and Study 2.
6. **Web Appendix F** (Sensitivity Analyses): A detailed description of post-hoc sensitivity analyses for Study 1 to determine the confidence with which we could detect observed effect sizes.
7. **Web Appendix G** (Robustness Check): Results obtained during the robustness check (when all analyses were re-run without control variables).
8. **Web Appendix H** (Detailed Results for Study 1): A documentation of the complete set of results obtained to examine the psychometric properties of the repeated measure instrument for psychological safety.

9. **Web Appendix I** (Detailed Results for Study 2): Tabulated results expanding on Figure 3 of the manuscript as well as providing estimates for individual covariates in each staged model of the conceptual model.
10. **Web Appendix J** (Deviations from OSF Documents): A documentation of minor deviations from the data collection plans uploaded on the OSF page prior to the data collection.

Web Appendix A: Qualitative Pilot Study

Study Overview

The goal of the pilot study was to develop a typology of sensemaking interactions. We conducted a diary study using the dScout platform. We began with a pilot on February 14, 2023, where we asked 25 knowledge workers to define a sensemaking interaction in their own words. The results of this pilot informed the language and definition of sensemaking we provided to respondents in the full pilot study, and that we later provided to respondents in Study 2 and 3 of this paper.

The complete study was conducted with 38 respondents over 7 days from April 2-8, 2023. We selected these dates to align with a typical work week. Respondents were screened and selected the week before the study started. Appendix C details the screening criteria used to select eligible respondents. Our intention was to achieve a sample of 30, with an additional 9 to compensate for non-response or drop-outs; 38 respondents submitted at least one diary entry. Respondents received $100 for completing all portions of the study, which included providing video responses several times a day for seven days as well as essay responses and responses to validated questionnaires as part of the broader project. There was an even split between female and male employees and non-managers and managers—defined as employees with two or more direct reports. Employees worked in a variety of industries and in teams with variable team sizes. Table S2 contains all the pertinent details about the Study 1 respondents such as their employment industries, team sizes, working arrangement, and seniority.

The Screener contained basic demographic questions including job title, industry, employment status (i.e., full-time vs. part-time), employment arrangement (i.e., permanent vs. temporary), level of seniority/management, company size, software categories used, working location, how many people the respondent saw when they were in the office, number of days per week they worked remotely/in the office, the degree of collaboration/independence in work, the personal description of what sensemaking interactions meant, an example of a recent sensemaking interaction, and which locations/tools/people helped them in their sensemaking interactions. At the end of the diary study component, respondents

completed an endline entry. The endline entry contained reflections on common types of sensemaking across the week, the frequency of high-quality interactions, factors contributing to good sensemaking, barriers to sensemaking, most useful tools for sensemaking, missed opportunities for sensemaking, potential changes to future interactions and associated challenges/opportunities, and general reflection.

Repeated Measures

Two times each day, respondents filled out a diary form which asked about their working location since the last entry. For instance, employees indicated whether they had worked from their office, homes or a third location. Respondents also indicated the degree of interaction with colleagues by answering the question "How much have you interacted with your colleague since the last entry." Respondents further answered an open-ended question about the context for their most significant sensemaking interaction. For instance, one respondent indicated that they "had a regularly scheduled meeting with (their) team to get a weekly update on the progress of their projects." Similarly, respondents recounted the specifics of their interaction through an open-ended narrative question. Responses varied greatly in detail, but all responses captured the "story" behind each significant sensemaking interaction that respondents were thinking about in the context of the question. Afterward, respondents indicated the number of people, the media, and the tools used for their target sensemaking interaction using multiple choice questionnaires.

Results

We report the results of two forms of data collected from the diary study. First, we present a set of themes derived from an inductive thematic analysis of qualitative data captured in respondents' open responses. These themes were derived from the patterns observed across respondents' open-entry responses to a question that asked them to detail their most significant sensemaking interaction each day. Second, we examine the diary entries quantitatively to report on trends across respondents and entries.

When prompted to tell us about sensemaking interactions at work, some respondents provided examples that did not fit conventional notions of sensemaking. This could be for two reasons: they genuinely considered these interactions to be sensemaking, or they were simply describing their most recent and available interaction. For this reason, we asked respondents to rate how much they believed the

interaction to truly be a sensemaking interaction. Then, analysis was performed only on entries that were considered by the respondent to be at least a "fair" example of a sensemaking interaction.

When we asked respondents to describe the critical ingredients of a good sensemaking interaction, respondents identified many dimensions. Relevant themes derived from the qualitative data are presented in Table S1, along with definitions and example data points from respondents. Broadly speaking, we constructed a taxonomy of sensemaking interactions by distinguishing between: the medium (the platform or communication venue), formality (the extent to which interactions were structured and normative), participation (the extent to which respondents were active or passive in the interactions), use of materials (the extent to which interactions consisted of digital or physical tools), synchronicity (the extent to which interaction partners communicate in real time), interaction partners (the extent to which the interaction consisted of managers, peers or direct reports) and location (the extent to which interaction partners were co-located with each other) of different sensemaking interactions.

Figure S1 presents an empirical portrait that captures the heterogeneity of sensemaking interactions along these dimensions. It is apparent from this figure that sensemaking interactions vary considerably across multiple dimensions – notably formality (Figure S1A), power dynamics (Figure S1C), the digital media channel on which they occur (Figure S1E) and their level of synchronicity (S1F). Given that we noticed the greatest heterogeneity along these dimensions, in Study 2, we measured this subset of dimensions (i.e. formality, power dynamics, digital media channel, synchronicity).

Figure S1G presents the main obstacles to sensemaking interactions, most of which were due to a lack of synchronicity. These qualitative findings lend further credence to our hypothesis that informal sensemaking interactions are most common in-person because the "selectively on" nature of digital media platforms hinders serendipitous and unstructured encounters. Finally, Figure S4 depicts the core media channels and locations in which interactions take place. It is particularly noteworthy that most sensemaking interactions took place on video conferencing platforms and instant messaging platforms.

Table S1: Dimensions of Sensemaking Interactions (Qualitative Pilot Study)

Derived Themes	Definition	Respondent Example
Medium	The platform or communication venue that hosted the sensemaking interaction.	"The medium was the most important: as a remote worker/manager, getting to see and hear people live was the highest quality sensemaking interaction." - Meg
Formality	The extent to which the interaction was structured and suffused with norms.	"For me, a lot was due to having a natural flow of conversation, or easily being able to stick my head into someone's office." - Kim
Participation	The extent to which respondents were active or passive in the interaction.	"Meetings where people came prepared with questions or issues. Meetings where people came and just sat there weren't productive." - Kenneth
Materials	The digital or physical tools that supported the interaction.	"Being able to work together on documents at the same time getting our thoughts together was very helpful." - Ben
Synchronicity	The extent to which the interaction occurred in real time.	"The most helpful sensemaking interactions were the ones that could happen in real time, and a resolution made immediately." - Sharon
Attendees and Power Dynamics	The extent to which the interaction occurred with direct reports, peers or managers.	"The most helpful sensemaking interactions were my meetings with senior management, more specifically where there were multiple senior members." - Mark
Co-Location	The extent to which interaction partners were physically co-located with each other.	"The best sensemaking interactions for me were in person and included solution-minded active respondents." - Kayla

Figure S1: An Empirical Portrait of the Sensemaking Interaction Taxonomy

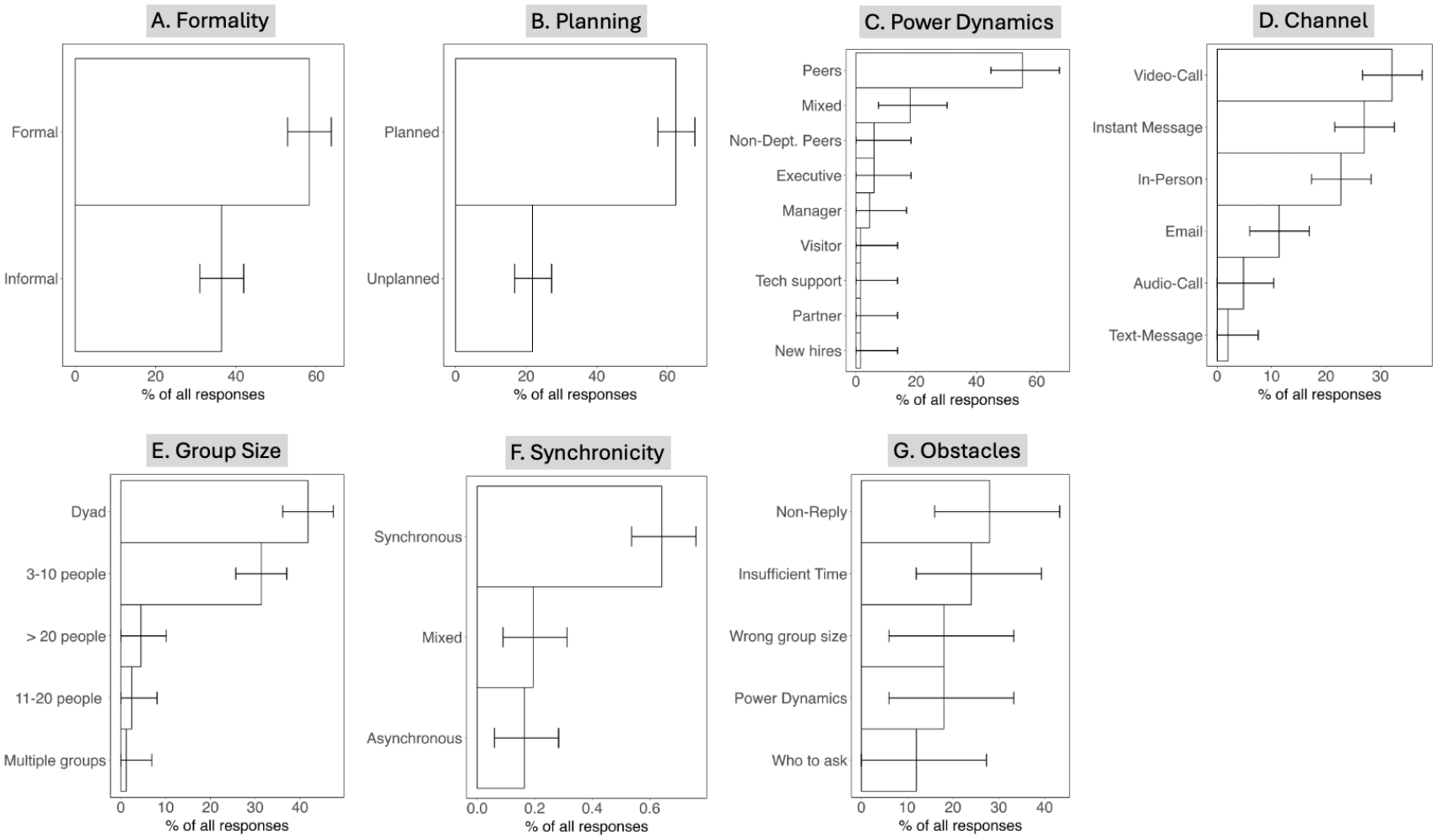


Table S2: Demographic Characteristics of All Respondents in the Qualitative Pilot Study

Respondent	Age	Gender	Job Title	Industry	Team Size	Working Arrangement	Manager
1	38	M	VP of Financial Analysis at a Large Financial Institution	Financial Services	8	Hybrid	Yes
2	47	M	Project Manager, Customer Support at a Large Financial Institution	Financial Services	5	Remote	No
3	34	M	Manufacturing Engineer in Transportation	Manufacturing	4	Office	No
4	36	M	District Manager for a Major Restaurant Chain	Food, Beverage & Tobacco	14	Office	Yes
5	26	F	Care Coordinator in Primary Health Care Office	Health Care	10	Office	No
6	41	F	Copywriter for Real Estate Marketing	Real Estate	9	Office	No
7	49	F	SVP at Chemical Manufacturer	Chemical	12	Hybrid	Yes
8	34	F	Regulatory Engineer at a Chemical Manufacturer	Chemical	8	Office	No
9	32	F	Staff Attorney at a Non-Profit	Legal	15	Remote	No

10	33	M	Director of Business Development/Sales for an Educational Institution	Education	6	Remote	No
11	31	M	Technical Consultant/Project Manager for Medical Labs	Health Care	10	Remote	No
12	46	M	Director of Account Management for a Manufacturing Company	Manufacturing	6	Hybrid	Yes
13	41	Other	Head of Operations for Online Advertising	Advertising	8	Hybrid	Yes
14	33	F	Designer for Digital Marketing	Technology	5	Hybrid	No
15	35	F	Operations Manager at a High School	Education	4	Office	Yes
16	35	M	Brand Manager for Chocolate Company	Consumer Products	10	Hybrid	Yes
17	47	F	Systems Analyst	Technology	8	Hybrid	No
18	29	M	Assistant Director of Logistics at a Machinery Factory	Manufacturing	8	Hybrid	Yes
19	26	F	Senior Associate Campus Recruiter for a Financial Services Firm	Financial Services	10	Remote	No
20	32	F	Nursing Home Administrator	Health Care	10	Office	Yes

21	29	F	Nurse Supervisor for Pediatric Neurology in a Large Hospital	Health Care	20	Hybrid	Yes
22	30	M	Accountant for Environmental Records	Accounting	5	Office	No
23	37	M	Sales and Promotion for Entertainment Products	Entertainment & Leisure	10	Hybrid	No
24	52	F	Executive Director for Fundraising in a School	Education	4	Office	No
25	37	F	Professional Development Coordinator in a High School	Education	12	Office	No
26	58	F	Paralegal for Antitrust and Class Action Law	Legal	6	Hybrid	Yes
27	27	F	Epidemiologist in Health Care Institution	Health Care	8	Remote	No
28	35	M	Audio Producer for an Entertainment Company	Entertainment & Leisure	20	Hybrid	Yes
29	36	F	Services Enablement Lead for a 3D Printer Manufacturer	Manufacturing	7	Remote	No
30	62	F	Donations Manager in a Non-Profit Organization	Legal	10	Hybrid	Yes
31	27	F	Administrative Assistant in a Consulting Firm	Consulting	5	Remote	No

32	27	F	Marketing Specialist for a Large Hospital	Health Care	8	Hybrid	No
33	48	F	Processing Assistant in a Health Care Institution	Health Care	8	Office	No
34	59	F	Math Educational Materials Writer	Education	12	Remote	No
35	31	F	Accounting Manager at a Biotech Company	Accounting	6	Remote	Yes
36	37	F	Purchasing and Selling for Food Service Disposables	Consumer Products	5	Office	No
37	28	M	Project Controller at an Accounting Firm	Accounting	9	Remote	No
38	42	M	Security Engineer at a Pharmaceutical Company	Pharmaceuticals	7	Hybrid	Yes

Note: All participants (n = 38) are remote-capable knowledge workers based in the United States with at least a bachelor's degree.

Web Appendix B: Eligibility Criteria and Compensation Scheme for Study 1 and Study 2

Eligibility Criteria

For both studies, to participate in the baseline survey, respondents had to meet a set of criteria. These criteria were implemented to recruit remote-capable knowledge workers that were working remotely at-least one day during a typical workweek. The rest of the criteria were included to ensure that respondents were completing the diary studies solely based on their experiences at work. Employees had to be: (1) regular permanent employees, (2) employed full time, (3) working regular working hours (9 AM – 5 PM), (4) a "knowledge worker" comprising of roles including: a skilled office worker, senior staff, junior management, middle management, senior management or executive management, (5) in a primary team that did not change during the study period, (6) working in a hybrid working arrangement (e.g., wherein each week, they worked between a company office or a client/customer site and a different location such as their home or a café), (7) not taking PTO/time off during the study period.

Compensation Scheme (Study 1)

All respondents received $0.50 for participating in the screener survey and $3.50 for participating in the baseline survey. Based on whether respondents indicated having at least two direct reports, they were classified as managers or non-managers. Managers could receive up to $33.10 in compensation for the diary surveys based on their completion rate. Non-managers could receive up to $27.10 in compensation for the diary surveys based on their completion rate. Both managers and non-managers received $1.50 in compensation for completing the endline survey. Our compensation scheme was developed to mimic minimum respondent compensation based on ethical guidelines provided by our crowdsourcing platform of choice (Prolific). These guidelines indicated that respondents should (at the very minimum) receive pro-rated compensation corresponding to $8/hour.

Compensation Scheme (Study 2)

Specifically, respondents received $3.50 for completing the baseline survey, $1.00 for completing each 5-minute daily survey and $1.50 for completing each 7-minute daily survey. Additionally, managers

(defined as employees with two or more direct reports) received a bonus of $9.00 for completing at-least 80% of all diary surveys and an additional bonus of $11.00 for completing at-least 90% of all diary surveys. Non-managers (individual contributors) received a bonus of $4.50 for completing at-least 80% of all diary surveys and an additional bonus of $5.50 for completing at-least 90% of all diary surveys. Hence, managers could earn up to a total of $44.50 and non-managers could earn up to $34.50 for completing the diary study component. In general, our compensation scheme was constructed in a manner akin to study 1.

Web Appendix C: Data Preprocessing for Experience Sampling Reports for Study 1 and Study 2

A comprehensive set of data cleaning steps were implemented to ensure that only high-quality experience sampling observations were retained for the final analysis, following gold-standard guidance from past management research (Gabriel et al., 2019).

We identified and labelled the following observations as problematic and screened them out:

1. All daily surveys that corresponded to respondents who did not indicate any variability in their psychological safety over the duration of the study, in line with past research (Bredehorst et al., 2024).
2. All daily surveys that corresponded to respondents with fewer than 5 total observations, in line with past research (e.g., Bredehorst et al., 2024; Breevaart & Bakker, 2018).
3. Daily surveys corresponding to days where respondents did not have a typical workday. Since, these daily surveys did not capture an employees' everyday work experiences, they were filtered out.
4. Duplicate observations for each daily survey that were completed within 3 hours of previous observations. For each type of daily survey (12 PM, 3 PM and 6 PM), we labelled observations that were completed within 3 hours of a previous survey as problematic. Our goal was to ensure that the analysis dataset contained (at most) one observation per respondent per day for each survey ping.
5. Daily surveys that took more than 3 hours. In doing so, we ensured that there was no overlap in the experiences that respondents were reporting on across the three different surveys completed each day.
6. Daily surveys that were started after 3 hours of receipt in the respondents' local time zone. Similarly, in doing so, we ensured that each daily survey corresponded to a unique period of respondents' everyday working experiences.

Web Appendix D: Respondent Selection Across Study Stages

Pilot Qualitative Study

Out of 623 respondents, 233 applications for the study met the baseline inclusion criteria. After applying additional criteria, we invited 39 respondents to the full study. These respondents were manually selected to ensure: (1) an event split between managers and non-managers; (2) male and female (3) an even split between workers in remote only, hybrid and office only arrangements and (4) to represent a broad variety of industries.

Study 1

A total of 1200 respondents participated in our screener. Out of these 1200 respondents, 773 were eligible to participate (64.4% of all screener participants) in the baseline survey because they met all the criteria indicated above. Out of the total 773 eligible respondents, a total of 579 respondents completed the baseline survey (74% of all screener respondents). We filtered out respondents in the baseline survey who: (1) choose to not provide their email addresses and phone numbers and (2) choose to not provide their primary time zone of residence, leaving 509 respondents who were eligible to participate in the intensive longitudinal study (88% of all baseline respondents). Out of the 509 respondents who were invited to participate in the intensive longitudinal study, a total of 372 respondents completed at-least one experience sampling survey (73% of all baseline respondents). We implemented a series of data cleaning steps to ensure that only high-quality observations were retained to generate the dataset used for all subsequent analysis. This resulted in a final sample of 346 respondents (93.1% of all respondents who completed at-least one experience sampling survey) who provided a total of 5453 observations.

Study 2

All 1230 respondents who had completed the screener survey for study 2 were not eligible to participate in Study 2 to ensure independent samples. A total of 1121 new respondents completed the screener survey for Study 2. Out of these 1121 respondents, 588 were eligible to participate in the baseline study (52.4% of all screener respondents). A total of 353 respondents from this group completed

the baseline study (60% of all screened participants). Akin to Study 1, we filtered out participants who choose not to provide their contact information and primary time zone of residence for the study duration. Hence, 330 respondents were invited to complete the diary studies (93.9% of all baseline respondents). Out of these 330 respondents, 312 completed at-least once experience sampling report (94.5%). We subsequently implemented a series of data cleaning steps to ensure that only high-quality observations were retained to generate the dataset used for all subsequent analysis (see Appendix B). This resulted in a final sample of 290 respondents (92.9%) who provided a total of 4936 observations.

Web Appendix E: Analytic Plan

Study 2

Unless noted otherwise, we tested our hypotheses via a series of multilevel models in R using the lme4 package (Bates et al., 2015) and the glmmTMB package (Brooks et al., 2017). All multilevel models controlled for sex, age, organizational tenure, team size, team interdependence, industry and employee seniority. Our choice of control variables was driven by past research. Research suggests that women tend to experience poorer psychological safety compared to men (Singh et al., 2013) and that older employees report greater psychological safety compared to younger employees (Jiang & Probst, 2014). Similarly, organizational tenure and seniority are important predictors of trait psychological safety – senior employees report greater psychological safety as compared to junior employees and new hires (Bransby et al., 2024; Koopmann et al., 2016). Team interdependence and cohesion is also an important covariate, with more interdependent and cohesive teams typically reporting greater trait-level psychological safety (Frazier et al., 2017; Humphrey et al., 2007). Finally, past research has consistently found that psychological safety is higher and easier to maintain on smaller teams as compared to larger teams (Edmondson & Lei, 2014; Liang et al., 2012), meriting an inclusion of team size as a control variable.

We decomposed the within and between person variance for all models. For structural equation models used to test mediation, the within-person variables were latent mean centered (Asparouhov and Muthén 2019). For multilevel models, the within-person variables were cluster mean centered prior to being modelled (Wang and Maxwell 2015), including categorical variables (Yaremych et al. 2021). Standardized coefficients were computed by sample standardizing the within-person centered repeated measure variables and the raw between-person variables.

Model 1: Team Colocation and Work Location

The first model predicted employees' team-colocation (i.e., the extent to which employees physical co-locate with their team) based on their work location (i.e., whether they worked from the office our outside the office), with random intercepts for work location. We reasoned that generally, employees

should report great team colocation when working from their office, hence there would be insufficient heterogeneity across people to justify the inclusion of random slopes:

$$TeamColocation_{ti} = \beta_{0i} + \beta_{1i} WorkLocation_{ti} + e_{ti}$$

$$\beta_{0i} = \gamma_{00} + \gamma_{01} WorkLocation_i + \gamma_{02-n} Control_i + u_{0i}$$

$$\beta_{1i} = \gamma_{10}$$

Model 2: Frequency of Informal Sensemaking and Team Colocation

The second model examined the link between employees' daily team co-location and their frequency of informal and semi-formal work conversations with random intercepts and slopes for the predictor. Since conversation frequency was zero-inflated, we used a multilevel hurdle gamma model to compute our estimates. The model was specified using the following set of equations:

$$InformalWorkConversations_{ti} = \beta_{0i} + \beta_{1i} TeamColocation_{ti} + e_{ti}$$

$$\beta_{0i} = \gamma_{00} + \gamma_{01} TeamColocation_i + \gamma_{02-n} Control_i + u_{0i}$$

$$\beta_{1i} = \gamma_{10} + u_{1i}$$

Model 3: Psychological Safety and Frequency of Informal Sensemaking

The third model examined the association between the frequency of employees' informal work conversations at the daily level and their associated perceptions of psychological safety during that day. The model was specified using the following set of equations:

$$Psychological\ Safety_{ti} = \beta_{0i} + \beta_{1i} InformalWorkConversations_{ti} + e_{ti}$$

$$\beta_{0i} = \gamma_{00} + \gamma_{01} InformalWorkConversations_i + \gamma_{02-n} Control_i + u_{0i}$$

$$\beta_{1i} = \gamma_{10} + u_{1i}$$

Model 4: Interaction Partners and Psychological Safety

In model 4, we examined whether the interaction partners involved in sensemaking interactions explained variance in the psychological safety of employees. We created dummy coded variables for each type of interaction partner (corresponding to a total of 8 new variables) and included them as predictors in our model:

$$Psychological\ Safety_{ti} = \beta_{0i} + \beta_{1i} MediaChannel_{ti} + \beta_{2i-n} InteractionPartner_{ti} + e_{ti}$$

$$\beta_{0i} = \gamma_{00} + \gamma_{01} + \gamma_{02-n} Control_i + u_{0i}$$

Model 5: Digital Media and Psychological Safety

Finally, to examine best practices related to digital media use when having informal sensemaking interactions remotely. Specifically, we examined the media characteristics (e.g., channel richness, synchronicity) of the communication channel used by employees to have virtual informal social interactions and assessed if these led to increased psychological safety using the following equations

$$Psychological\ Safety_{ti} = \beta_{0i} + \beta_{1i} MediaChannel_{ti} + \beta_{2i} Synchronicity_{ti} + \beta_{3i} Recordability_{ti} + e_{ti}$$

$$\beta_{0i} = \gamma_{00} + \gamma_{01} MediaChannel_i + \gamma_{01} Synchronicity_i + \gamma_{01} Recordability_i + \gamma_{02-n} Control_i + u_{0i}$$

$$\beta_{1i} = \gamma_{10}$$

$$\beta_{2i} = \gamma_{20}$$

$$\beta_{3i} = \gamma_{30}$$

Model 6: Work-Related Outcomes and Psychological Safety

Finally, we examined the extent to which work-related outcomes were predicted by lagged psychological safety using the following set of equations and the same set of control variables that were used in all the models specified so far.

$$Outcome_{ti} = \beta_{0i} + \beta_{1i} PsychologicalSafety_{t-1i} + e_{ti}$$

$$\beta_{0i} = \gamma_{00} + \gamma_{01} PsychologicalSafety_i + \gamma_{02-n} Control_i + u_{0i}$$

$$\beta_{1i} = \gamma_{10} + u_{1i}$$

Web Appendix F: Sensitivity Analyses

Table S3: Monte Carlo Simulation Analysis for Study 1

Parameter	*B*	Std. Deviation	S.E. Average	95% Coverage	% Sig Coefficient
Psychological Safety	3.122	0.035	0.0355	0.958	1.000
Psychological Safety $_{t-1}$ → Psychological Safety $_{t}$	0.298	0.026	0.0209	0.890	1.000

Note: Coverage gives the proportion of replications for which the 95% confidence interval contains the true parameter value. b Power is defined as the proportion of replications for which the null hypothesis that a parameter is equal to zero is rejected for each parameter at the .05 level in a two-tailed test.

Appendix G: Robustness Checks

Table S5: Results of Staged Multilevel Modelling Without Covariates (Study 2)

	N_{ppt} (N_{obs})	*B*	Std. Error	95% CI	Model Fit (Conditional R^2 / Marginal R^2)
Model 1: Work Location$_t$ → Team Colocation$_t$	278 (1575)	0.65	0.022	[0.60, 0.69]	0.855 / 0.370
Model 2: Team Colocation$_t$ → Frequency of Informal Social Interactions$_t$	278 (1575)	0.20*	0.010	[0.18, 0.22]	0.858 / 0.038
Model 3: Frequency of Informal Social Interactions$_t$ → Psychological Safety$_t$	290 (4785)	0.12	0.020	[0.08, 0.15]	0.857 / 0.380
Model 4: Psychological Safety$_{t-1}$ → Team Performance$_t$	290 (17,609)	-0.11	0.020	[-0.16,-0.07]	0.010
Model 4: Psychological Safety$_{t-1}$ → Team Learning Behaviors$_t$	290 (17,609)	0.44	0.057	[0.27, 0.602]	0.110
Model 4: Psychological Safety$_{t-1}$ → Work Creativity$_t$	290 (17,609)	0.30	0.027	[0.23, 0.36]	0.051
Model 4: Psychological Safety$_{t-1}$ → Work Engagement$_t$	290 (17,609)	0.20	0.030	[0.14, 0.26]	0.035
Model 4: Psychological Safety$_{t-1}$ → Primary Team Trust$_t$	290 (17,609)	0.22	0.023	[0.18, 0.27]	0.052

Note: Model 2 was computed using a multilevel Poisson regression, hence *raw estimates are reported I place of standardized estimates. The *modelsummary* package (Arel-Bundock, 2022) was used to obtain R^2 values for Model 1 and Model 3. The *performance* package (Lüdecke et al., 2021) was used to obtain R^2 values for Model 2. Model 4 was computed using dynamic structural equation modelling in MPlus. Hence, for Model 4, the standard deviation of posterior estimates is reported in place of standard error and the average within-person R^2 value is reported in place of conditional and marginal R^2 values. The larger number of observations in Model 4 are attributed to the temporal scaling procedure that was used to meaningful interpret lagged coefficients.

Table S6: Results of Within-Person Mediation Without Covariates (Study 2)

	β	Pos. SD	95% CI	*p*	Within-Person R^2
Work Location → Frequency of Informal Social Interactions → Psychological Safety (Indirect Within-Person Effect)	**0.011**	0.004	[0.003, 0.019]	p<0.01	-
Work Location → Frequency of Informal Social Interactions → Psychological Safety (Indirect Between-Person Effect)	**0.078**	0.045	[0.012, 0.176]	p<0.01	-
Work Location → Frequency of Informal Social Interactions (a)	**2.386**	0.443	[1.290, 3.149]	p<0.01	0.024
Frequency of Informal Social Interactions → Psychological Safety (b)	**0.005**	0.001	[0.001, 0.007]	p<0.01	0.041
Work Location → Psychological Safety (c')	**0.158**	0.026	[0.105, 0.206]	p<0.01	0.035
Work Location → Psychological Safety (c)	**0.173**	0.026	[0.129, 0.224]	p<0.01	-

Note: All estimates are reported in the unstandardized form. Significant estimates are in bold. All associations are cotemporaneous and measured at the daily level. For instance, the finding pertaining to work location and psychological safety (c) should be interpreted as "employees indicated greater psychological safety on days when they indicated working from the office, as compared to when they worked from outside the office". *p* values are one-tailed *p-values.*

Table S7: Properties of High-Psychological Safety Sensemaking Interactions Without Covariates

	N_{ppt} (N_{obs})	*B*	Std. Error	95%CI	Conditional R^2 / Marginal R^2
Channel Characteristics	219/1070				0.626 / 0.004
Recordability		0.043	0.111	[-0.099, 0.132]	
Synchronicity of Message Receival		**0.077**	**0.023**	**[0.032, 0.125]**	
Synchronicity of Message Transmission		-0.041	0.023	[-0.08, 0.004]	
Modalities	235/1334				0.631 / 0.059
Phone Call		-0.014	0.018	[-0.049, 0.020]	
Texting on the Phone		0.027	0.017	[-0.05, 0.02]	
Instant Messaging on Productivity Apps		**-0.049**	0.020	**[-0.089, -0.009]**	
Instant Messaging on Social Media		-0.015	0.017	[-0.049, 0.017]	
Video Chatting on Productivity Apps		0.02	0.020	[-0.019, 0.06]	
Video Chatting on Social Media		-0.003	0.017	[-0.037, 0.030]	
Audio Calling on Productivity Apps		-0.026	0.018	[-0.061, 0.009]	
Audio Calling on Social Media		0.006	0.017	[-0.03, 0.04]	
Personalized Email		0.00	0.017	[-0.03, 0.04]	
Non-Personalized Bulk Email		-0.017	0.017	[-0.05, 0.016]	
Interaction Partners	286/2882				0.638 / 0.003
Primary Team Peer		**0.047**	**0.050**	**[0.022, 0.071]**	
Non-Primary Team Peer		0.018	0.012	[-0.006, 0.042]	
Primary Team Manager		**0.047**	**0.012**	**[0.023, 0.069]**	
Non-Primary Team Manager		0.000	0.012	[-0.022. 0.022]	
Customer/Client		-0.005	0.012	[-0.028, 0.017]	
Technology Specialist		-0.011	0.011	[-0.03, 0.011]	
Primary Team Direct Reports		0.001	0.012	[-0.021, 0.024]	
Non-Primary Team Direct Reports		0.015	0.012	[-0.007, 0.037]	

Note: Significant estimates are in bold. Channel characteristics, modalities and interaction partners were modelled separately different models, as indicated I the detailed analytic plan.

Appendix H: Detailed Results for Study 1

Multilevel Factor Structure and Reliability for State Psychological Safety

We assessed the reliability of our repeated-measures instrument in assessing psychological safety using gold-standard approaches recommended by management scholars (Gabriel et al., 2017). Multilevel factor analyses revealed that the within-person reliability of our psychological safety instrument (5-items) was $a_w = 0.732$ and the between-person reliability was $a_b = 0.967$. According to past research (Nezlek, 2017; Shrout, 1998; Yang et al., 2022), these reliability values indicate moderate to high validity. Next, we computed a more conservative estimate of within-personal reliability that relaxes the assumption that the underlying factor structure of the instrument is equivalent for all respondents (Geldhof et al., 2014). In these analyses, the within-person composite reliability was $\sigma_w = 0.719$ and the between-person composite reliability was $\sigma_b = 0.933$, indicating that even under a conservative calculation, our repeated measure instrument for psychological safety was reliable in assessing moment-to-moment and person-to-person variation. In line with past research, the values reported here are interpreted to exceed thresholds that justify their use in repeated measure research (Nezlek, 2017). Corresponding between and within reliability estimates are presented in Table 2. In sum, this pattern of results indicated that our repeated-measures instrument for psychological safety was reliable, allowing us to proceed testing our primary hypotheses.

Computing Within and Between-Person Variance

We computed a random effects adjusted intraclass coefficient to examine the distribution of within and between person variance in psychological safety using the "performance" package in R (Lüdecke et al., 2021). The adjusted intraclass coefficient[1] indicated that 53.3% of the variance in psychological safety was attributed to between-person factors and 46.7% variance was attributed to within-person factors.

[1] The adjusted intraclass coefficient was computed with the built-in assumption that random slopes would be specified for all key relationships and therefore provides a more conservative estimate of the distribution of between and within-person variance.

Assessing Meaningful Variation

Specifically, to assess the extent to which psychological safety varied considerably over time, we modelled the relationship between lagged psychological safety and momentary psychological safety using two multi-level linear models that were subsequently compared using an ANOVA test. The between-person model specified a relationship between momentary and lagged psychological safety with only random intercepts. Results indicated that, as expected, lagged psychological safety was positively associated with state psychological safety (B=0.310, 95% CI=[0.270, 0.350]). A likelihood ratio test was used to compare the relative fit of a multi-level model containing random slopes and intercepts for lagged psychological safety in comparison to a model containing random intercepts only. Results indicated that the addition of random slopes for psychological fit resulted in a statistically significant increase in the model fit χ^2 (2) = 89.406, $p< 0.001$ suggesting that the autoregressive relationship of psychological safety varied significantly across people. Finally, we used multilevel confirmatory factor analysis to assess whether a single-factor two-level confirmatory factor analysis (observations nested within people) fit the data better than a single-factor one-level confirmatory factor analysis (no nesting).

Goodness-of-fit indicators such as the Bayesian Information Criteria suggested that a two-level structural equation model explained greater variance in psychological safety in comparison to a single-level structural equation modelling, providing further support for the validity of our instrument.

Appendix I: Detailed Results from Study 2

Table S8: Results of Within-Person Mediation (Study 2)

	β	**Pos. SD**	**95% CI**	***p***	**R^2**
Work Location → Frequency of Informal Social Interactions → Psychological Safety (Indirect Within-Person Effect)	**0.010**	0.004	[0.002, 0.020]	<0.01	-
Work Location → Frequency of Informal Social Interactions → Psychological Safety (Indirect Between-Person Effect)	**0.078**	0.045	[0.012, 0.176]	<0.01	-
Work Location → Frequency of Informal Social Interactions (a)	**2.428**	0.434	[1.490, 3.171]	<0.01	0.024
Frequency of Informal Social Interactions → Psychological Safety (b)	**0.004**	0.002	[0.001, 0.007]	<0.01	0.040
Work Location → Psychological Safety (c')	**0.157**	0.025	[0.106, 0.201]	<0.01	0.038
Work Location → Psychological Safety (c)	**0.174**	0.025	[0.111, 0.212]	<0.01	-

Note: All estimates are reported in the unstandardized form. Significant estimates are in bold. All associations are cotemporaneous and measured at the daily level. For instance, the finding pertaining to work location and psychological safety (c) should be interpreted as "employees indicated greater psychological safety on days when they indicated working from the office, as compared to when they worked from outside the office."

Table S9: Model 1 with complete covariates

	Team Colocation		
Predictor	***B***	***SE***	***95%CI***
Intercept	0.03	0.2	-0.37 – 0.42
Work Location	0.64	0.02	0.59 – 0.68
Team Interdependence	0.04	0.03	-0.02 – 0.09
Sex	0.02	0.03	-0.03 – 0.07
Age	0.01	0.03	-0.05 – 0.06
Organizational Tenure (Years)	-0.02	0.03	-0.08 – 0.04
Team Size	0.07	0.05	-0.02 – 0.17
Seniority	0.06	0.03	0.00 – 0.11
Trait Psychological Safety	0.02	0.02	-0.02 – 0.07
Industry			
Consumer Goods	-0.49	0.39	-1.27 – 0.28
Education	0.05	0.22	-0.37 – 0.48
Energy and Utilities	-0.1	0.25	-0.59 – 0.39
Financial Services & Insurance	-0.02	0.21	-0.43 – 0.38
Government & Public Sector	0.02	0.22	-0.40 – 0.45
Healthcare & Pharmaceuticals	-0.1	0.22	-0.53 – 0.32
Information Technology - Hardware, Software	0.06	0.21	-0.35 – 0.46
Logistics	-0.09	0.26	-0.60 – 0.43
Manufacturing & Industrial Equipment	0.09	0.23	-0.36 – 0.53
Media, Entertainment and Arts	-0.02	0.28	-0.56 – 0.52
Mining & Materials	-0.97	0.38	-1.71 – -0.23
Not-for-Profit	-0.1	0.23	-0.55 – 0.35
Other	0.04	0.23	-0.40 – 0.49
Professional Services - Legal, Consulting	0.04	0.22	-0.39 – 0.46
Real Estate	0.11	0.28	-0.43 – 0.66
Retail	-0.04	0.26	-0.56 – 0.48
Telecommunications	-0.27	0.26	-0.79 – 0.25
Transportation	-0.95	0.72	-2.37 – 0.47
Travel, Tourism & Hospitality	-0.84	0.38	-1.59 – -0.10
Random Effects			
σ^2	0.37		
N	262		
Observations	1495		
Marginal R^2 / Conditional R^2	0.380 / 0.854		

Table S10: Model 2 with complete covariates

	Frequency of Informal Work Conversations		
Predictor	***B***	***SE***	***95% CI***
Intercept	2.57	1.3	0.96 – 6.93
Team Colocation	1.25	0.02	1.22 – 1.28
Team Interdependence	1.06	0.07	0.93 – 1.21
Sex	1.02	0.07	0.89 – 1.17
Age	0.83	0.06	0.71 – 0.96
Organizational Tenure (Years)	1.06	0.08	0.91 – 1.24
Team Size	1.33	0.34	0.80 – 2.20
Seniority	1.2	0.08	1.05 – 1.38
Trait Psychological Safety	1.01	0.06	0.89 – 1.14
Industry			
Consumer Goods	0.84	0.93	0.10 – 7.33
Education	1.1	0.6	0.38 – 3.19
Energy and Utilities	1.17	0.78	0.32 – 4.33
Financial Services & Insurance	1.24	0.66	0.44 – 3.50
Government & Public Sector	1.83	1.01	0.62 – 5.38
Healthcare & Pharmaceuticals	1.31	0.73	0.44 – 3.90
Information Technology - Hardware, Software	1.16	0.61	0.42 – 3.25
Logistics	0.97	0.65	0.26 – 3.64
Manufacturing & Industrial Equipment	1.02	0.59	0.33 – 3.18
Media, Entertainment and Arts	0.7	0.48	0.18 – 2.66
Mining & Materials	2.94	3.21	0.35 – 24.88
Not-for-Profit	0.97	0.57	0.31 – 3.04
Other	2.02	1.15	0.66 – 6.20
Professional Services - Legal, Consulting	1.45	0.81	0.49 – 4.34
Real Estate	0.83	0.64	0.19 – 3.73
Retail	1.03	0.69	0.28 – 3.80
Telecommunications	0.77	0.53	0.20 – 2.99
Transportation	0	0.01	0.00 – 10.20
Travel, Tourism & Hospitality	0.38	0.42	0.04 – 3.41
Random Effects			
σ^2	0.18		
N	262		
Observations	1495		
Marginal R^2 / Conditional R^2	0.162 / 0.858		

Table S11: Model 3 with complete covariates

	State Psychological Safety		
Predictor	***B***	***SE***	***CI***
Intercept	0.86	0.34	0.18 – 1.53
Total Frequency of Informal Interactions	0.09	0.02	0.06 – 0.13
Team Interdependence	0.11	0.04	0.02 – 0.20
Industry			
Consumer Goods	0.44	0.76	-1.05 – 1.93
Education	-1.04	0.37	-1.76 – -0.32
Energy and Utilities	-0.85	0.45	-1.74 – 0.04
Financial Services & Insurance	-0.91	0.36	-1.61 – -0.21
Government & Public Sector	-0.62	0.37	-1.35 – 0.12
Healthcare & Phramceutical	-0.88	0.38	-1.62 – -0.14
Information Technology - Hardware, Software	-0.85	0.35	-1.55 – -0.16
Logistics	-0.64	0.45	-1.54 – 0.25
Manufacturing & Industrial Equipment	-0.7	0.39	-1.46 – 0.06
Media, Entertainment and Arts	-1.54	0.45	-2.42 – -0.66
Mining & Materials	-0.52	0.71	-1.92 – 0.88
Not-for-Profit	-1.13	0.39	-1.90 – -0.36
Other	-0.73	0.39	-1.48 – 0.03
Professional Services - Legal, Consulting	-0.71	0.38	-1.45 – 0.03
Real Estate	-0.87	0.52	-1.88 – 0.14
Retail	-0.91	0.44	-1.78 – -0.05
Telecommunications	-0.4	0.46	-1.30 – 0.50
Transportation	-1.02	0.63	-2.25 – 0.22
Travel, Tourism & Hospitality	-1.56	0.75	-3.03 – -0.08
Sex	0.02	0.05	-0.07 – 0.11
Age	-0.03	0.05	-0.13 – 0.06
Organiational Tenure (Years)	0.01	0.05	-0.09 – 0.11
Team Size	0.06	0.06	-0.05 – 0.17
Seniority	-0.01	0.05	-0.10 – 0.08
Trait Psychological Safety	0.38	0.04	0.30 – 0.46
Random Effects			
σ^2	0.21		
N	273		
Observations	4530		
Marginal R^2 / Conditional R^2	0.216 / 0.630		

Table S12: Model 4 with complete covariates

Covariates	Psychological Safety			Primary Team Performance			Primary Team Trust			Work Engagement			Work Creativity			Team Learning		
	B	Pos. SD	95%CI	*B*	Pos. SD	95%CI	*B*	Pos. SD	95%CI	*B*	Pos. SD	95%CI	*B*	Pos. SD	95%CI	*B*	Pos. SD	95%CI
Organizational Tenure	0.024	0.066	[-0.107,0.149]	0.044	0.063	[-0.079,0.167]	-0.016	0.066	[-0.15,0.112]	0.035	0.076	[-0.112,0.184]	0.007	0.071	[-0.132,0.145]	0.083	0.094	[-0.098,0.273]
Sex	-0.042	0.06	[-0.162,0.077]	-0.027	0.058	[-0.139,0.086]	-0.056	0.061	[-0.175,0.06]	-0.175	0.068	[-0.305,-0.036]	-0.145	0.065	[-0.267,-0.011]	0.068	0.085	[-0.104,0.234]
Age	-0.005	0.065	[-0.132,0.123]	-0.007	0.065	[-0.136,0.118]	0.016	0.066	[-0.114,0.148]	0.125	0.078	[-0.028,0.277]	0.021	0.073	[-0.12,0.164]	-0.105	0.102	[-0.304,0.092]
Seniority	-0.015	0.061	[-0.131,0.105]	-0.119	0.059	[-0.236,-0.005]	-0.013	0.061	[-0.131,0.11]	-0.049	0.072	[-0.19,0.092]	-0.258	0.066	[-0.381,-0.122]	-0.127	0.086	[-0.295,0.043]
Team Interdependence	0.107	0.061	[-0.014,0.222]	0.004	0.059	[-0.112,0.121]	0.114	0.06	[-0.004,0.233]	0.241	0.073	[0.09,0.378]	0.033	0.069	[-0.102,0.17]	0.08	0.088	[-0.099,0.241]
Team Size	0.055	0.056	[-0.055,0.163]	-0.035	0.054	[-0.141,0.073]	0.005	0.056	[-0.104,0.115]	-0.032	0.062	[-0.155,0.088]	-0.123	0.061	[-0.244,-0.006]	-0.042	0.063	[-0.167,0.083]
Trait Psychological Safety	0.481	0.049	[0.378,0.569]	-0.508	0.047	[-0.594,-0.412]	0.476	0.049	[0.373,0.569]	0.197	0.063	[0.071,0.322]	0.042	0.06	[-0.082,0.159]	0.203	0.081	[0.032,0.348]
State Psychological Safety	-	-	-	-0.093	0.019	[-0.131, -0.058]	0.223	0.021	[0.183, 0.267]	0.175	0.029	[0.118, 0.234]	0.219	0.029	[0.167, 0.280]	0.296	0.054	[0.173, 0.391]

Table S13: Interaction Characteristics and Psychological Safety

	State Psychological Safety		
Predictor	***B***	***SE***	***95% CI***
Intercept	1.16	0.5	0.18 – 2.13
Recordability	0.07	0.12	-0.17 – 0.31
Synchronous Receipt	0.07	0.02	0.03 – 0.12
Synchronous Reply	-0.04	0.02	-0.09 – 0.01
Team Interdependence	0.13	0.06	0.01 – 0.24
Sex	0.03	0.06	-0.09 – 0.15
Age	-0.05	0.07	-0.18 – 0.08
Organizational Tenure (Years)	0.07	0.07	-0.07 – 0.22
Team Size	0.04	0.04	-0.05 – 0.13
Seniority	-0.03	0.06	-0.15 – 0.09
Trait Psychological Safety	0.35	0.05	0.25 – 0.45
Number of Digital Media Channels	-0.01	0.03	-0.07 – 0.05
Industry			
Consumer Goods	0.09	0.9	-1.67 – 1.85
Education	-1.56	0.53	-2.60 – -0.51
Energy and Utilities	-1.35	0.6	-2.52 – -0.18
Financial Services & Insurance	-1.11	0.51	-2.11 – -0.11
Government & Public Sector	-0.71	0.53	-1.75 – 0.33
Healthcare & Pharmaceuticals	-1.3	0.53	-2.35 – -0.25
Information Technology - Hardware, Software	-1.11	0.51	-2.11 – -0.11
Logistics	-1.08	0.62	-2.30 – 0.14
Manufacturing & Industrial Equipment	-0.97	0.54	-2.04 – 0.09
Media, Entertainment and Arts	-2.04	0.64	-3.29 – -0.79
Mining & Materials	-0.45	0.9	-2.23 – 1.32
Not-for-Profit	-1.56	0.58	-2.70 – -0.42
Other	-0.89	0.55	-1.96 – 0.18
Professional Services - Legal, Consulting	-1.07	0.53	-2.11 – -0.03
Real Estate	-1.14	0.66	-2.44 – 0.16
Retail	-1.16	0.73	-2.59 – 0.27
Telecommunications	-0.59	0.75	-2.06 – 0.89
Transportation	-1.41	1.02	-3.41 – 0.58
Travel, Tourism & Hospitality	-2.07	0.97	-3.97 – -0.17
Random Effects			
σ^2	0.2		
N	207		
Observations	1009		
Marginal R^2 / Conditional R^2	0.208 / 0.641		

Table S14: Digital Media Channel and Psychological Safety

	State Psychological Safety		
Predictor	*B*	*SE*	*95% CI*
Intercept	1.06	0.46	0.16 – 1.96
Phone Call	-0.05	0.03	-0.10 – 0.01
Texting	0	0.03	-0.05 – 0.05
Instant Messaging (Productivity Apps)	-0.11	0.04	-0.18 – -0.03
Instant Messaging (Social Media)	-0.04	0.02	-0.08 – 0.00
Video Chat (Productivity Apps)	-0.03	0.04	-0.11 – 0.04
Video Chat (Social Media)	-0.02	0.02	-0.06 – 0.02
Audio Call (Productivity Apps)	-0.06	0.03	-0.12 – -0.01
Audio Call (Social Media)	-0.01	0.02	-0.05 – 0.03
Personalized Email	-0.03	0.03	-0.08 – 0.02
Bulk Email	-0.03	0.02	-0.08 – 0.01
Team Interdependence	0.12	0.06	0.01 – 0.24
Sex	0.05	0.06	-0.06 – 0.17
Age	-0.02	0.06	-0.14 – 0.11
Organizational Tenure (Years)	0.04	0.07	-0.09 – 0.18
Team Size	0.05	0.04	-0.04 – 0.13
Seniority	-0.05	0.06	-0.16 – 0.07
Trait Psychological Safety	0.34	0.05	0.24 – 0.44
Number of Digital Media Channels	0.1	0.08	-0.04 – 0.25
Industry			
Consumer Goods	0.26	0.9	-1.50 – 2.02
Education	-1.44	0.5	-2.42 – -0.46
Energy and Utilities	-1.22	0.57	-2.34 – -0.10
Financial Services & Insurance	-1.03	0.47	-1.96 – -0.09
Government & Public Sector	-0.76	0.49	-1.72 – 0.20
Healthcare & Pharmaceuticals	-1.16	0.5	-2.13 – -0.18
Information Technology - Hardware, Software	-1.02	0.48	-1.95 – -0.09
Logistics	-0.86	0.59	-2.02 – 0.29
Manufacturing & Industrial Equipment	-0.87	0.51	-1.87 – 0.13
Media, Entertainment and Arts	-1.99	0.61	-3.19 – -0.80
Mining & Materials	-0.6	0.89	-2.35 – 1.15
Not-for-Profit	-1.44	0.55	-2.52 – -0.35
Other	-0.77	0.51	-1.78 – 0.24
Professional Services - Legal, Consulting	-0.93	0.5	-1.91 – 0.04
Real Estate	-1.02	0.65	-2.29 – 0.26
Retail	-1.24	0.64	-2.49 – 0.01
Telecommunications	-0.49	0.74	-1.94 – 0.97
Transportation	-1.42	1.01	-3.41 – 0.57
Travel, Tourism & Hospitality	-1.6	0.93	-3.44 – 0.23
Random Effects			
σ^2	0.19		
N	222		
Observations	1261		
Marginal R^2 / Conditional R^2	0.188 / 0.652		

Table S15: Interaction Partners and Psychological Safety

	State Psychological Safety		
Predictor	*B*	*SE*	*95%CI*
Intercept	0.86	0.37	0.12 – 1.59
Primary Team Peer	0.04	0.04	-0.05 – 0.13
Nonprimary Team Peer	0	0.04	-0.08 – 0.09
Primary Team Manager	0.04	0.04	-0.05 – 0.12
Nonprimary Team Manager	-0.01	0.03	-0.06 – 0.05
Customer/Client	-0.01	0.02	-0.05 – 0.03
Tech Specialist	-0.02	0.02	-0.06 – 0.02
Primary Team Direct Reports	-0.01	0.03	-0.06 – 0.05
Non-Primary Team Direct Reports	0.01	0.01	-0.01 – 0.04
Team Interdependence	0.1	0.05	0.00 – 0.20
Sex	0.04	0.05	-0.06 – 0.15
Age	-0.04	0.05	-0.14 – 0.07
Organizational Tenure (Years)	0.01	0.06	-0.10 – 0.13
Team Size	0.04	0.04	-0.04 – 0.13
Seniority	0	0.05	-0.10 – 0.10
Trait Psychological Safety	0.38	0.04	0.29 – 0.47
Number of Interaction Partners	0.02	0.08	-0.14 – 0.19
Industry			
Consumer Goods	0.45	0.82	-1.15 – 2.06
Education	-1.14	0.4	-1.93 – -0.35
Energy and Utilities	-1.01	0.5	-1.98 – -0.04
Financial Services & Insurance	-0.91	0.39	-1.68 – -0.14
Government & Public Sector	-0.69	0.41	-1.49 – 0.11
Healthcare & Pharmaceuticals	-0.9	0.41	-1.71 – -0.09
Information Technology - Hardware, Software	-0.88	0.39	-1.64 – -0.12
Logistics	-0.71	0.5	-1.68 – 0.27
Manufacturing & Industrial Equipment	-0.77	0.42	-1.60 – 0.06
Media, Entertainment and Arts	-1.56	0.5	-2.54 – -0.58
Mining & Materials	-0.43	0.82	-2.04 – 1.18
Not-for-Profit	-0.99	0.43	-1.84 – -0.14
Other	-0.64	0.43	-1.48 – 0.19
Professional Services - Legal, Consulting	-0.74	0.41	-1.55 – 0.08
Real Estate	-0.78	0.57	-1.90 – 0.34
Retail	-0.82	0.48	-1.76 – 0.12
Telecommunications	-0.11	0.54	-1.17 – 0.96
Transportation	-1.11	0.71	-2.50 – 0.29
Travel, Tourism & Hospitality	-1.25	0.84	-2.89 – 0.39
Random Effects			
σ^2	0.18		
N	269		
Observations	2682		
Marginal R^2 / Conditional R^2	0.198 / 0.644		

Web Appendix J

Below, we note two minor deviations from our planned data collection and analytic plans as uploaded on OSF prior to the start of our data collection.

Smaller Than Anticipated Sample Sizes

Across both Study 1 and Study 2, our analytic paradigm and power analysis indicated that a sample size of 400 respondents would be sufficient to detect our minimum effect size of interests (see OSF Page) . However, due to respondent attrition our final dataset consists of fewer than 400 respondents for both intensive longitudinal studies (Study 1 N=346; Study 2 N=290). Post-hoc sensitivity analysis for Study 1 revealed that at N=300, we could detect our observed effect size of autoregressive psychological safety with 100% power.

Change in Analytic Paradigm for Study 2

We had initially planned to run a series of dynamic structural equation models to test the core hypotheses for study 2 (see OSF page). However, we decided to change our approach to focus on within-person (1-1-1) mediation since this method provided results that were easier to interpret and directly tested our hypotheses. We note that currently, there is no widely accepted mechanism to assess the power of within-person mediation analysis. Second, in addition to running a within-person mediation analysis, we also ran a series of multilevel models that tested the validity of our model in a staged fashion. The switch from dynamic structural equation models to simpler multilevel models allowed us to control for a wide variety of covariates that would otherwise not have been possible.

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