Temporal restructuring features prominently in the future of work. Specifically, teamwork is now often performed asynchronously: members of teams work at different times, by themselves, rather than simultaneously and together. Because women in teams have typically been held back from performing to their full potential, it is imperative to ask: how does this shift to asynchronous teamwork affect the performance of men and women differently? This paper argues that women will perform better when teamwork is asynchronous, rather than synchronous, because working alone will afford them greater freedom for creative expression. We argue that men will not experience the same boost in performance, and thus the rise of asynchronous teamwork has the potential to reduce gender disparities in performance. We explore this question in the context of folk music ensembles in eastern India. After collecting ethnographic and interview data from folk musicians to develop our theory, we conducted a field experiment in which individual singers, both men and women, recorded a song both synchronously and asynchronously with a standard set of instrumentalists. This paper contributes to scholarship on the temporal restructuring of work, performance of women in teams, and gender inequality, while also advancing conversations on the future of work.
The world of work is fundamentally changing, driving vigorous debate about what the “future of work” will look like (Kochan and Dyer 2020, Malone 2004). New technologies, digitization and big data are transforming how work is performed in domains ranging from manufacturing to knowledge work to cultural production (Kellogg, Valentine and Cristin 2020, Ranganathan and Benson 2020). The COVID-19 pandemic has only accelerated these changes, as companies were forced to experiment with work-from-home and hybrid work arrangements (Kelly and Moen 2021, Cappelli 2021).

In particular, temporal restructuring of work – changing the expectations regarding work schedules and work hours – is proliferating in conjunction with flexible work practices and supporting technologies that enable workers to work from anywhere at any time (Moen, Kelly and Hill 2011, Moen et al 2011, Perlow and Kelly 2014, Correll et al 2014). One recent and salient manifestation of temporal restructuring is the increasing prevalence of asynchronous teamwork (Hinds, Kiesler and Kiesler 2002): rather than working at the same time and together, team members now often work at different times and by themselves.

Accordingly, a growing body of work has emerged on the unique opportunities and challenges posed by temporally-distributed teams (Hinds and Bailey 2003, Hinds and Mortenson 2005, O’Leary and Mortenson 2010, Fayard and Metiu 2014). However, this scholarship has not investigated how the shift to asynchronous teamwork might affect the performance of men and women differently, and in particular whether working asynchronously will help or hurt women. This is an important question: women have typically been prevented from performing to their full potential in teams (Kalev 2009, Thomas-Hunt and Phillips 2011, Joshi 2014), and asynchronous teamwork is fast becoming the “new normal” (Forbes 2020). Therefore, it is imperative to understand the implications of this structural change for gender equality.
This paper argues that the shift to asynchronous teamwork has the potential to help women. We assert that women will perform better when teamwork is asynchronous because working alone will afford them greater freedom from their teammates to express themselves creatively in their work. Men, by contrast, will perform similarly whether teamwork is synchronous or asynchronous. This finding suggests that the rise of asynchronous teamwork has the potential to reduce gender disparities in performance. As more jobs move towards asynchronous teamwork, working conditions for women may improve; they may have more creative freedom, thus benefiting their performance. While teams vary in the extent of their “creative” work, all work has elements of creativity; consequently, this pattern should generalize to teams in diverse domains.

An ideal setting for studying asynchronous teamwork and gender disparities in performance, would have three key features. First, it would be routine for teamwork to be performed both synchronously and asynchronously. Second, the shift to asynchronous teamwork would not be accompanied by changes in the work performed by individual team members. Third, teams would be gender-diverse. Music recording by ensembles meets all these criteria. Studio music recording can happen either synchronously (when ensemble members perform together “live”) or asynchronously (when ensemble members’ separate recordings are digitally layered atop one another); these two forms of recording map nicely to the conditions of work that we aim to study. Also, music ensembles are teams whose members naturally perform discrete roles, such that a structural shift to asynchronous teamwork does not require changes to the work of individual team members. Finally, most music genres are characterized by at least some gender diversity.

This paper investigates asynchronous teamwork and gender differences in performance in the context of folk music ensembles in eastern India. In particular, we focus on a genre of folk music
called Baul *sangeet*. Both men and women sing Baul folk music, but the instrumentalists tend to be men: this configuration offers us gender diversity in one key role while keeping gender constant in all others.

In our research process and the organization of this article, we adhere to the full-cycle research model, moving from qualitative theory-building to quantitative theory testing (Fine and Elsbach 2000, Chatman and Flynn 2005, Ranganathan 2018). Our research team began by conducting ethnographic observation and interviews with Baul musicians, with other musicians who collaborate with Bauls, and with ethnomusicology experts in this genre from May to August 2020. The qualitative data suggested that women have little say in creative and aesthetic decisions when they perform alongside their ensembles, but are able to express themselves more fully when they sing alone. This observation led us to hypothesize that women singers would perform better asynchronously. Meanwhile we learned about click-track recording methods—the new norm in the music-recording industry—whereby individual musicians record independently of their ensemble colleagues; the multiple resulting tracks are layered atop one another. We then designed a field experiment to work with a sample of Baul singers, both men and women; we brought them to a recording studio to record with a consistent set of instrumentalists, both synchronously and asynchronously. We assessed their musical output under both conditions and had an expert panel evaluate this output. Finally, we conducted detailed interviews to unpack the singers’ recording experiences.

This paper studies a fundamental structural transformation of teamwork: the shift to asynchronous teamwork. The paper contributes to the literature on the temporal restructuring of work by studying the direct impact of asynchronous work arrangements on the performance of individuals in teams, and in particular the heterogeneous effects of these work arrangements for
men and women. The paper also contributes to the literature on women in teams by documenting the potential of this shift to asynchronous teamwork to reduce gender disparities in performance. Furthermore we highlight greater creative freedom for women in their work as a novel mechanism underlying this effect. Apart from these theoretical contributions, this paper contributes to an ongoing policy debate on how to structure the future of work to eliminate persistent demographic disadvantages.

ASYNCHRONOUS TEAMWORK AND GENDER DIFFERENCES IN PERFORMANCE

Temporal Restructuring of Work

The future of work will include an increase in temporal restructuring of individuals’ work lives (Correll et al. 2014, Cappelli 2021, Bojinov, Choudhury and Lane 2021). There has already been an increased adoption of contract work arrangements (in place of full-time salaried work), and of flexible work programs (“work from any location at any time”), and a movement towards reduced work hours, including the four-day workweek (Evans, Kunda and Barley 2004, Perlow and Kelly 2014, Laker and Roulet 2019). As the organization of work continues to evolve and to leverage technology in its operation, prevailing implicit assumptions about time (Sorokin and Merton 1937, Sennett 1998), including when and how work should be done, are being challenged. Many individuals and organizations are questioning adherence to clock-based, synchronous work schedules. The use of digital tools for the enactment and coordination of work has further enabled the temporal restructuring trend to flourish (Rhymer 2020). An additional motivation for temporally restructuring work is to provide individual flexibility for workers: the benefits of eliminating work commutes, along with the ability of individuals to determine the hours they work and to take breaks as needed throughout the day, seem sizable (Moen et al.
Changes to the temporal organization of work have been further accelerated by mandated COVID-19 work-from-anywhere arrangements.

Academic discussion of the temporal restructuring of work has focused mainly on workers’ ability to control their own schedules, and on the ensuing effects on workers’ health, work-family balance, and workforce retention. Flexible work structures dismantle the authority of clocks and calendars over when and where work is performed, and ingrained cultural beliefs about work time and face time as indicators of work commitment, productivity, and quality. This flexibility can improve workers’ schedule control, and subsequently their health and family outcomes, greatly reducing turnover (Moen et al. 2011, Kelly, Moen and Tranby 2011, Moen, Kelly and Hill 2011). Conversely, other scholars point out that technological advances that allow flexible work can also blur boundaries between work and home, exacerbating overwork and worsening health outcomes and work-family interactions (Caza and Wrzesniewski 2013).

Workers can theoretically choose their own pace and hours, but managers can also set unrealistic deadlines to boost productivity. Worse yet, in the absence of strict schedules, time dedicated to work can become limitless (Shih 2004). While good managers and structures like a “results-only work environment” can improve conditions for all, the data shows objectively worse professional outcomes – slower promotions, lower wage growth, and worse performance evaluations – for employees who are perceived as “seeking flexibility to address their personal needs, rather than clients’ needs” (Perlow and Kelly 2014:113), despite the numerous benefits that firms stand to gain from offering these arrangements.

We focus here on a specific kind of temporal restructuring—asynchronous teamwork—that occurs when team members contribute to a joint outcome at different times of the day, at the same or different locations. Teams are “a set of interdependent parties, small in number, who
recognize themselves as [such] and have some degree of shared accountability” (Gibson and Gibbs 2006: 452). To be a team, members no longer need to meet face-to-face or through video or phone calls. Furthermore, teams do not even need to communicate regularly; some teams are coordinated purely through a team manager (Perlow 2001). Rather, if a deliverable is dependent on multiple members who may serve different roles but are working towards the same goal, then they constitute a team. Many of the increasingly popular “flexible work arrangements” have some element of asynchronous teamwork (Majchrzak et al. 2000, Choudhury et al. 2021). For example, virtual teams distributed around the globe often perform work asynchronously (Rutkowski et al. 2007). Very little research on asynchronous teamwork has been published, but we can draw insights from research on globally and virtually distributed teams whose members often work asynchronously.

**Distributed Teamwork**

The literature on global teams sheds light on the effects at the team level of eliminating physical proximity, namely eroding trust, increasing conflict and misunderstandings, and lowering effectiveness (Maznevski and Chudoba 2000, Hinds and Mortensen 2005). Much of the research on virtual teams documents the downsides of this arrangement, such as how a lack of face-to-face interaction diminishes trust (Jarvenpaa, Knoll and Leidner 1998, Mortensen and Neeley 2012), shared social context (Olson and Olson 2000), and familiarity (Hinds and Bailey, 2003). Distance and reliance on technology-mediated communication reduce team cohesion and create conflict via the development of subgroups, increased transaction costs, time lags, and sequencing problems (Hinds 2003, Gibson and Gibbs 2006, O'Leary and Mortensen 2010). Although theories posit potentially higher overall performance due to the increased time that teams are
active, reduced travel, and low reallocation costs, little empirical work has been done to
demonstrate this expected benefit (Rhymer 2020).

When discussing distributed teams, management scholars tend to focus on the overall
performance of the team. In other words, “the literature on the subject explores how teams
operate while being physically separated, with a team level of analysis” (Rhymer 2020: 37). Less
attention has been paid to the performance of individuals within teams. Yet studying individual-
level outcomes is crucial to identifying winners and losers in distributed work arrangements, and
to specifying how individual careers might be impacted by wider adoption of asynchronous
teamwork. Efforts to measure change in the performance of individuals on teams due to temporal
restructuring are particularly scant, perhaps due to the recency of the phenomenon. Some studies
measuring the effects of remote work arrangements on individual productivity have broadly
documented productivity increases (Bloom et al. 2015, Choudhury, Foroughi and Larson 2021).
However, these studies examine individuals working alone, rather than in teams.

In research on global teams, some effort has been spent distinguishing geographic dispersion
from temporal dispersion (Cummings et al. 2009, Espinosa and Carmel 2003). A key insight is
that asynchronous teamwork can occur even among co-located coworkers. Relying on email
instead of picking up the phone or walking to someone’s office is an example of choosing
asynchronous over synchronous communication. A rare example of research focused on
temporal dispersion shows that certain individuals prefer asynchronous communication even
when synchronous communication is an option; they enjoy engrossing themselves in their work
and do not like being interrupted by calls or meetings, and prefer to communicate at more
convenient times over email (Rutkowski et al. 2007). The bulk of the literature, though, focuses
on internationally-distributed teams, and less research has been done on asynchronous teamwork centered in a single location, and outside of the U.S.

There are likely many factors that contribute to the efficacy of asynchronous teamwork. For example, some literature addressing creative work in rocket design (Malhotra et al. 2001) and software engineering (Fayard and Metiu 2014) posits that creativity requires synchronous teamwork (Espinosa et al. 2015). Others caution that teams require a “safe communication climate” in order to reap the creative benefits of synchronous collaboration, and further note that a safe communication climate may be impeded by status differences within the team, such as those based on nationality (Gibson and Gibbs 2006, Metiu 2006). For example, one study documents that when Indian engineers were brought to the U.S. headquarters to work synchronously, the majority of the U.S. team members did not even introduce themselves to the Indian engineers, much less incorporate their ideas or develop a genuine give-and-take that would have benefitted the creative process (Metiu 2006).

While some attention has been paid to the role of status differences based on nationality in global teams, not much empirical investigation has focused on differential performance effects of asynchronous teamwork by gender. Scholars have long anticipated that temporal restructuring “may affect employees differently depending on their gender” (Kelly et al. 2011: 268, Reid, O’Neil and Blair-Loy 2018), but this question has not been empirically examined. Nearly thirty years ago an article concluded that “there is much speculation about the role of temporal structure, particularly in relation to gender [inequality], but little research” (Abbott 1993); that assertion still holds true.
In an effort to address these gaps in the literature – limited focus on individual (rather than team) performance; minimal attention to single, non-US locations; and less exploration of differential performance effects by gender – we focus on the heterogeneous performance effects of asynchronous teamwork for men and women in India.

**Women in Teams**

Scholarship on the temporal restructuring of work has not yet looked at differential performance effects of asynchronous teamwork by gender, but a different body of work has documented that women have been prevented from performing to their full potential in teams. Research has documented conclusively that women are treated less well than men in team interactions (Berger et al. 1977, Carli 1990, Ridgeway and Diekema 1989). Team members routinely have lower performance expectations for women than for men (Berger, Rosenholtz, and Zelditch, 1980, Lockheed and Hall 1976, Meeker and Weitzel-O’Neil, 1977), and give women fewer opportunities to participate (Meeker and Weitzel-O’Neil 1977, Ridgeway and Berger 1986, Mendelberg et al. 2015). Women who attempt to gain the floor in meetings by interrupting the speaker are less likely than men to succeed (Zimmerman and West 1996). Further, women’s contributions are routinely attributed less competence than men’s (Foschi 1996, Foschi, Lai, and Sigerson 1994); women may be perceived as less expert by other team members despite similar levels of expertise, and consequently have less influence on team decisions (Thomas-Hunt and Phillips 2004). Women are also less likely to occupy leadership positions in teams (Yang and Aldrich 2014). In historically men-dominated environments such as science and engineering, these patterns can be exacerbated; gender often functions as a cue for identifying team members’

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1 This phenomenon is not specific to situations with token representation of women (Mansbridge 1996). Women speak less often and experience more “negative interruptions” – interruptions that negate or ignore the speaker’s point – even when they have numerical parity with men (Mendelberg et al. 2014, Karpowitz and Mendelberg 2016).
skills and expertise because gender differences among team members are highly salient and visible (Cohen and Zhou 1991, Ridgeway 1991, Joshi 2014). Intra-functional (rather than cross-functional) teams can pose particularly persistent barriers to inclusivity (Kalev 2009). Most of this research has been focused in the United States, but we expect that the same gender dynamics will exist in other countries as well.

A key source of women’s disadvantaged position in teams, according to scholars, is stereotype threat: because men have traditionally made important organizational decisions, stereotypes may imply that men are better at making such decisions (Spencer, Steele and Quinn 1999, Ellemers 2018). That is, the content of those decisions may be perceived as male-typed simply because historical precedent has ingrained the association of men with decision-making (Chatman et al. 2003). For example, new venture creation has historically been seen as an arena for businessmen, and the characteristics attributed to successful entrepreneurs—agentic, pragmatic, and risk-taking—are stereotypically masculine (Calas et al. 2009). This stereotyping might make it difficult for women to assume leadership positions in entrepreneurial teams (Yang and Alrich 2014). When gender functions as a salient status characteristic, expectations for women’s competence are lowered and women’s opportunities are limited (Foschi 2000). Furthermore, these stereotypes can become so ingrained in women’s own minds that when their gender is made salient, women may unconsciously mimic the female stereotype of deference to men, thus inhibiting expression of their own ideas (Davies et al. 2005).

Norms are another factor that prevents women from fully expressing themselves in groups. Norms define what is considered socially acceptable or unacceptable in a given context. They can be enforced within an individual through emotions like shame, or from the group through social sanctioning (Elster 2011). Thus, women may be conditioned by prevailing norms to
constrain expression of their independent thoughts in mixed-gender group settings. Norms can vary by culture, but the norm for women to defer to men in group work is nearly universal (Fiske et al. 2017). Whether norms or stereotypes are more at play, the fact of the matter is that women are less likely to be heard than their male counterparts in mixed-gender settings.

Some studies have investigated the effect of women’s constrained positions within teams on team performance. For example, scholars have found that teams composed of women experts will exhibit lower performance than those with men experts (Thomas-Hunt and Phillips 2004). Similarly, the proportion of highly educated women in a team is negatively associated with its performance in fields with few women (Joshi 2014). These studies are eye-opening, but they speak to team performance rather than that of individuals. In particular, research is limited on the conditions under which individual women and men on teams perform better or worse. This is the focus of our study.

Further, scholarship on women in teams has generally not yet acknowledged the temporal restructuring introduced by asynchronous teamwork. The literature is still using dated conceptions of teams. Some recent work admits that “our old definitions [of teams] are feeling the strain” (Wageman, Gardners and Mortensen 2012: 304) and that “it is time to rethink our fundamental conceptualization of teams and to revisit our approaches to studying them” (Mortensen and Haas 2018: 341). Indeed, it is important to consider recent developments in how teamwork is structured because “changing the environment [has the potential] to reduce the threat” of gender-related stereotypes and to help women (Spencer, Logel and Davies 2016: 427).

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2 One exception is Jang et al (2022), which finds that asynchronous teams with women coordinating between team members perform better than teams with men in these roles, specifically because they increase participation of other women on their teams.
Our paper seeks to enhance existing debate about women in teams by quantifying the differential effect of a shift to asynchronous teamwork on the individual performances of men and women, and by identifying the primary channel for that impact.

**SETTING: Baul Folk Ensembles in India**

We chose the context of folk music ensembles in eastern India to investigate how asynchronous teamwork contributes to gender differences in performance. Specifically, we focus on *Baul-sangeet*, a genre of folk music in the Bengali language from east and northeast India and Bangladesh. This is an oral tradition, whose lack of notation means that each song has many versions and interpretations. The music represents a long heritage of preaching mysticism through songs. Through their music, Bauls seek divine love, a transcendent experience rooted in simplicity, freedom, and humanism that rejects societal divisions along caste, religious, and other lines (Urban, 1999). Bauls primarily reside in the West Bengal districts of Birbhum, Bardhaman, Bankura, Murshidabad, and Nadia. South Asian audiences increasingly favor Western musical genres over folk music, and folk artists’ traditional patronage and performance opportunities have dwindled in recent times. As a result, Baul singers often travel for work, and are thus accustomed to collaborating with different sets of musicians each time they perform.

Production of Baul music is an appropriate setting to investigate our research question for three key reasons. First, most Baul ensembles consist of a singer and a few instrumentalists who play such traditional Indian instruments as the dhol, dotara, harmonium, manjira and flute. Each member within the “team” has a distinct role, enabling a switch to asynchronous teamwork without changing the performance. This is an advantage over other contexts, such as white-collar

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3 We refer to Baul-Fakirs as Bauls for concision, which is common practice in the community.
settings, where work must be restructured first to accommodate asynchronous teamwork.

Second, both men and women sing Baul *sangeet*, but instrumentalists are primarily men. This configuration makes for gender diversity in one role but gender consistency throughout the rest of the team. Third, studio recording of folk music in India can be both synchronous (live group recordings) and asynchronous (solo recordings that are later combined digitally).

Historically, all music was recorded synchronously: members of an ensemble performed “live” together in a studio, where their musical output was recorded on tape. With the advent of digital recording technologies and asynchronous recording, individual members of an ensemble can now record their parts independently of each other. Each musician records their part alone in a studio on an independent track, wearing headphones to listen to a “click track” (a series of audio cues resembling a metronome). Eventually the individual tracks are combined to create the complete musical piece. A music producer and sound engineer are typically present at both synchronous and asynchronous recordings; the producer facilitates the recording process while the sound engineer manages the technical details of recording. Both synchronous and asynchronous recording processes are still used in India, allowing for a natural, empirical setting for our research.

**FULL-CYCLE RESEARCH METHODS**

We adopted a full-cycle research approach, which combines inductive and deductive methodologies (Cialdini 1980, Fine and Elsbach 2000, Ranganathan 2018). We first conducted ethnographic fieldwork and semi-structured interviews, which generated our theory and hypotheses. We then tested those hypotheses using a field experiment.

*Qualitative Methods*
Our qualitative data collection consisted of three phases: (1) Zoom and telephone interviews, (2) ethnographic observation in towns where Bauls live, and (3) ethnographic observation in recording studios.

We began this project in May 2020. To develop a preliminary understanding of the historical and present-day context of Baul folk-music ensembles, we interviewed (a) ethnomusicologists, (b) contemporary and classical Indian musicians who had experience with Baul or Baul-fusion music, and (c) Bauls themselves, via videoconferencing or telephone. In this phase of the project, we conducted 17 interviews averaging 1 hour in length. These interviews were semi-structured; we used a protocol but deviated from it to follow the natural flow of conversation. Our interviews touched on the livelihoods of Baul musicians, their audiences, their group dynamics, and the authenticity of their music.

We selected our first group of interviewees by means of a broad survey of recorded Baul music and academic research. We tried to identify individuals whose engagement with the genre was extensive. Initially, we contacted 25 individuals via email, Facebook message, telephone, or a combination of these media. When we first contacted interviewees, we stated our interest in studying the livelihoods of Baul musicians. About half of those we contacted expressed interest in the project; we scheduled interviews with them. Interviewees were eager to provide information and guidance because of their passion for the tradition, our expressed interest, and our novel academic approach to learning about Baul musicians. We also solicited or were offered referrals to other potential interviewees from most calls. Interviews were conducted in English or Bengali by the authors. The sessions were recorded for later transcription.
Equipped with this understanding of Baul folk ensembles, we then engaged in ethnographic observation. In June and July 2020, we conducted field visits to musicians’ homes and to akharas (performance venues) in four West Bengal districts: Birbhum (6.5 hours from Kolkata), Bardhaman (2.5 hours from Kolkata), Murshidabad (5.5 hours from Kolkata), and Nadia (4 hours from Kolkata). (See Appendix A for a map of these regions.) Some of these locales took several hours to reach due to poor road connectivity and conditions. A key purpose of the visits was to see Baul musicians perform, both with other musicians and alone. We met a diverse array of musicians, both men and women, during these field visits. We also used these visits to conduct one-on-one interviews with other Baul musicians; during this phase, we conducted an additional 25 formal semi-structured interviews and 7 informal interviews. The interviews were conducted by one of the authors in Bengali. These interviews focused on musicians’ journeys into this occupation, their relationships with the music, their typical and preferred performance formats, and their experiences with recording and with collaboration.

We worked with a local NGO to construct an interview sample that would be balanced across geography, gender, and age. The NGO also provided us local guides, whose initial introductions helped us begin fieldwork on a footing of trust and respect. We received a warm welcome from the Bauls, both because of their community traditions and because they appreciated our interest in their music. Every household or akhara offered us either a meal or chai; informal conversation during these interactions elicited a more robust picture of the artists’ lives. We took notes during each visit, in addition to recording interviews and performances.

Finally, we orchestrated three day-long recording sessions in Kolkata, where we engaged in ethnographic observation of instrumentalists and singers participating in informal jam sessions. During each session, a man and woman Baul singer recorded their music, while we took detailed
notes documenting interactions, body language, and dynamics between the musicians; we recorded the sessions with GoPros, and used the videos to supplement our notes. We also conducted in-depth interviews with all participants after each session. Our final experimental setup closely resembled these initial recording sessions: five instrumentalists accompanied the singer; producers and sound engineers facilitated recording; and the singer performed both an asynchronous and a synchronous recording.

We translated and transcribed all field notes and interviews, resulting in 628 pages of data. We inductively analyzed this open-ended information via multiple readings, memo-writing, and coding in Atlas.ti., generating our hypotheses and an experimental design to test the hypotheses.

**QUALITATIVE FINDINGS**

The sections that follow will describe synchronous work in this setting, and men’s and women’s differential experiences performing and recording Baul music asynchronously and synchronously, leading to the hypotheses that we tested in a field experiment. Note that interviewees sometimes referred to synchronous teamwork as recording “as an ensemble,” and to asynchronous teamwork as recording “using a click track” or “on tracks.”

**Working Synchronously**

Our observations and interviews revealed that Baul musicians typically worked synchronously, whether performing live or recording. In the words of one Baul musician (0702FV16):

> It has been almost 40 years that I have been performing now. We usually perform with around 5–6 people in a group. Our songs are all about the feelings—they equally belong to the person who is singing them and to the ones who are playing the instruments. We perform using instruments such as dotara, harmonium, flute, khamak (used sometimes), and percussion instruments such as dubki, kartaal, et cetera.
Apart from live performances, Baul musicians were also accustomed to recording synchronously with fellow musicians. As one musician (0627FV15) explained, “I have self-recorded my music 2–3 times before. While performing some new songs, if we feel like we are doing well and more people need to hear this, then we go and record it. The recordings mostly take place in an ensemble format and not on tracks.” Another musician (0625FV01) added:

I have recorded one song before, for which I was contacted by some people. They didn’t allow us to use our own instrumentalists there at the studio. You had to rehearse with their instrumentalists. The recording format which I generally follow is singing in a group, with the musicians playing the instruments. I have never recorded on tracks.

Bauls described the process of working on a piece with fellow musicians as a rather difficult negotiation among artists. As one musician (0608ZI14) explained, “All of the work that I do is a negotiated effort between me and the bandmates. We work together to figure out what sounds best; there are no pre-prescribed, pre-planned parts.” Another singer (0609ZI16) added: “When I bring something to my bandmates, we work out what would sound best based on how I’m singing the song, what my interpretation is.” A flautist (0716P102) added:

What generally happens in the case of folk music is that some artists sing a particular song in a specific style, and others sing it differently. Now, if I am used to hearing the song being sung in a specific style, and if someone else comes and sings it in another way, it doesn't necessarily mean that they are singing it all wrong. We have to create a balance with the singer in our own way at that time.

These negotiations take place both in synchronous studio recordings and in live performances.

One musician (0615ZI08) explained:

Our format is basically a “jam” format, which occurs due to the equal effort between the collaborators. For example, our lead vocalist might transition to a different song on stage which might not have been practiced at the time of the rehearsal. Then the other musicians automatically make that transition too, which happens on stage spontaneously. There is a level of comfort involved, without which this is not possible.
Another musician (0716P102) concurred: “Studio recordings … depend upon a mutual understanding between the musicians playing.”

Musicians also asserted that their own individual performances depended on the dynamics of the group. In the words of one musician (0716P102): “Such an issue should not arise where [one musician] has to stop his song and direct [the other musicians]. The understanding has to be there, so that the whole thing occurs spontaneously and the whole environment is created.” A singer (0608ZI14) explained:

The people I perform with know me very well; they understand my sound and I understand theirs. I sort of go into a meditative trance when I sing, and I perform whatever I feel I should, based on what the band is playing or others are singing. You have to have mutual respect for this; you have to value the other’s knowledge and talent. Otherwise, it simply won’t work.

One musician (0716P102) described a performance that had suffered because of unfavorable group dynamics and misunderstandings:

The music which you are playing depends a lot on the expression that comes along when the singer is singing the song. Unless the singer is able to express themselves properly, the other musicians can't give their best efforts. This has happened in the past due to some sort of misunderstanding between the musicians.

**Men’s and Women’s Experiences of Synchronous Performance**

Our data further revealed that men and women singers had experienced synchronous performances very differently. Men enjoyed performing synchronously with fellow musicians and felt that the group brought out the best in them. One man (0702FV16) said that “he still feels that the type of music which he performs best comes out when performed with his own people” (ethnographic notes). Another (0703FV22) explained: “I feel that the happiness which one can derive from performing for a live audience cannot be attained while recording inside a closed
studio room alone.” A third man (0716P102) agreed: “Singing in an ensemble format is always preferable, as we can directly keep track of what the other musicians are playing.”

In particular, the men felt that they were better able to express themselves in synchronous teams. As one man (0702FV16) said: “The real expression of the music only comes out while performing among a gathering. We want our songs to be amalgamated with the instruments that are playing in the background. There has to be a union of both of these elements while we are singing.” He added that “the expressions come out a lot better because your song complements the music being played at the same time and vice-versa.” A second man (0716P106) said: “Our songs are all about feelings. So if we get to see each other in front of us while playing, then definitely the jelling is better.” A third man (0716P107) added: “We do not sing these songs as per the notations. We sing based on our own feelings; it can sometimes turn out to be good and sometimes it can turn out bad.” Baul men explained that a song was more likely to turn out well if they performed synchronously because, as one man put it, they were better “able to express their creative voice” (0804P201).

The men also reported enjoying banter and creative discussions with their fellow musicians while working in a synchronous team; they enjoyed offering and receiving input on their work. As one man (0716P101) said about a synchronous recording session: “The fact that I could share my skills with you all is the greatest gift for me. What I loved most about the whole thing was that the seniors who were recording with me were correcting my mistakes. People generally get irritated if someone points out their mistakes, but I really appreciate that.” He also commented on the synchronous recording experience and said, “Throughout the process, I had a chance to air my own thoughts. There was a time when I felt that the aunty who was singing with me was a bit out of rhythm. I explained the issue to the people who were there and they took care of that.”
Men also tended to describe the group setting of synchronous recording as more motivating. In the words of the same man (0716P101): “People were encouraging me throughout, which further boosted my confidence; it felt like they were guiding me. I also got respect from all the people here. I also had a great experience interacting with the music producers; they were all very good.”

In contrast, women singers expressed far greater variation in their preferences for synchronous or asynchronous recordings. Some women agreed with the men that they performed best in group settings; this performance format was more familiar and thus less intimidating. In the words of one woman (0702FV18): “It becomes a lot easier for me when I sing with my own people around me, in my own setting; I am not so scared at that time anymore.” Another woman (0814P302) described recording without her fellow musicians as “a nerve-wracking experience.”

Other women singers expressed skepticism, however, about working in group settings. One woman (0804P207) reported: “There is always a hidden rivalry between the artists. . . The more popular ones [often men] will always try to assert their dominance over the less popular ones while performing together.” For this reason, another woman (0716P103) said: “If I am to record with some musicians, it will take some time for the jelling to happen.” The first woman (0804P207) also reported that she “did not receive as much respect from her fellow musicians as she deserved.” Other women described being constantly “corrected by [their] seniors” and sensing that their fellow musicians “did not stand by [them].” They reported an unspoken expectation that women should take criticism but not offer any: women, they elaborated, did not have the “right to point out any mistakes committed by their fellow musicians” and should “hide any feelings regarding the problems that they have faced while performing the songs.” As one
woman (0716P103) said, “I was scared to address some of my concerns to the people who were around.”

A few women reported being overtly held back in synchronous performances. One (0804P207) described in detail an occasion when she had felt unfairly judged and tried to stand up for herself.

Her effort backfired:

There are different types of artists. Some are really down-to-earth but not as talented, and some are very talented but at the same time will keep showing off. The flute player who was playing today was very talented; there is absolutely no doubt about it. But his behavior towards me was not nice. . . Now, I am not a person who talks a lot, but if I feel that I am facing obstruction in my work, I will definitely speak up. The person who was playing the flute was trying to establish himself as a big shot, and was constantly boasting about himself. He was trying to hint that I was not singing properly at certain points. This is not good. I feel that if my fellow musicians cooperated with me a little more in this regard, it would have been better. . . When I pointed out this mistake, and he was offended by it, no one else supported me even though they knew what I was saying was correct. . . From that point of view, I felt really bad today.

Several women described such behavior as routine: “These sorts of challenges are faced very frequently while recording in ensemble format,” as one woman (0804P207) put it, which often affected their songs. After a particularly difficult synchronous recording experience, one woman (0804P207) said: “I couldn’t please everyone with my song,” and lamented: “As long as I am not happy with how my song has turned out, how can I expect my listeners to be happy?” An instrumentalist (0804P201) who had performed alongside a woman singer concurred: “The female singer who was singing today was not at all comfortable, and it could be well seen. . . Unless she is able to portray the expressions of the song, it won't matter how well the musicians play their instruments because, after all, it is the song that the audience comes to listen to.”

As a result, one woman (0609ZI16) said: “It is very difficult being a woman in this industry. . . . There are a lot of different expectations people have. When I left home, I told my parents that I would chart my own path and not see myself as less equal because I am a woman, and that is
principle I live by even today.” Another woman (0703FV25) recalled: “There was a lot of struggle from the community when I first started out. People used to question my every move; they still do.”

**Women’s Experience of Creative Expression While Working Alone**

Our ethnographic observation also included seeing singers performing alone, in their homes and in studios where artists recorded their parts to a click track sequentially. Our data suggest that women Bauls seemed to be more effective when working alone. As one woman (0804P207) said, “I think I could give better effort while singing in click format than singing in ensemble format.” A music producer (0717ZI13) commented about a woman’s performance: “I had this notion that the aesthetics of the songs might come out better in non-click format rather than in click format, but surprisingly that didn’t happen at all.” Another woman (0627FV11) said, “For me, it is easier to sing alone” and “When I sing alone at home, I sing for myself, which is a different feeling altogether. When we sing in groups, we are performing for others.”

More specifically, our data suggest that women experienced more freedom for creative expression when they sang alone. As one academic (0724ZI02) observed, “I definitely think that they will be able to express themselves much more if they are separated from their men counterparts.” A woman (0814P302) who agreed explained that, when she recorded asynchronously, “Whatever I had within me related to that song. I was able to provide all of it.” Another woman (0702FV19) said, “When I sing alone . . . the expressions come out from within me.” A third woman (0814P302) reported that, when she sings alone, “The emotion of the song comes out. It could be that while I sing, I repeat a line twice. That happens when divine inspiration strikes; you yourself will lose all direction and go with the flow.” She continued:
The kind of emotions in the song that you are talking about doesn't come in cases where you are nervous. . . . That sort of emotions can only be expressed through the song when the singer will completely be able to get immersed in the music. . . . They literally get goosebumps all over his body. The musician goes into a state of trance at that moment, and even if he wants to, he cannot forcefully re-create that moment later on. I think it’s sort of a divine connection that occurs at that moment. . . . When such emotions in the song will come about, every single element of the music will fall into place. Not a single part of the song will be out of rhythm and everything will be perfect at that time.

Other women reported that singing alone afforded them the space and latitude and separation from fellow musicians to express themselves creatively and thus to improve their performance.

“It was because I was in my own element at that time,” one woman (0627FV11) said. “There was no one directing me to sing and perform in a certain way. If someone does that, I start getting nervous.” Another woman (0804P205) said, “I felt more comfortable while playing in click format, because here it was not necessary to know every one of my fellow musicians and rehearse more before performing my section of the music. I just heard the rhythm of the click track through my headphones and recorded my part.” A third woman (0804P204) said, “I think that, while recording on click track, every musician is able to concentrate a lot more in playing his own part. At that time, he is not constantly distracted by the thought of which musician's section he has to follow, or when he has to enter or leave a song, which generally happens in case of ensemble recording.” Another woman (0804P207) said:

I really enjoyed singing in the click format. In most cases, what happens is that when I sing in click format, the music keeps on playing in my mind. Hence, I find it easier to sing accordingly. Also in this format, no male musician is trying to assert their dominance over me while I am singing. I felt more comfortable singing in this format. I had complete creative freedom in this format; I did not face any major problems here.

Some men singers reported the same benefits of working alone. One man (0703FV23) said, “I also find that recording alone in a separate room is a good thing, because it helps you concentrate on your music without any external distractions; I don’t necessarily think that it is a bad idea.” Another man (0804P202) agreed:
When everyone is playing together in an ensemble format, I have to constantly keep track of who is playing in which way so that I can adjust accordingly. My attention is constantly divided in that case, and my individuality is lost in the process. But in the case of click recording, I am able to concentrate completely on my work. I am not distracted by how others are playing their instruments at that time. So I can retain my individuality in my performance while recording on click track.

However, the men singers were less constrained than their women counterparts in group settings. They reported fewer incidents of fellow musicians “asserting their dominance” and “directing [them] to sing and perform in a certain way”; thus the benefits they experienced from singing alone were less pronounced. More variance was also evident in the attitudes of the men singers toward singing alone. Indeed, more men singers explicitly disliked singing asynchronously. One man (0702FV26) asserted that “the expression of the artists will not come through [asynchronous recording] well.” Another man (0804P201) elaborated:

> The thing which is not good about this [asynchronous] format of recording is that one cannot get that happiness that one usually gets while performing in harmony in a group, with all the instruments being played together. That’s a feeling that is missing while recording on click format.

**Hypotheses**

This qualitative data led us to generate some general hypotheses that we then sought to test systematically with a field experiment. Our first hypothesis stems from the differing experiences of men and women when working in groups and alone. Our data suggest that women Baul singers might perform better when singing asynchronously rather than synchronously, a pattern that might not apply to their men counterparts. Thus we hypothesize:

**Hypothesis 1:** Women will perform better when teamwork is asynchronous rather than synchronous; men will experience no significant difference in performance.
Our second hypothesis pertains to the mechanism underlying the first hypothesis. Our qualitative data suggest that singing alone frees women to express themselves creatively. We hypothesize:

**Hypothesis 2:** Freedom of creative expression is a key mechanism underlying the performance boost that asynchronous teamwork affords to women artists.

**EXPERIMENTAL DESIGN**

In keeping with full-cycle research, we designed a field experiment to test these hypotheses.

**Experimental Subjects**

*Bauls.* Our key experimental subjects were Baul singers. Ninety-nine\(^4\) singers (50 men and 49 women) from five West Bengal districts—Birbhum, Bardhaman, Bankura, Murshidabad and Nadia—participated in the experiment. A map of the singers’ home locations appears in Appendix A. We identified potential participants via (1) a list of Bauls provided by BanglanatakDotCom, a West Bengal NGO that works with folk musicians and other indigenous artists and craftspeople, (2) field visits, and (3) referrals from other participants.

We contacted potential participants via telephone, and described our research question as “understanding how the music-recording process could be made easier for Bauls.” Each willing candidate was asked a set of demographic questions, and then asked to submit an audition tape; candidates were not told that the tapes would be used for screening or selection purposes. Audition tapes were ranked for musical quality by decile, and the top 50 artists of each gender were invited to record in a studio.

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\(^4\) One less woman participated than originally planned due to logistical problems.
A promised honorarium of INR 5,000 ($65) motivated subjects to participate, as did the opportunity to record in a professional studio. Subjects were not told that they would record both synchronously and asynchronously, nor informed about the research question or our hypotheses.

Non-Experimental Participants

Instrumentalists, producers, and sound engineers also participated in the studio recordings: we worked with a total of 3 producers, 3 sound engineers, and 15 instrumentalists across 3 recording studios (that is, 1 producer, 1 sound engineer, and 5 instrumentalists at each studio). These non-experimental participants were all men. At each studio, the lineup of non-experimental participants remained unchanged throughout all recording sessions.

Producers. Producers were chosen based on their eminence in the field and prior experience working with Baul or Baul-fusion music. Producers helped singers record effectively in both the control and treatment conditions but did not directly plan musical arrangements. Producers were instructed to be equally encouraging to the artists in both the control and treatment conditions. They were unaware of the project’s hypotheses and research question.

Instrumentalists. Instrumentalists were recommended by BanglanatakDotCom and selected on the basis of experience. To maintain comparability, all singers were accompanied on the same set of instruments: dhol, dotara, harmonium, flute, and manjira. Singers were not allowed to play instruments while singing.

Sound engineers. The sound engineers were provided by the recording studios, and were responsible for operating the digital recording equipment.
A team of 5 research assistants also helped execute the experiment. They too remained uninformed about the research question and hypotheses.

**Experimental Treatment and Within-Person Research Design**

Each team of musicians recorded a pre-assigned song under two experimental conditions: synchronous and asynchronous teamwork. Our approach in each condition, and the overall studio environment, were modeled on standard music-industry practice.

**Control Condition:** All musicians record “live,” synchronously. See Figure 1.1.

**Treatment Condition:** Each musician records alone, beginning with the singer. The song is then built up layer by layer as tracks are recorded. When the singer records, no other musician is present. See Figure 1.2.

In short, each singer records the same pre-assigned song twice, synchronously (control condition) and asynchronously (treatment condition). See Table 1 for a visual representation of the key variation we exploit in this experiment.

**Song Choice**

Each singer was assigned a Baul song of the research team’s choosing. Singers were deliberately assigned songs they had not previously performed. The evening before recording, a singer was asked about prior familiarity with a set of three to five songs compiled by the research team. Each singer was assigned a song that they had not previously learned or performed; the song’s lyrics and two different MP3 recordings by known artists were then sent to the singer via WhatsApp. Singers were urged to prepare an individual rendition, not to try to replicate either
MP3 version; two versions were provided to discourage imitation and encourage personal interpretation.

**Location Logistics**

The experiment was performed at three recording studios in the South Kolkata area, using similar equipment and similar layouts. Recording took place over the course of 21 days, between August 22 and September 19, 2020. Recording was suspended on government-mandated lockdown days related to the COVID-19 pandemic, and the utmost care was taken to perform temperature checks and follow safety protocols.

Cars were hired to transport participating singers to and from their homes for reasons of safety and comfort. Subjects were required to travel alone, without companions, for safety reasons and to avoid extraneous influence.

**Recording Sessions**

Each recording session followed a prescribed but randomly assigned schedule in which singer order and treatment condition order were each randomized. Consequently, there were four possible schedules which varied the order of the singers’ performances with respect to each other and which condition they completed first. (See Appendix B for an example of one of the four schedules.) All sessions began with 45 minutes of jamming or rehearsal for the instrumentalists and singers to figure out how they wanted to approach the song. At the start of each day, the producer read a prompt explaining the day’s agenda to the subjects: “Today you will be recording the song provided to you yesterday, in two formats: one where you all perform together, and another where you record individually and in conjunction to a click track.” Singers were given the same amount of time to record in the control and treatment conditions, and
encouraged to complete as many takes as possible during their scheduled time, utilizing it fully. Producers were asked to adhere to the overall schedule and not to allow unplanned breaks or changes. The actual duration of each step in the process was noted on a daily timesheet, signed by the research assistants and the producers.

Except while reading the prompt, for which the producer entered the recording floor, the producer interacted with the musicians via intercom from a separate control room, a standard practice in the music industry. The control room and recording floor were mutually visible through a pane of glass. During takes, only the singer whose session was being recorded, the instrumentalists, and the research staff were allowed on the recording floor. In the treatment condition, the singer was alone on the recording floor. When not recording, musicians could interact with each other and with lab staff in break rooms or common areas.

**Other Data: Video Recordings, Interviews, and Observations**

Each session was recorded with one GoPro camera placed in the control room and one on the recording floor, which the participants were aware of. Each research assistant also moved back and forth between the two rooms during takes to observe and take written notes on interactions between participants. No explanation of research motives or experimental-design choices was offered to participants beyond the initial outreach and recording instructions. Participants were asked not to discuss their experiences in the studio with others until the project had ended.

We surveyed and interviewed all the singers after they had completed both conditions. The surveys consisted of Likert scale questions about the singers’ experiences while recording in synchronous and asynchronous teams, in addition to demographic information. The interviews were open-ended, enabling singers to describe and reflect on their recording experiences; they
lasted 30 to 45 minutes. The producers and instrumentalists completed a brief survey at the end of each day; the instrumentalists also participated in more extensive surveys and open-ended interviews at the beginning and end of the project.

**EXPERIMENTAL VARIABLES**

The 198 treatment and control recordings (99 singers, 2 recordings per singer) were subjected to a process of audio coding whereby the musical output was rated by experts on a variety of parameters of musical quality. These ratings provided us a set of variables that we could use to compare a given singer’s treatment and control “performances.” Because the experiment, and thus the audio-coding process, was organized to evaluate singers’ performances, each audio track was processed by a professional sound engineer to highlight the vocals. Expert evaluations are a common way to assess quality of musical performance. Expert evaluation of singer performance is important because it is an indicator of critical acclaim or success in the music industry. Even in ensemble performances, music producers, brokers, and other industry experts evaluate the performances of individual musicians to decide who to work with and who to promote next.

We selected 4 expert coders, 2 men and 2 women, from an applicant pool of over 30. Some candidates were participants in academic music programs; others had extensive vocal-performing experience. Those who passed an initial résumé screen were invited to code a sample of 2 songs; their responses were compared to those of the research team (who had previously completed the exercise) for completeness and accuracy. Candidates who passed the coding test were then interviewed by two research assistants to assess their commitment to the project.

Coding proceeded full-time over roughly one week in Spring 2021. Each recording was coded by 2 coders. In preparation, the research team provided in-depth training on each metric, and on the
operation of the online tool created for the project. Coders were advised to begin by listening to a track in its entirety, then to listen closely and timestamp any “event” they noticed, and then to assign it to one of nine categories, such as pitch, timing, modulation and vocal arrangement. Each timestamp also required a comment, specifying what had drawn the coder’s attention to that event. These timestamps facilitated measurement of creative expression. Finally, coders assigned an overall rating, on a 1–10 scale, from very poor to exceptional, on three dimensions—overall performance, vocal range, and tonal quality—to the singer and to the overall group performance. Though the coding process followed a strictly enforced set of guidelines, these metrics ultimately reflect the coders’ perceptions. Coders remained unaware whether a track was recorded synchronously or not.

**Dependent and Independent Variables**

We consider a total of four dependent variables, each of which can assume a value between 1 and 10. The first variable, *Singer performance*, measures the overall performance of the singer. *Singer tonal quality* measures the sound quality, or timbre, of the singer’s voice; *Singer vocal range* assesses the spectrum of musical notes the artist can produce. Finally, *Group performance* is a rating of the overall performance of the group as a whole, and of its cohesiveness.

Two independent variables are of particular interest: *Woman* and *Treatment*. *Woman* is a dummy variable that assumes a value of 0 when the singer is a man and 1 when the singer is a woman. *Treatment*, a dummy variable that indicates whether a session was asynchronous or synchronous, assumes a value of 0 for synchronous sessions and 1 for asynchronous sessions.

**Mediator Variable: Creative Expression**
Our measure of *Creative expression* consisted of the number of coded timestamps—that is, the individual occurrences—of three variables that capture singers’ creative choices: modulation, phrasing, and vocal arrangement. The measure is essentially a count of the number of occurrences of creative expression in a performance. *Modulation* indicates how well a singer adapts his or her voice to the essence of a song, creating appropriate and musically interesting variations in loudness and generating dynamic variations. *Phrasing* captures whether the vocal phrases are musically and rhythmically interesting, consistent throughout the song, and relevant to the musical context. *Vocal arrangement* indicates whether the singer selected a key suitable to the song and to his or her vocal range, produced a nuanced performance characterized by clever improvisations, and took into consideration the complexity of these nuances. (Appendix C provides the descriptions of the three variables given to coders in a Coding Protocol document.)

**Moderator Variables**

Will all women in this study be equally affected by the asynchronous treatment? To address this question, we considered two variables that moderate the gendered effect of asynchronous teamwork on individual performance, *High tenure* and *Baul parent*. *Tenure* is a measure of how many years the singer had been performing. We constructed the dummy variable *High tenure* to indicate whether a singer had 20 or more years of experience as a performer. (Twenty years of experience was the median for singers in the study.) We consider this variable because more experienced women singers may be better able to overcome the creative hindrances of working synchronously with men instrumentalists, and may thus experience a less pronounced boost in performance when recording asynchronously. *Baul parent*, a similar dummy variable, indicates whether a singer had a Baul musician as a parent. A singer’s parentage determines their childhood environment and exposure to Baul ensembles. We consider this variable because
women singers with Baul backgrounds might be better equipped to express themselves creatively when working in synchronous teams, and might thus experience a smaller performance boost when performing asynchronously.

Ultimately, the dataset we used for our analysis was at the singer-session level with 198 observations (99 singers and 2 recording sessions per singer).

**EXPERIMENTAL RESULTS**

Table 2, Panel A, presents descriptive statistics for the 99 singers, by gender. The groups are broadly similar, but the men are on average older and more experienced as performers than the women. The women, on the other hand, tend to be more highly educated and Hindu. This configuration is in keeping with our field interviews, in which men tended to be in the majority and incumbent; women were less experienced as performers and tended to live in Hindu areas. Both groups spent a mean of 117 minutes rehearsing their assigned songs.

**INSERT TABLE 2 HERE**

Table 2, Panel B, presents descriptive statistics for the 198 recording sessions. All singers performed both synchronously and asynchronously, and the sessions were distributed nearly equally by gender. Coders were stringent in their evaluations: in the aggregate, singers received an average score of 5.624 (out of 10) for their overall performance. A mean of 1.542 instances of *Creative expression* were logged per session.

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5 Note that in additional analyses, we confirm that this difference in experience does not drive the difference in the effect of the asynchronous treatment for men and women singers.

6 Hindu communities tend to be more gender egalitarian (Desai and Temsah 2014).

7 Our sample consisted of 49 women and 50 men, resulting in 98 recording sessions with women singers and 100 sessions with men singers.
Figure 2 compares the mean overall synchronous and asynchronous performance of men and women. Both groups experienced an improvement in performance when shifting to the asynchronous condition, but the difference is larger and statistically significant only for women. Women earned on average 1.239 extra points when they performed asynchronously; men earned on average only 0.285 extra points. Given that the mean of Singer performance is 5.624, asynchronous teamwork improves the performance of women by 17% as compared to men. It is also noteworthy that, on average, men singers were more highly rated than women. Figure 2 offers preliminary support for Hypothesis 1. To ensure that the findings are robust to the addition of controls, we ran further specifications, presented in Tables 3–5.

INSERT FIGURE 2 HERE

In Table 3, overall singer performance is regressed against a dummy variable Asynchronous, a dummy variable Woman, and the interaction Asynchronous x Woman. Model 1 does not include singer fixed effects while model 2 does. Estimates are from OLS models, and standard errors are clustered by singer. Figure 2’s initial findings hold in these regressions. On average, women were rated 30% lower than men when recording synchronously; performing asynchronously enabled them to close this gap by more than half, to 14%. The coefficient for the interaction Asynchronous x Woman is 0.955, statistically significant at the 0.01 level. The results are robust to the inclusion of singer-level fixed effects in model 2, which controls for individual time-invariant characteristics.

INSERT TABLE 3 HERE

As a robustness check, we additionally tested Hypothesis 1 with two other singer-level dependent variables: (1) tonal quality and (2) vocal range. The results for these regressions
appear in Table 4, models 1 and 2. The regression setup is the same as in Table 3. The results are also in line with those from Table 3: women received 35% and 34% lower ratings than men for tonal quality and vocal range respectively when recording synchronously, but asynchronous teamwork closed the gaps to 20% and 19% respectively. These results are statistically significant at the 0.05 level.

We were also curious how asynchronous teamwork would affect evaluations of group performance for ensembles with women and men singers. It would be reasonable to expect that, if women singers individually perform better asynchronously, the same scenario would also improve group performance, and this is exactly what we found. The gap in group performance between ensembles with men and women singers was 22% when recording synchronously, but dropped to 14% when recording asynchronously. This result is marginally significant (p<0.10).

The regression in Table 5 tests our second hypothesis, that enhanced creative expression is the mechanism whereby women achieve better performance when recording asynchronously. We use the classic Baron and Kenny (1986) approach to mediation analysis, which requires satisfaction of three conditions: (1) that the key independent variable (Asynchronous x Woman) is a significant predictor of the dependent variable (Singer performance); (2) that the key independent variable is a significant predictor of the mediator (Creative expression); and (3) that the coefficient for the key independent variable is greatly reduced when adding the potential mediator. Condition 1 is established in Table 3. Condition 2 is established in Table 5, model 1: when regressing creative expression against Asynchronous, Woman, and Asynchronous x Woman, the coefficient for Asynchronous x Woman is positive, large, and statistically significant.
Condition 3 is established in Table 5, model 2: when we add *Creative expression* to the main regression from Table 3, the coefficient for *Asynchronous x Woman* shrinks in magnitude and statistical significance. These conditions provide evidence in support of Hypothesis 2, that creative expression is a key mechanism underlying the gendered performance effects of asynchronous teamwork.

**INSERT TABLE 5 HERE**

Table 6 provides additional quantitative evidence for our mechanism of creative expression with two variables—*High tenure* and *Baul parent*—that moderate the positive effect of asynchronous recordings for women. The reasoning here is that either longer tenure or having a parent in the profession would instill greater confidence in the singer, and would thus be expected to diminish women’s need for working asynchronously in order to perform freely. This is indeed what we find, as demonstrated by the negative coefficients and statistical significance of the interactive variables *Asynchronous* *Woman* *High tenure* and *Asynchronous* *Woman* *Baul parent*. In other words, the benefits of recording asynchronously are diminished among those women who are able to express themselves in the presence of men instrumentalists – experienced singers and those with Baul parents – thus further supporting our mechanism of creative expression.

**INSERT TABLE 6 HERE**

**ADDITIONAL QUALITATIVE EVIDENCE**

In addition to the quantitative analyses that provide support for Hypothesis 2, we also interviewed experimental participants about their experiences while recording. Creative expression - or lack thereof - often featured in women's descriptions of their recording experiences. In synchronous settings, it was clear that women were often discouraged from
expressing their capacities fully; such interference ranged from being asked to “tone it [expressiveness] down” to experiencing an utter lack of creative control over the song. Given that Baul music is famous for its emotion, these singers being asked to hold back emotionally shows the extent to which the critiques they suffer from men colleagues are not about the objective quality of their work. For instance, one woman (0917FE88) reported after her performance that “This one time I was saying that if it [the song] could be done a little differently, [it might be better]. Then the one who was playing the harmonium said that ‘This is Saiji’s song, which is a common song, so keep it like this without changing your tune.’ So I said OK.”

By contrast, asynchronous recording offered women a setting free from the influence of their men team members, where they felt empowered and performed better. As one participant (0830FE39) noted, “It was because no one else was present in the room at that time. I was all alone. That’s why I could express my feelings more.” Lack of interference by their male colleagues also allowed them to improvise: “I didn’t use the conventional melody in which the song is actually sung. The melody which I have used in the song is my own,” one woman (0830FE36) said. Another participant (0826FE17) said that singing alone afforded her the opportunity to experiment with different techniques: “I tried to sing with an arai pyach style, trying to ensure my performance was not lost in the process of its capture.” Table 7 presents this and other supplemental qualitative data from our experimental participants.

DISCUSSION
This project began with the aim of understanding the differential effects of the temporal restructuring of work on men’s and women’s performance. Our exploration focused on synchronous and asynchronous recordings of Baul folk ensembles in West Bengal. Through interviews and ethnographic observation, we developed two hypotheses: (1) that women singers will uniquely experience a boost in performance when working asynchronously, and (2) that the source of this boost in performance is greater freedom for creative expression than is available in synchronous settings. In a field experiment, 99 men and women Baul singers were each recorded twice, singing synchronously and asynchronously, with a standard set of instrumentalists. Our results show that asynchronous teamwork improves women’s performance—expert evaluations increase nearly 30%—but not that of their men colleagues. We further establish creative expression as a key mechanism underlying this pattern through mediation analysis and additional qualitative evidence from experimental participants.

These findings are stark for two reasons. First, even though women singers had more experience with synchronous performances and recordings, they actually performed better in the less-familiar asynchronous setting. Second, even though singers are typically in a leadership position within a team of musicians, women singers felt more free to express themselves when they recorded asynchronously, suggesting that in other contexts where women are not in leadership roles, the effects we document might be even stronger.

**Contributions to Scholarship on Temporal Restructuring of Work and Distributed Teamwork**

This paper makes two contributions to the study of temporal restructuring and distributed teamwork. First, it investigates the direct impact of asynchronous work arrangements on
individual performance within teams. Prior scholarship on temporal restructuring has largely focused on three outcomes: work-family balance, emotional and physical wellbeing, and turnover (Moen et al 2011, Kelly, Moen and Tranby 2011, Moen, Kelly and Hill 2011, Caza and Wrzesniewski 2014). The key mechanism by which temporal restructuring is posited to affect these outcomes is schedule control, or individuals’ control over when and how much they will work (Kelly et al 2011, Perlow 2014). Other research, on global and virtual distributed teams, investigates the effects of physical and temporal distance on team cohesion, trust, and effectiveness (Rhymer 2020, Maznevski and Chudoba 2000, Hinds and Mortensen 2005). This paper, by contrast, and for the first time in the literature, investigates the effect of asynchronous teamwork on individual performance in teams. It thus looks beyond how work fits into individuals’ lives; it also takes seriously the idea that, irrespective of the effects of temporal restructuring on overall team outcomes, individual team members might respond to the opportunities afforded by asynchronicity in ways that merit deeper investigation. Given that asynchronous work arrangements are increasingly widespread, this investigation is important and timely.

Second, the paper studies the heterogeneous performance effects of asynchronous teamwork on men and women. Scholars acknowledge that asynchronous teams are diverse (Neeley 2021), but the literature implicitly assumes that men and women transitioning from synchronous to asynchronous teamwork will face a uniform set of issues and will thus respond similarly in terms of performance. Some attention has been paid to how individuals of different nationalities respond to asynchronous work arrangements (Mell, Jang and Chai 2021), but gender diversity has gained less attention (Abbott 1993, Kelly et al 2011). This paper fills a notable gap by demonstrating that asynchronous teamwork has specific performance implications for women,
above and beyond schedule control and reduction of work-family conflict. In particular, the fact that our experiment did not vary the extent to which subjects could control their schedule, the work setting, or their work-family balance highlights the direct impact of asynchronicity itself on women’s work performance.

**Contributions to Scholarship on Women in Teams**

This paper also makes two key contributions to the study of women in teams. First, though the literature has long acknowledged that women in teams have been held back from performing to their full potential in many ways (Cohen and Zhou 1991, Ridgeway 1991) and that this phenomenon can affect team performance (Thomas-Hunt and Phillips 2004, Joshi 2014), the conditions under which individual women on teams might be able to perform better have received less attention. And though, in the words of one team of scholars, “the nature of [teams] has been changing at an accelerating pace,” little research has investigated whether newer teamwork arrangements might help women (Wageman, Gardner and Mortensen 2012: 301). This paper takes a first step in that direction by looking beyond the “archetypal team” to investigate how asynchronous teamwork affects the performance of men and women differently. Indeed, we find that women perform better in an asynchronous teamwork scenario than in a synchronous arrangement. This is an important finding: it suggests that changes to the structure of teamwork can ameliorate some of the historical disadvantages that women have faced in teams, allowing them to put their best foot forward. This conclusion is especially salient at this moment in time, when firms are experimenting actively with how they organize teams.

Second, this paper highlights a novel mechanism—creative expression—whereby asynchronous teamwork improves women’s performance. Working asynchronously and alone affords women
greater freedom from teammates to express themselves creatively at work. There are various reasons – for example, stereotype threat and gender norms (Smith et al. 2016, Ellemers 2018, Mendelberg et al. 2014) – why women might be less likely to express their creativity in group work with men. Determining which of these factors is at play in our study is beyond the scope of this paper; our argument is simply that asynchronous teamwork will produce higher quality performances by women on mixed-gender teams than synchronous teamwork, and that this relationship is mediated by freedom of creative expression.

**Generalizability and Future Research**

We expect the findings presented in this paper to be relevant to a wide array of workplaces. Most immediately, this research shows that a structural change, such as a shift to asynchronous teamwork, can enhance the recording experience and performance of women in the music space. Although live performances are inherently synchronous, music recording is increasingly done asynchronously, making this a realistic option for recording artists. Beyond gender, other demographic minorities might also experience more freedom for creative expression when teamwork is asynchronous, which might explain why, as some reports suggest, minorities have been quick to embrace distributed work arrangements (Dupree 2022). Empowering historically marginalized minorities to express their creative abilities may not only enhance traditional performance, but also facilitate better collaborations. Demographic minorities in other artistic professions, ranging from movie production to architecture, may also display improvements in creativity, and hence productivity, with a move to asynchronous teamwork. Though this paper focuses on music production, work in a wide variety of domains has elements of creativity; thus we expect this pattern to be widely generalizable. We can imagine, for example, that women in
asynchronous scientific teams will put forth creative suggestions to advance research projects more readily than they would if the teams operated synchronously.

The question of whether temporal restructuring of work is feasible in a broad range of professions has been answered by the COVID-19 pandemic. With global economic recovery, however, organizations now face the opposite question: whether to revert to synchronous work to maximize output. We posit that, alongside women in music, other disadvantaged and minority groups (e.g., due to race or sexual orientation) in other industries also stand to benefit from asynchronous work arrangements. As Jennifer Nason, J.P. Morgan’s global chairman of investment banking, has observed about technologies facilitating new forms of work: “[These technologies] created a profound shift in the power dynamics of group interactions. . . . I have witnessed many women in investment banking, young women in particular, find their voices and project newfound confidence in this virtual square. Remember, this is an industry still dominated by men and the physical manifestations of assertiveness and power” (Wall Street Journal, July 2, 2021). The asynchronous-work effect has also shown up among racial minorities. A recent 10,000-person survey conducted by the Future Forum, a research consortium created by Slack Technologies, bolsters the JP Morgan anecdote with a “26 percentage point increase in Black respondents reporting ‘I am treated fairly at work’ from a year ago, and similarly big jumps in other questions about their work lives” (Financial Post, October 5, 2021).

We do not expect our findings to be limited to India. There is considerable documentation of the consistency with which women’s voices are more constrained than men’s in mixed-gender groups (Mendelberg et al. 2014). Furthermore, stereotypes and norms of women deferring to men are global phenomena (Ellemers 2018, Fiske 2017). In fact, by studying Baul folk music ensembles in India, we are extending the number of work environments to which the findings on
teamwork can be applied. That being said, different types of work are likely to benefit to different degrees from asynchronous teamwork. In circumstances where coordination costs outweigh positive creative effects, overall performance may decline. Industries that already enjoy considerable gender equity because of high representation of women, or where women feel equally empowered in synchronous and asynchronous work environments, might see little improvement. Our study was conducted in a men-dominated field with clear gender stereotyping; as these characteristics are mitigated, so too may be the benefits of asynchronous teamwork. However, given that women are less likely than men to be heard in informal group conversations or in political organizations, even when they have a simple majority, we do expect the effect we found to apply even to settings with more than one woman (Karpowitz and Mendelberg 2014, Mendelberg et al. 2015, and Mendelberg et al. 2014).

In conclusion, the fundamental takeaway is that women tend to feel freer and do better in environments where they are not dominated by colleagues. Given the ubiquity of mixed-gender teams in diverse work settings, we believe that temporal restructuring of work represents a striking opportunity to lessen gender differences in performance.


Mendelberg, T., Karpowitz, C., & Oliphant, J. (2014). Gender inequality in deliberation: Unpacking the black box of interaction. *Perspectives on Politics,* 12(1), 18–44. [https://doi.org/10.1017/S1537592713003691](https://doi.org/10.1017/S1537592713003691)


https://www.forbes.com/sites/forbestechcouncil/2020/05/20/remote-working-the-new-normal/?sh=5e6453593b12

https://doi.org/10.1177%2F1046496406297042

https://doi.org/10.1177/0963721409359292


https://doi.org/10.2307/2787024

https://doi.org/10.1023/B:QUAS.0000020694.53225.23

https://doi.org/10.1007/978-94-017-9897-6_13

https://doi.org/10.1086/217540

https://doi.org/10.1006/jesp.1998.1373

https://doi.org/10.1146/annurev-psych-073115-103235

https://doi.org/10.1287/orsc.13.5.583.7813


Stropoli, R. (2021, August 18). Are We Really More Productive Working from Home? Data from the pandemic can guide organizations struggling to reimagine the new office. Chicago Booth Review.  
https://www.chicagobooth.edu/review/are-we-really-more-productive-working-home


Figure 1: The Control and Treatment Conditions

Figure 1.1. Control Condition: The Singer Performs with Instrumentalists

Figure 1.2. Treatment Condition: The Singer Performs Alone
Figure 2: Differential Performance by Singers’ Gender and Treatment Condition

Note: 95% confidence interval bars are drawn around the mean.

Table 1: Recordings by Gender of Singer and Treatment

<table>
<thead>
<tr>
<th></th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment (Asynchronous)</td>
<td>50</td>
<td>49</td>
</tr>
<tr>
<td>Control (Synchronous)</td>
<td>50</td>
<td>49</td>
</tr>
</tbody>
</table>

Note: One less woman performed than was originally planned due to transportation problems.
Table 2: Descriptive Statistics

Panel A: Singer-Level (n=99)

<table>
<thead>
<tr>
<th></th>
<th>Men</th>
<th>Women</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>48.38</td>
<td>38.61</td>
<td>9.768***</td>
</tr>
<tr>
<td></td>
<td>(14.33)</td>
<td>(13.61)</td>
<td></td>
</tr>
<tr>
<td>Proportion married</td>
<td>0.840</td>
<td>0.755</td>
<td>0.085</td>
</tr>
<tr>
<td></td>
<td>(0.370)</td>
<td>(0.434)</td>
<td></td>
</tr>
<tr>
<td>Proportion with no children</td>
<td>0.180</td>
<td>0.224</td>
<td>-0.044</td>
</tr>
<tr>
<td></td>
<td>(0.388)</td>
<td>(0.422)</td>
<td></td>
</tr>
<tr>
<td>Proportion Hindu</td>
<td>0.380</td>
<td>0.653</td>
<td>-0.273**</td>
</tr>
<tr>
<td></td>
<td>(0.490)</td>
<td>(0.481)</td>
<td></td>
</tr>
<tr>
<td>Proportion backward castes</td>
<td>0.380</td>
<td>0.449</td>
<td>-0.069</td>
</tr>
<tr>
<td></td>
<td>(0.490)</td>
<td>(0.503)</td>
<td></td>
</tr>
<tr>
<td>Years of education completed</td>
<td>9.160</td>
<td>11.08</td>
<td>-1.922**</td>
</tr>
<tr>
<td></td>
<td>(2.972)</td>
<td>(4.010)</td>
<td></td>
</tr>
<tr>
<td>Monthly earnings from music (in Rupees)</td>
<td>8630.2</td>
<td>7074.5</td>
<td>1555.710</td>
</tr>
<tr>
<td></td>
<td>(9207.1)</td>
<td>(8516.9)</td>
<td></td>
</tr>
<tr>
<td>Number previous synchronous recordings</td>
<td>7.080</td>
<td>3.449</td>
<td>3.631</td>
</tr>
<tr>
<td></td>
<td>(11.28)</td>
<td>(8.725)</td>
<td></td>
</tr>
<tr>
<td>Number previous asynchronous recordings</td>
<td>1.600</td>
<td>0.735</td>
<td>0.865</td>
</tr>
<tr>
<td></td>
<td>(2.871)</td>
<td>(1.857)</td>
<td></td>
</tr>
<tr>
<td>Tenure (in years)</td>
<td>27.62</td>
<td>15.97</td>
<td>11.651***</td>
</tr>
<tr>
<td></td>
<td>(14.47)</td>
<td>(11.01)</td>
<td></td>
</tr>
<tr>
<td>Proportion with Baul parent</td>
<td>0.600</td>
<td>0.408</td>
<td>0.192</td>
</tr>
<tr>
<td></td>
<td>(0.495)</td>
<td>(0.497)</td>
<td></td>
</tr>
<tr>
<td>Proportion who knew any instrumentalists in experiment</td>
<td>0.920</td>
<td>0.857</td>
<td>0.063</td>
</tr>
<tr>
<td></td>
<td>(0.274)</td>
<td>(0.354)</td>
<td></td>
</tr>
<tr>
<td>Number of minutes spent practicing song for experiment</td>
<td>117</td>
<td>117.6</td>
<td>-0.551</td>
</tr>
<tr>
<td></td>
<td>(143.0)</td>
<td>(127.5)</td>
<td></td>
</tr>
<tr>
<td>Observations</td>
<td>50</td>
<td>49</td>
<td></td>
</tr>
</tbody>
</table>

Backward castes include scheduled castes, scheduled tribes, and other backward castes as defined by the Indian constitution; mean coefficients; sd in parentheses

* p<0.05, ** p<0.01, *** p<0.001

Panel B: Recording-Session-Level (n=198)

<table>
<thead>
<tr>
<th></th>
<th>Both Men and Women</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
</tr>
<tr>
<td>Proportion of recording sessions asynchronous</td>
<td>0.500</td>
</tr>
<tr>
<td>Proportion of sessions with female singer</td>
<td>0.495</td>
</tr>
<tr>
<td>Number of instrumentalists</td>
<td>5.000</td>
</tr>
<tr>
<td>Performance of singer (1-10)</td>
<td>5.624</td>
</tr>
<tr>
<td>Tonal quality of singer (1-10)</td>
<td>5.176</td>
</tr>
<tr>
<td>Vocal range of singer (1-10)</td>
<td>5.384</td>
</tr>
<tr>
<td>Performance of group (1-10)</td>
<td>6.183</td>
</tr>
<tr>
<td>Creative expression (count)</td>
<td>1.542</td>
</tr>
</tbody>
</table>

Creative expression is the number of the coded timestamps of three variables that capture singers’ creative choices: modulation, phrasing, and vocal arrangement
Table 3: Differential Effect of Asynchronous Teamwork on Singers’ Performance, by Gender

<table>
<thead>
<tr>
<th></th>
<th>Singer performance (1)</th>
<th>Singer performance (2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asynchronous</td>
<td>0.285 (0.230)</td>
<td>0.285 (0.325)</td>
</tr>
<tr>
<td>Woman</td>
<td>-1.879*** (0.342)</td>
<td></td>
</tr>
<tr>
<td>Asynchronous*Woman</td>
<td>0.955** (0.314)</td>
<td>0.955* (0.444)</td>
</tr>
<tr>
<td>Constant</td>
<td>6.175*** (0.249)</td>
<td>6.108*** (0.163)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observations</td>
<td>198</td>
<td>198</td>
</tr>
<tr>
<td>Clusters</td>
<td>99</td>
<td>99</td>
</tr>
<tr>
<td>R²</td>
<td>0.214</td>
<td>0.816</td>
</tr>
<tr>
<td>Singer Fixed Effects</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Notes.
Recording-session-level observations.
All estimates are from OLS models.
Singer performance: expert rating between 0-10.
Asynchronous: 0/1 = 1 if recording session was asynchronous.
Woman: 0/1 = 1 if singer was a woman.
Standard errors clustered by singer appear in parentheses.
* p<0.05, ** p<0.01, *** p<0.001 (two-tailed tests).
Table 4: Effect of Asynchronous Teamwork on Other Singer and Group Outcomes

<table>
<thead>
<tr>
<th></th>
<th>Singer tonal quality (1)</th>
<th>Singer vocal range (2)</th>
<th>Group performance (3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asynchronous</td>
<td>0.0300</td>
<td>0.400</td>
<td>-0.0300</td>
</tr>
<tr>
<td></td>
<td>(0.278)</td>
<td>(0.243)</td>
<td>(0.212)</td>
</tr>
<tr>
<td>Woman</td>
<td>-2.082***</td>
<td>-2.021***</td>
<td>-1.463***</td>
</tr>
<tr>
<td></td>
<td>(0.348)</td>
<td>(0.344)</td>
<td>(0.303)</td>
</tr>
<tr>
<td>Asynchronous*Woman</td>
<td>0.893*</td>
<td>0.784*</td>
<td>0.535+</td>
</tr>
<tr>
<td></td>
<td>(0.353)</td>
<td>(0.327)</td>
<td>(0.302)</td>
</tr>
<tr>
<td>Constant</td>
<td>5.970***</td>
<td>5.990***</td>
<td>6.790***</td>
</tr>
<tr>
<td></td>
<td>(0.254)</td>
<td>(0.243)</td>
<td>(0.222)</td>
</tr>
</tbody>
</table>

Observations: 198
Clusters: 99
R\(^2\): 0.204

Notes.
Recording-session-level observations.
All estimates are from OLS models.
Tonal quality and vocal range of singer: expert rating between 0-10.
Group performance: expert rating between 0-10.
Asynchronous: 0/1 = 1 if recording session was asynchronous.
Woman: 0/1 = 1 if singer was a woman.
Standard errors clustered by singer appear in parentheses.
+ p<0.10, * p<0.05, ** p<0.01, *** p<0.001 (two-tailed tests).
Table 5: Mediation Analysis: Creative Expression Mechanism

<table>
<thead>
<tr>
<th></th>
<th>Creative expression (1)</th>
<th>Singer performance (2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asynchronous</td>
<td>-0.460 (0.358)</td>
<td>0.488* (0.205)</td>
</tr>
<tr>
<td>Woman</td>
<td>-1.374*** (0.359)</td>
<td>-1.271*** (0.282)</td>
</tr>
<tr>
<td>Asynchronous*Woman</td>
<td>1.139* (0.522)</td>
<td>0.451 (0.297)</td>
</tr>
<tr>
<td>Creative expression</td>
<td></td>
<td>0.442*** (0.0739)</td>
</tr>
<tr>
<td>Constant</td>
<td>2.170*** (0.314)</td>
<td>5.215*** (0.269)</td>
</tr>
</tbody>
</table>

Observations: 198, Clusters: 99, $R^2$: 0.050, 0.495

Notes.
Recording-session-level observations.
All estimates are from OLS models.
Singer performance: expert rating between 0-10.
Asynchronous: 0/1 = 1 if recording session was asynchronous.
Woman: 0/1 = 1 if singer was a woman.
Creative expression: count of modulation, phrasing and vocal arrangement timestamps.
Standard errors clustered by singer appear in parentheses.
* p<0.05, ** p<0.01, *** p<0.001 (two-tailed tests).
Table 6: Heterogeneity by Tenure in Profession and Parentage

<table>
<thead>
<tr>
<th></th>
<th>Singer Performance (1)</th>
<th>Singer Performance (2)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Asynchronous</strong></td>
<td>-0.141</td>
<td>0.0250</td>
</tr>
<tr>
<td></td>
<td>(0.453)</td>
<td>(0.375)</td>
</tr>
<tr>
<td><strong>Woman</strong></td>
<td>-2.185***</td>
<td>-1.718***</td>
</tr>
<tr>
<td></td>
<td>(0.549)</td>
<td>(0.476)</td>
</tr>
<tr>
<td><strong>Asynchronous*Woman</strong></td>
<td>1.681**</td>
<td>1.518**</td>
</tr>
<tr>
<td></td>
<td>(0.524)</td>
<td>(0.462)</td>
</tr>
<tr>
<td><strong>High tenure</strong></td>
<td>-0.133</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.549)</td>
<td></td>
</tr>
<tr>
<td><strong>Asynchronous*High tenure</strong></td>
<td>0.626</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.522)</td>
<td></td>
</tr>
<tr>
<td><strong>Woman*High tenure</strong></td>
<td>0.719</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.727)</td>
<td></td>
</tr>
<tr>
<td><strong>Asynchronous<em>Woman</em>High tenure</strong></td>
<td>-1.444*</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.678)</td>
<td></td>
</tr>
<tr>
<td><strong>Baul parent</strong></td>
<td></td>
<td>0.417</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.498)</td>
</tr>
<tr>
<td><strong>Asynchronous*Baul parent</strong></td>
<td></td>
<td>0.433</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.475)</td>
</tr>
<tr>
<td><strong>Woman*Baul parent</strong></td>
<td></td>
<td>-0.199</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.693)</td>
</tr>
<tr>
<td><strong>Asynchronous<em>Woman</em>Baul parent</strong></td>
<td>-1.176+</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.639)</td>
</tr>
<tr>
<td><strong>Constant</strong></td>
<td>6.266***</td>
<td>5.925***</td>
</tr>
<tr>
<td></td>
<td>(0.460)</td>
<td>(0.366)</td>
</tr>
<tr>
<td><strong>Observations</strong></td>
<td>198</td>
<td>198</td>
</tr>
<tr>
<td><strong>Clusters</strong></td>
<td>99</td>
<td>99</td>
</tr>
<tr>
<td><strong>R^2</strong></td>
<td>0.225</td>
<td>0.236</td>
</tr>
</tbody>
</table>

*Notes.*
Recording-session-level observations.
All estimates are from OLS models.
Singer performance: expert rating between 0-10.
Asynchronous: 0/1 = 1 if recording session was asynchronous.
Woman: 0/1 = 1 if singer was a woman.
High tenure >= 20 years of performing.
Baul parent: 0/1 = 1 if singer’s parent was a Baul musician.
Standard errors clustered by singer appear in parentheses.
+ p<0.10, * p<0.05, ** p<0.01, *** p<0.001 (two-tailed tests).
Table 7: Women’s Differential Experiences when Working Synchronously and Asynchronously

**Synchronous Teamwork: Less Creative Freedom for Women**

When I'm repeating a line, somewhere I want to play around with something, I can't find that opportunity with the group. When I'm alone it is possible, because I can do it on my own. But when I'm with the group . . . [for example,] Farida Parveen [a famous artist] sings the song [assigned to me] in a specific way. There were not many modulations. This one time I was saying that, if it could be done a little differently, [it might be better]. Then the one who was playing the harmonium said that “This a song composed by Saiji, and it is a common song, so keep it the way it is without changing your tune.” So I said OK. (0917FE88)

[The group recording] was fine, but I had a desire to express a little more. But he [the senior musician in the group] told me to tone it down a bit. . . . He said, “Don’t go to the zone you are trying to.” That’s what he said. I wanted to do more. I felt if I could do more, it would have been better. . . . But still, for a female singer, [I did] whatever I could do. (0902FE47)

No, I was unable to express myself [in the group recording]. . . . How does a vegetable cooked with less salt taste? The salt was less in my recording . . .When the harmonium was being played, there was random movement from one riff to another. The scale was unstable. . . . if the scale gets lost, there is no way of adjustment. . . . I did not say anything during the recording because [I was scared] the song would be affected. . . . Simple human beings are like burnt coal; I am that coal. I don’t hold any ill feelings. . . . There were a few problems that I faced [with] the one on the harmonium, but I let it go. (0826FE17)

I didn't have much control over the song while singing in ensemble format. The song should come straight from the heart. I should be trying to bring out the tune. I had tried doing that, but that didn't happen. (0828FE24)

I could have done better [in the group recording]. Why did I feel like this? I could not express my heart's desires in words. That is remaining in my heart. Music is a lot like this. . . .We go to see these idols which are made out of mud and hay, but the ornaments are used to decorate the idols. Only then do we say that the idol is beautiful. Everybody wants to call the idol-maker who makes such beautiful idols. So here too, if some more ornamentation could be put in . . . it becomes more and more beautiful, and it creates a desire to create something more beautiful. (0916FE87)

**Asynchronous Teamwork: More Creative Freedom for Women**

I had been made to listen to two of these songs before my performance, one of Mansur Fakir and another of a woman whose name I don’t know. I did not sing on the basis of those tunes. Toward the beginning, it was similar. But I tried to sing with an arai pyach style, trying to ensure my performance was not lost in the process of its capture. (0826FE17)

[When singing alone], I didn’t use the conventional melody in which the song is actually sung. The melody which I have used in the song is my own. (0830FE36)

It was because no one else was present in the room at that time. I was all alone. That’s why I could express my feelings more. (0830FE39)
I could express my emotions completely in the case of click format. . . . I liked it, because there were no additional sounds [and it was so quiet]. . . . The thing is, if there is chaos, you need to control that. . . . So no such chaos was present in the case of click-format recording. I could feel my own heartbeat while recording in click format. It creates a sort of connection with my soul. There is a sense of comfort and goodness in it. (0826FE20)

I was adapting to myself. That was my advantage. . . . When I sang on the metronome, the advantage I got was that I was able to fully immerse myself. I got into the expressions. You may have heard that. (0915FE83)
Appendix A: Locations in West Bengal where Baul Singers Reside
Appendix B: Sample Schedule

<table>
<thead>
<tr>
<th>Schedule Version A*</th>
<th>Call Time: 10.00 AM</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.00 - 10.45 AM [45 m]</td>
<td>Mic Setup</td>
</tr>
<tr>
<td>10.45 - 11.30 AM [45 m]</td>
<td>Rehearsal: Man Singer</td>
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<tr>
<td>11.30 AM - 12.15 PM [45 m]</td>
<td>Rehearsal: Woman Singer</td>
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<td>Break</td>
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<tr>
<td>12.20 – 12.35 PM [15 m]</td>
<td>Man Singer &amp; Instrumentalists “Control”</td>
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<tr>
<td></td>
<td>Break</td>
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<tr>
<td></td>
<td>Break</td>
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<tr>
<td>1.00 – 1.15 PM [15 m]</td>
<td>Man Singer “Treatment”</td>
</tr>
<tr>
<td></td>
<td>Break</td>
</tr>
<tr>
<td>1.20 – 1.35 PM [15 m]</td>
<td>Woman Singer &amp; Instrumentalists “Control”</td>
</tr>
<tr>
<td></td>
<td>Break</td>
</tr>
<tr>
<td>1.40 – 2.10 PM [30 m]</td>
<td>Dhol “Treatment”: Click Track Songs (2)</td>
</tr>
<tr>
<td></td>
<td>Lunch Break</td>
</tr>
<tr>
<td>2.50 – 3.20 PM [30 m]</td>
<td>Manjira “Treatment”: Click Track Songs (2)</td>
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<td>Break</td>
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<tr>
<td>3.25 – 3.55 PM [30 m]</td>
<td>Harmonium “Treatment”: Click Track Songs (2)</td>
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<td>Break</td>
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<tr>
<td>4.00 – 4.30 PM [30 m]</td>
<td>Dotara “Treatment”: Click Track Songs (2)</td>
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<td>Break</td>
</tr>
<tr>
<td>4.35 – 5.05 PM [30 m]</td>
<td>Flute “Treatment”: Click Track Songs (2)</td>
</tr>
</tbody>
</table>

*Note that this schedule is just one of four possible schedules that we used. Each recording session followed a randomly assigned schedule; we varied the order of the singers’ performances with respect to each other and which condition they completed first across the different schedules.
Appendix C: Creative Expression Categories

Modulation
Are the vocal color and tonal texture appropriate to the song or the style of music? How well are they adapting their voice in terms of modulating and matching it with the message of the song? Is there appropriate use of vibratos, straight notes, loud, and soft parts? Are there dynamic variations in the song and are dynamics musically interesting, appropriate, and well-executed? Do the modulation and dynamics follow the narrative/story of the song? How prominent are the gradations in volume or intensity throughout the song? Are the loud and soft parts both audible enough? Is the singer confident with their throw? Are the attacks, sustain and releases of notes appropriate to the song?

Phrasing
Is the vocal phrasing relevant in context to the music? Does it fit into the right musical pockets? Are the vocal phrases musically and rhythmically interesting? Is the phrasing consistent throughout the song?

Vocal Arrangement
Has the singer selected a fairly appropriate key to sing the song based on their vocal range? This criterion is also based on performance nuances performed by the singer. How difficult are these performance nuances and how difficult is the vocal arrangement? Can the singer execute them well? Does the singer perform appropriate adlibs? Are there repeating motifs or are there too many repetitions? Is there any improvisation or clever performance enhancements?