Marching to Her Own Beat: Asynchronous Teamwork and Gender Differences in Performance on Creative Projects

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**ABSTRACT**

Women have traditionally been held back from performing to their full potential at work, particularly in creative project teams where women constitute a minority. However, the structure of teamwork is rapidly evolving owing to recent technological developments. Specifically, teamwork is now often performed asynchronously: members of teams work at different times, by themselves, rather than simultaneously and together. How will this shift to asynchronous teamwork affect the performance of men and women on creative project teams? 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 that the spread 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 the same set of instrumentalists. This paper contributes to the study of gender inequality, creativity, and the temporal restructuring of work.
A wealth of research has shown that women in the workplace experience disadvantages in pay, promotion and performance across a range of industries (e.g., see Ridgeway 2011). Because of the lower status of women in mixed-gender environments, women are prevented from reaching their full potential in work teams (Kalev 2009, Thomas-Hunt & Phillips 2011, Joshi 2014). Women in mixed-gender groups speak less than men on average, are frequently interrupted, and rarely get credit for their ideas (Henley 2015, Zimmerman & West 1975). Such gender disparities particularly impact women in creative project teams, such as screenwriting and songwriting teams, where work is project-based and performance depends on creativity (Bielby 2009). Creative project teams are typically dominated numerically by men, and the expression of creativity, which is associated with assertiveness and confidence, is seen as a stereotypically masculine trait (Smith et al. 2016, Dellas & Gaier 1970). Women are thus typecast into subordinate roles in such teams (Bell et al. 2013, Clawson 1999, Larson 2020) and their contributions are undervalued relative to their men colleagues (Heilman & Haynes 2005).

However, ongoing changes in the world of work have the potential to impact gender dynamics in creative project teams. New technologies and digitization are transforming how creative work is performed (Askin & Mol 2018, Nagaraj & Ranganathan 2022). In particular, temporal restructuring of work is proliferating (Perlow & Kelly 2014). One salient post-pandemic manifestation of temporal restructuring is the increasing prevalence of asynchronous teamwork: rather than working simultaneously and together, team members now often work at different times and alone (Rhymer 2022). The sociology-of-creativity literature (for a recent review, see Godart et al. 2020) has largely emphasized the value of synchronicity for creative performance, but whether synchronicity is equally valuable for men and women is an open question. Indeed, gender scholars have emphasized that changing the work environment has the
potential to reduce the impact of gender-related stereotypes and thus to help women (Spencer et al. 2016). To seriously consider recent developments in how teamwork is structured and the implications for gender inequality, this paper asks 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 on creative project teams.

We argue 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. Men, by contrast, will not experience the same performance boost when teamwork is asynchronous. This theory suggests that the rise of asynchronous teamwork has the potential to reduce gender disparities in performance on creative projects. As more creative jobs move toward asynchronous teamwork, working conditions for women may improve; they may enjoy more creative freedom, enhancing their performance.

An ideal setting for studying asynchronous teamwork and gender disparities in performance on creative projects 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 recordings 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 onto the work conditions 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 provides for 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 & Elsbach 2000, Chatman & Flynn 2005). 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 resulting 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 when working 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.
The paper first contributes to the literature on women in teams by documenting the potential of a shift to asynchronous teamwork to reduce gender disparities in performance. We also highlight greater creative freedom for women as a novel mechanism underlying this effect. The paper also contributes to the literature on the sociology of creativity by showing that, though prior research emphasizes synchronicity as an important determinant of creative performance, lower-status members of teams such as women are actually more creative when teamwork is asynchronous. Thus, this paper develops our understanding of the underexplored relationship between creativity and inequality in creative teamwork. Finally, this paper contributes to the literature on the temporal structuring of work by studying the direct impact of asynchronous work arrangements on individual rather than team performance, and in particular the heterogeneous effects of these work arrangements for men and women. Apart from these theoretical contributions, the paper contributes to the ongoing policy debate on how to structure the future of work to mitigate persistent demographic disadvantages.

ASYNCHRONOUS TEAMWORK AND GENDER DIFFERENCES IN PERFORMANCE

Gender and Teamwork

A considerable body of work has shown that women have generally been prevented from performing to their full potential in teams. Some of the hurdles women face arise from the behavior of their teammates. Research has documented conclusively that women are treated less well than men in team interactions (Berger et al. 1977, Carli 1990, Ridgeway & Diekema 1989). Team members routinely have different performance expectations for women than for men (Berger, Rosenholtz, & Zelditch 1980, Lockheed & Hall 1976, Meeker & Weitzel-O’Neil 1977); thus their feedback is often more critical and less constructive. Similarly, women are given fewer
opportunities to participate (Meeker & Weitzel-O’Neil 1977, Ridgeway & Berger 1986), and those who attempt to gain the floor in meetings by interrupting the speaker are less likely than men to succeed (Zimmerman & West 1996).\(^1\) Even on the U.S. Supreme Court, women justices experience two-thirds of all interruptions, despite constituting only one-third of the court (Jacobi & Schweers 2017). Women’s contributions are also routinely attributed less competence than men’s (Foschi 1996, Foschi, Lai, & Sigerson 1994); women tend to be perceived as less expert by others despite similar levels of expertise, and consequently have less influence on team decisions (Thomas-Hunt & Phillips 2004).

Unsurprisingly, women might also censor their ideas before voicing them to teammates. Over time, being treated as less capable and less pivotal to a team’s output can erode women’s confidence and willingness to continue trying to speak up in environments dominated by men (Karpowitz & Mendelberg 2014). Gender norms — pervasive within society or specific to an organization or a team — can become internalized, such that women are more critical of their own ideas than those of men colleagues (Ford et al. 2002, Steele 1997, Ellemers 2018). In historically men-dominated environments like science and engineering, these patterns can be exacerbated because the scarcity of women in these teams makes gender highly salient (Cohen & Zhou 1991, Ridgeway 1991, Joshi 2014). This salience is key to triggering stereotype threat, whereby women made aware of their gender perform worse on an array of tasks (Spencer et al. 1999, Hoyt & Murphy 2016). Most of this research has focused on the United States, but we expect the same gender dynamics to exist in other countries as well.

Several studies have investigated the effect of women’s constrained positions within teams on team performance. Scholars have found that teams composed of women experts exhibit

\(^{1}\) This phenomenon is not specific to situations characterized by token representation of women (Mansbridge 1999).
lower performance than those composed of men experts (Thomas-Hunt & Phillips 2004). Similarly, the proportion of highly educated women in a team is negatively associated with its performance in fields where women are rare (Joshi 2014). These studies are eye-opening, but they do not specify how the careers of individual women on teams are impacted. Research is limited on the conditions under which individual women can improve their performance on teams; the few studies that do exist are generally conducted in the lab, offering little insight into how these gender dynamics play out in realistic settings. Nor do existing studies specify the unique mechanisms that produce gender inequality in the context of teams working on creative projects, an area in which women may be at a particular disadvantage because it tends to be men-dominated and because creativity tends to be male-typed (Proudfoot et al. 2015). To close these gaps, we observe women’s individual performance in naturally occurring mixed-gender teams in a creative industry.

**Women in Creative Project Teams**

Creative project teams can range from rock bands to videogame development teams, but their primary focus is to deliver a creative product (Lingo & Tepper 2013, Berg 2022). While some creative teams are long-term, as in advertising (Koppman 2014), many are project-based, such as actors in a play or a film or songwriting teams (Lutter 2015). These teams’ members typically collaborate for relatively short periods of time to perform their individual roles without the benefits or constraints of long-term norms, established hierarchies, or human-resource departments (Bechky 2006). Indeed, such teams rarely operate within organizations with clear management structures, and thus are often self-managing, meaning that “team members are
responsible for the monitoring” (Langfred 2004: 386) that would usually be done by a supervisor.

Scholars have specified two key stages when women in creative project teams face hurdles. First, women face constraints at the point of entry, and thus are underrepresented in an array of cultural fields (Bielby & Bielby 1992, Smith et al. 2019). These disadvantages have been traced to gender stereotypes, scant social capital, and gender bias in hiring. Specifically, women in creative teams are often typecast (Friedman & O’Brien 2017, Bielby & Bielby 1996, Zuckerman et al. 2003, Yuen 2016, Miller 2016, de Laat 2019), or siloed into supporting rather than leading roles (Hesmondhalgh & Baker 2015). For example, since the 1980s US and UK rock bands have relegated women to playing the bass, in part because it is a supportive role that men no longer favor (Clawson 1999).

Similarly, Goldin and Rouse (2000) documented gender bias in auditioning for orchestras, which has been ameliorated by a shift to blind auditions. Women who clear the hurdles at the entry stage face additional disadvantages during the evaluation stage of the creative process. Creators’ gender shapes how their work is perceived by others, experts and laymen alike, with consequences for the marketability of women’s creations and thus the reputational benefits and rewards they can access (Wolfe 2019). Women’s creative work is often evaluated more harshly than men’s, and this difference is not likely to be based on quality, given that randomly attributing the same work to a woman or a man significantly changes evaluations of it (Rivera & Tilesik 2019, Khazan 2019). Women are less likely to be perceived as leaders by bandmates in performing groups, and their contributions to creative work

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2 Similarly, work by women writers is often stereotyped as “women’s fiction,” prompting women to select into less prestigious genres because they are more welcoming than those dominated by men (Childress & Naulta 2019, Larson 2020). Additionally, Lutter (2015) has shown that women actors experience exclusion from high-status, professional networks, which puts them at a disadvantage for finding projects to join.
are undervalued (Heilman & Haynes 2005, Proudfoot et al. 2015). Success in creative fields depends heavily on positive appraisals by consecrating institutions (Godart et al. 2020), and women experience biased evaluation by such institutions, just as they do from gatekeepers during the entry stage.

The literature’s scrutiny of the entry and evaluation stages of creative work has not been matched by similar attentiveness to the intervening stage: the doing of the creative work. In other words, we have overlooked gender disadvantages faced by women in the process of actually being creative in project teams. As Godart et al. (2020: 503) observe, “study of the causes and consequences of inequality is central to the study of sociology, but locating creativity in such contexts has only recently started to attract attention.” Creative work requires taking chances, challenging expectations, and often risking conflict with those who oversee creative production (Becker 1974). Taking such independent stances is likely to be particularly difficult for low-status team members.

Scholars who theorize about creativity have emphasized that the structural conditions of a team are likely to influence its creative performance, and that of its individual members (Godart et al 2020). Murninghan and Conlon’s (1991) in-depth analysis of classical-music quartets showed that, for a quartet to be successful, its members had to accept its leaders as legitimate, praise those in supporting roles, confront disagreements head-on, and prioritize the shared goal of creating music. More specifically, the existing research implies that creativity thrives best in synchronous, in-person work environments, where team members can build on each other’s ideas and feedback (Hargadon & Bechky 2006, Borgo 2006, Watson 2007). Working synchronously can encourage individuals to feed off of each other’s insights and energy, leading to more

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3 In fact, as representation of women increases in some creative project teams, such as orchestras, men sometimes become more dissatisfied with the group itself (Allmendinger & Hackman 1995).
brainstorming (Brucks & Levav 2022). Furthermore, given the need for creative team members to work in concert (Bielby 2009), constructive feedback and exposure to others’ suggestions in real time can prevent creative workers from drifting in discordant directions.

This perspective, however, has tended to overlook status—including gender—in its theorization of creativity. The social nature of creativity leads many researchers to focus exclusively on how innovation is fueled by social interactions. Indeed, when looking at homogenous teams with “safe communication environments,” synchronous teamwork may promote creativity (Metiu 2006); but this approach overlooks the ways in which creativity might be hindered by the presence of others, particularly for low-status participants. A restructuring of creative teamwork might affect not just team performance but also individual members’ performance, and might have differential effects on the performances of team members of differing status. This project explores the ways in which temporally restructuring creative teamwork may differentially affect the performance of men and women on creative teams.

**Temporal Restructuring of Work**

This paper focuses on a specific kind of temporal restructuring—asynchronous teamwork—that occurs when team members contribute to a joint outcome but work separately, at different times and possibly at different locations (Rhymer 2022). We understand a team to be “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). No longer do team members need to meet face-to-face or even via video or phone calls. Teams do not even need to communicate regularly; some are coordinated exclusively by a team manager (Perlow 2001). If a deliverable depends on multiple individuals who perform different functions but are working
toward the same goal, they constitute a team; thus asynchronous workers can still constitute a creative team. For example, song-writing can be accomplished by teams that work asynchronously (Skaggs 2019, de Laat 2015). Many “flexible work arrangements”—whether in creative industries or not—entail asynchronous teamwork (Majchrzak et al. 2000, Choudhury et al. 2021); indeed, such temporal flexibility is often appreciated by workers (Moen et al. 2011).

Most research on asynchronous teamwork focuses on the team’s overall performance, ignoring individual outcomes. 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). To ignore the effect of asynchronous teamwork on individual performance, however, is to overlook the possibility of individual differences in the response to asynchronous restructuring, such as by gender. Some attention has been paid to the role of status differences between team members based on nationality (Metiu 2006), but little empirical investigation has focused on differential performance effects 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 & Blair-Loy 2018), but this question has not been empirically examined. Nearly thirty years ago an article observed 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.

Some research suggests that women receive less favorable performance evaluations than men in asynchronous work environments (Rivera & Tilscik 2019, Khazan 2019), but this work does not actually look at differences in output at all, but at differences in ratings of the same work when it is attributed to a woman or to a man. Further, this research looks at women working alone rather than in teams. If we aim to examine not merely rater bias but also the determinants of women’s performance in teams, then it is important to assess recent changes 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 & Davies 2016: 427). Identifying the varied impacts of asynchronous teamwork would contribute to the sociological literatures on gender, creativity and work.

**SETTING: BAUL FOLK ENSEMBLES IN INDIA**

To investigate how asynchronous teamwork contributes to gender differences in performance, we chose the context of folk-music ensembles in eastern India. Specifically, we focus on *Baul sangeet*, a genre of folk music in the Bengali language from eastern and northeastern India and Bangladesh. This is an oral tradition, whose lack of notation means that each song has many versions and interpretations. The music embodies a long heritage of preaching mysticism in song; through their music, Bauls⁴ seek divine love, a transcendent experience rooted in simplicity, freedom, and humanism, which rejects societal divisions along caste, religious, and other lines (Urban 1999). Bauls reside primarily in the West Bengal districts of Bankura, Bardhaman, Birbhum, Murshidabad, and Nadia. South Asian audiences increasingly favor Western musical genres over folk music, and folk artists’ patronage and performance opportunities have dwindled in recent times. Baul singers often travel for work, and are thus accustomed to both collaborating with unfamiliar musicians each time they perform, and to having little say in which musicians they will perform with.

Production of Baul music is an appropriate setting in which to pursue our research question for three reasons. First, most Baul ensembles consist of a singer and a few instrumentalists, who play such traditional Indian instruments as the dhol, dotara, harmonium, harmonium,

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⁴ For concision, we refer to Baul-Fakirs as Bauls, as is common practice in the community.
manjira and flute. Each member of the team has a distinct role, facilitating a switch to asynchronous teamwork without changing the performance. This is a distinct advantage over contexts where work must be restructured to accommodate asynchronous teamwork. Second, both men and women sing Baul *sangeet*, but the 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 either synchronous (live group recordings) or 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, offering us 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 & Elsbach 2000, Ranganathan 2018). We first conducted

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5 Note that musicians do not typically have the luxury of choosing whether they record synchronously or asynchronously; the choice of recording format is most often in the hands of the producer.
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 of musicians in towns where Bauls live, and (3) ethnographic observation in recording studios.

We began the 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 highly familiar with Baul or Baul-fusion music, and (c) Bauls themselves, via videoconferencing or telephone. During 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 accommodate 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.

To select our first group of interviewees, we undertook 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 requested or were
offered referrals to other potential interviewees. Interviews were conducted in English or Bengali by the authors. The sessions were recorded for transcription.

Having familiarized ourselves with the milieu of Baul folk ensembles, we turned to ethnographic observation. In June and July 2020, we conducted field visits to musicians’ homes and to *akharas* (performance venues) in four West Bengal districts: Bardhaman, Birbhum, Murshidabad, and Nadia. (See Appendix A for a map of these regions.) Some of these locales took several hours to reach from Kolkata due to poor road conditions and connectivity. A key purpose of the visits was to watch Baul musicians perform, both with other musicians and alone. We met a diverse array of musicians, both men and women. We also used these visits to conduct an additional 25 formal semi-structured interviews and 7 informal interviews with Baul musicians. The interviews, conducted by one of the authors in Bengali, focused on the musicians’ entry into the occupation, their relationships with the music, their typical and preferred performance formats, and their experiences with recording and collaboration. We worked with a local NGO to construct an interview sample that would be balanced by geography, gender, and age. The NGO also provided us local guides, whose 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 and nuanced picture of the artists’ lives. We took notes during each visit in addition to recording interviews and performances.

The musicians we observed viewed us as students of the craft of Baul music; given the rarity of interaction between Baul musicians and academics (Krakauer 2015, 2016), they were not prone to being intimidated by our academic status. While people often behave differently
when being observed (McCambridge et al. 2014, Pillow 2003), we tried to mitigate this effect by spending more time with participants, and visiting them on multiple occasions; if some respondents were uncomfortable with us or tempted to show off, we reasoned that this tendency would subside over time as they grew accustomed to us (Svensberg et al. 2021). We also visited musicians at homes as well as in performance scenarios, expecting them to be more comfortable and less tempted to show off during home visits. The musicians in our study perform publicly on a regular basis, and thus are accustomed to being observed. Though a concern persists that men might be more prone to showing off than women, this did not appear to be the case in our data. Men aiming to present themselves in an inauthentically positive light would be unlikely to express vulnerability; our respondents described new performance experiences as “scary” and characterized themselves as “worried” about their performances. Furthermore, one of the benefits of doing full-cycle research is that the hypotheses are generated and tested using different methodologies with complementary weaknesses and strengths.

Finally, we arranged three day-long studio recordings in Kolkata, where we engaged in ethnographic observation of instrumentalists and singers participating in informal jamming. Each day, two Baul singers, a man and a woman, separately recorded their music. We took detailed notes documenting interactions, body language, and dynamics between the musicians, and recorded the sessions with GoPros; we used the resulting videos to supplement our notes. We also conducted in-depth interviews with all participants after each session. Our ultimate experimental setup closely resembled these initial recording sessions: five instrumentalists accompanied each singer; producers and sound engineers facilitated recording; and the musicians participated in both an asynchronous and a synchronous recording.
We translated and transcribed all field notes and interviews, resulting in 628 pages of data. We then inductively analyzed this open-ended information via multiple readings, memo-writing, and coding in Atlas.ti., generating hypotheses and an experimental design to test them.

QUALITATIVE FINDINGS

This section will describe how Baul musicians experience themselves as a team, what synchronous work looks like in this setting, and men’s and women’s experiences performing and recording Baul music asynchronously and synchronously in creative teams. 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.”

Seeing Themselves as a Team

Baul musicians frequently referred to their ensembles using we and our, without prompting from the interviewers. For example, a woman singer (0625FV01) explained how the team decides together what music to play:

When we reach a particular location for performing, depending upon the audience and the ambience present there, we get a certain feeling. The songs that we choose will depend upon this feeling.

Even when recording with new people, musicians referred to the group using we. For instance, one man instrumentalist (0625FV03) described a recording experience with a new group of instrumentalists: “We had practiced two, three times before going to the studio . . . [and] one time before the final recording. . . . We didn't face many difficulties.”

Musicians also routinely characterized their work as the output of a team effort. For example, a woman singer (0608ZI15) referred to her band as working “collectively, we’re all

6 Use of we as an indicator of identification with a group has been established by Pennington et al. (2014) and Yang et al. (2022).
doing something together. It is a circle, a musical circle. We are creating a sense of stability in that circle. A feeling is being created.” She was making the point that her own contribution was not sufficient to capture the full effect of a song, but must be combined with the contributions of the instrumentalists. A man musician (0615ZI08) agreed that songs take form through teamwork:

When planning a piece, we usually start off with a basic groove. After establishing a basic soundscape, we then blend in songs with lyrical similarity. We try not to violate the general nature of a song when making music, but at the same time we try to keep our signature style intact.

As is evident in these quotes, Baul musicians see themselves as part of a team, even if that team only works together for one performance. Both singers and instrumentalists refer to ensembles they’ve performed with using we and our, and they acknowledge the reliance of each member on the others to perform their roles.

**Working Synchronously**

Singers seemed to be aware of team dynamics, and of the need to manage those dynamics. Our observations and interviews revealed that Baul musicians typically worked synchronously, whether performing live or recording. In the words of one man 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.

Apart from live performances, Baul musicians were also accustomed to recording synchronously with fellow musicians. As one man 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.”
Bauls frequently described working on a piece with fellow musicians as a rather difficult negotiation among artists. As one woman singer (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 woman 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 man 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.

Such negotiations take place both in synchronous studio recordings and in live performances. One man instrumentalist (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 man instrumentalist (0716P102) concurred: “Studio recordings . . . depend upon a mutual understanding between the musicians playing.” Thus the performers view themselves as working toward a joint product.

Musicians also asserted that their own individual performances depended on the dynamics of the group. In the words of one man instrumentalist (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 woman 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 man instrumentalist (0716P102) described a performance that had suffered because of unfavorable group dynamics and misunderstandings:

The music that 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.

Thus, performing Baul music synchronously requires considerable communication and understanding among musicians. Working well together is less about adhering to prescribed techniques and more about coalescing to find a novel way to perform songs. Baul musicians need to be on the same page and to adapt to each other as they perform in order to create new music.

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

Our data revealed that men and women singers had experienced synchronous performance 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 man (0703FV22) elaborated: “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.”

Specifically, the men felt that they were better able to express themselves on creative projects 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.” These Baul men agreed 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 fellow musicians while working as a synchronous team; they enjoyed offering and receiving input. 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 elaborated: “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.” Thus, when working in a synchronous group, men felt supported by and collaborative with other men.

Men also tended to characterize 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 other words, men felt motivated when performing synchronously because they enjoyed the support of their men teammates.

In contrast, women singers expressed far greater variation in their preferences for synchronous or asynchronous recording. Some women declared, like 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. Some attributed their reservations to teammates’ hostile behavior, such as unnecessarily critical feedback. They described being constantly “corrected by [their] seniors” and sensing that their fellow musicians “did not stand by [them].” They did not report being offered the “encouragement” and “positive reinforcement” that their men counterparts described receiving from their colleagues (0625FV07). Instead, 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) reported that she “did not receive as much respect from her fellow musicians as she deserved.” Thus, overall, women’s experience working synchronously is more negative than men’s, in part because of criticism and unconstructive feedback when working with men.
Other women attributed their wariness about working with men to their own insecurities. That is, women may receive more feedback and criticism when working synchronously, but they may also respond differently to men’s feedback than men singers do. They also reported abiding by a tacit expectation that women should take criticism but not offer any: women 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.” One woman (0716P103) said, “I was scared to express some of my concerns to the people who were around.” These experiences of being judged and criticized, in conjunction with perceived norms specifying that women should submit to men’s direction, represent sources of inhibition that prevent women from creatively expressing themselves fully in synchronous recording sessions.

A few women reported being explicitly constrained when recording synchronously. One (0804P207) described an occasion when she had felt unfairly judged and tried to stand up for herself:

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 his 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,” often affecting their songs, one woman (0804P207) said. After a particularly difficult synchronous recording experience, the same woman 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?”
instrumentalist (0804P201) who had performed alongside a woman singer concurred: “The woman 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 the 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.”

In short, women face challenges as Baul singers that men do not. They experience pressure from fellow musicians to take a backseat role rather than leading the performance as men singers do. Sometimes women singers feel judged for their creative choices, and disrespected when they stand up for themselves. For these reasons—some direct outcomes of men instrumentalists’ behavior, some resulting from women’s own perceptions or internalized norms—women singers in this sample were more constrained than men singers when they performed synchronously with men musicians.

Women’s Experience of Creative Expression While Working Alone

We also observed singers performing alone, in their homes and in studios where they recorded their parts to a click track. Our data suggest that women Bauls performed more effectively 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.”

More specifically, our data also suggest that women experienced more freedom of creative expression when they sang alone. As one academic (0724ZI02) speculated, “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 . . . 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 recreate 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 latitude and separation from other musicians to express themselves more 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 their own part. At that time, they are not constantly distracted by the thought of which musician's section they have to follow, or when they have 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 man 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 (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 in group settings than their women counterparts. They reported fewer incidents of others “asserting their dominance” and “directing [them] to sing and perform in a certain way”; thus the benefits of singing alone were less pronounced for them. Also, the attitudes of men singers toward singing alone varied more.

Indeed, more men singers explicitly disliked singing asynchronously. One man (0702FV26) asserted that “the expression of the artists will not come through well [in asynchronous recording].” 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.

Overall, these interviews reveal that the experiences of men and women singers in synchronous settings are very different. When women sing alone, they can express their creativity more freely, resulting in a performance that they are more satisfied with.

**Hypotheses**

This qualitative data prompted us to generate hypotheses that we then sought to test systematically via 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 than when it is 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\(^7\) singers (50 men and 49 women) from five West Bengal districts—Bankura, Bardhaman, Birbhum, 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 informed 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.

An 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 at 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 consistent throughout all recording sessions.

\(^7\) One woman who had agreed to participate was unable to do so for logistical reasons.
Producers. Producers were chosen based on their eminence in the field and on prior experience working with Baul or Baul-fusion music. Producers helped singers record effectively in both the control and treatment conditions, but were not members of the ensembles. That is, they did not directly plan musical arrangements, offer advice on musicians’ creative choices, or give singers feedback. They remained behind a glass wall, communicating only via intercom, and did not interfere with the singer’s performance. 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.8

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.9

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 helped execute the experiment. They too remained uninformed about the research question and hypotheses.

Experimental Treatment and Within-Person Research Design

8 The role of a producer was to manage technical aspects of the recording, not to manage team dynamics; the producer was not a manager. Self-management is a common feature of Baul musicians’ experience, as noted in our qualitative interviews with Baul musicians, and of creative project team members’ experience in general.

9 Our singers were assigned to perform with certain instrumentalists rather than choosing who they worked with (this lack of choice is characteristic of many creative project teams). Our post-experiment questionnaire data indicates that many singers knew one or a few members of the team they were assigned to work with, but had worked together only briefly to achieve the specific objective of recording a song. The questionnaire also asked instrumentalists about their gender attitudes using a widely used gender ideology scale (Thebaud 2010). The average score of the instrumentalists was 3.49 out of 5. Higher scores represent less gender-egalitarian views; thus our instrumentalists were relatively non-egalitarian in their views of women.
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 combined. 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 (the control condition) and asynchronously (the 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, singers were asked about prior familiarity with a set of three to five songs compiled by the research team. Then each singer was assigned an unfamiliar song, and the song’s lyrics and two different MP3 recordings by known artists were 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 due 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. They were required to travel alone, without companions, for safety reasons and to avoid extraneous influence.

**Recording Sessions**

Each day of recording followed a prescribed but randomly assigned schedule: both the order in which singers performed and the treatment/control-condition order were randomized. Consequently there were four possible schedules, which varied the order of the singers’ performances with respect to each other and to the condition they completed first. (See Appendix B for an example of one of the four schedules.) Each session began with 45 minutes of jamming or rehearsal, during which the instrumentalists and the singer figured out how they wanted to approach the song. At the start of each day, the producer read a prompt explaining the 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 with 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 schedule and not to
allow unplanned breaks or changes. The actual duration of each step in the process was noted on a 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.

No explanation of our 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 singers after they had completed both conditions. The 30–45-minute interviews were open-ended, enabling singers to describe and reflect on their recording experiences. The producers and instrumentalists completed a brief survey at the end of each day; the instrumentalists also participated in more extensive surveys 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 an array of parameters of musical quality. We used these ratings 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 evaluation—how musical performance is typically assessed—is important because it is a proxy for critical acclaim, and sometimes for success in creative industries (Akinola and Mendes 2008). Music producers, brokers, and other industry experts routinely evaluate the performances of individual musicians, even in ensembles, to decide who to work with and who to promote next.

We selected 4 expert raters, 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 raters. In preparation, the research team provided in-depth training on each metric, and on the operation of the online tool created for the project. Raters were advised to begin by listening to a track in its entirety, then to listen closely and time-stamp any “event” they noticed, and finally 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 rater’s attention to that event. These timestamps facilitated measurement of creative expression. Finally, the raters 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 adhered to a strict set of guidelines, these
metrics ultimately reflect the raters’ perceptions. Raters remained unaware whether a track was recorded synchronously or not.\textsuperscript{10}

\textbf{Dependent and Independent Variables}

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

Two independent variables are of particular interest: \textit{Woman} and \textit{Treatment}. \textit{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. \textit{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.

\textbf{Mediator Variable: Creative Expression}

Our measure of \textit{Creative expression} consisted of the number of coded timestamps—that is, 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. \textit{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. \textit{Phrasing} captures whether the vocal

\textsuperscript{10} We could not conceal the gender of the singer from the raters. Though this circumstance allows for the possibility of gender bias in coding, such bias would affect judgments of women’s asynchronous and synchronous recordings equally; thus estimates of the treatment effect should be unaffected.
phrases are musically and rhythmically interesting, consistent throughout the song and relevant to the musical context. *Vocal arrangement* captures 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. (Descriptions of the three variables given to raters in a Coding Protocol document appear in Appendix C.)

**Moderator Variables**

Will all women in the study be equally affected by the experience of asynchronous performance? To address this question, we considered two variables that we expect might 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 chose to measure this variable because more experienced women singers might be better able to overcome the creative hindrances of working synchronously with men instrumentalists, and might 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. Singers’ parentage determines their childhood environment and exposure to Baul ensembles. We considered 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.

The dataset we used for our analysis was at the singer-session level, consisting of 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 than the women and more experienced as performers. The women, on the other hand, tend to be more highly educated and more likely to be 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. Raters 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 was logged per session.

Figure 2 compares the mean overall synchronous and asynchronous performances 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

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11 In additional analyses, we confirm that this difference in experience does not drive the difference between men and women singers in the effect of the asynchronous treatment.
12 Hindu communities tend to be more gender-egalitarian (Desai and Temsah 2014).
13 Our sample consisted of 49 women and 50 men, resulting in 98 recording sessions with women singers and 100 sessions with men singers.
also noteworthy that, on average, men singers were more highly rated than women, possibly as a consequence of negative gender bias, in keeping with research showing that women are often held to a higher standard and rated lower than men (Rivera & Tilcsik 2019, Khazan 2019).\footnote{We might be concerned that individuals perform differently when they are being observed by researchers. In this case subjects were observed identically in both experimental conditions. Thus if there is an observer effect, it is equal across our subjects, both men and women, and across treatments. Even if it is the case that men and women respond differently to the presence of observers, the estimate of the treatment effect on men and women is within-gender; thus the presence of researchers will not influence our experimental results.}

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 \textit{Asynchronous}, a dummy variable \textit{Woman}, and the interaction \textit{Asynchronous x Woman}. Model 1 does not include singer fixed effects; 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 \textit{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.\footnote{Appendix D presents the results of re-running our models from Table 3 but treating each rating as an observation instead of averaging the reviewers’ ratings of each performance. The results are robust to this alternative model specification. Because it is important in this model to account for rater variance, we include fixed effects by rater. We cluster standard errors by singer because our treatment is at the level of the singer (Abadie, Athey, Imbens and Wooldridge 2022).}

**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

\footnote{We might be concerned that individuals perform differently when they are being observed by researchers. In this case subjects were observed identically in both experimental conditions. Thus if there is an observer effect, it is equal across our subjects, both men and women, and across treatments. Even if it is the case that men and women respond differently to the presence of observers, the estimate of the treatment effect on men and women is within-gender; thus the presence of researchers will not influence our experimental results.}
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: when recording synchronously, women received 35% and 34% lower ratings than men for tonal quality and vocal range respectively; 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 performances by 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; 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 \((Asynchronous \times Woman)\) 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 \(Asynchronous \times Woman\), the coefficient for \(Asynchronous \times Woman\) 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 in 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.

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 recording for women. Our reasoning here is that both longer tenure and having a parent in the profession would instill greater confidence in a singer, and could thus be expected to diminish women’s need to work 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 more modest among women who have more experience with men instrumentalists. This finding further supports our hypothesis that enhanced freedom of creative expression accounts for women’s better performance when recording asynchronously.\textsuperscript{16}

ADDITIONAL QUALITATIVE EVIDENCE

\textsuperscript{16} We also explored heterogeneity in the performance results of women with and without regular collaborators and found no effect; irrespective of whether women had regular collaborators, they experienced a performance boost from asynchronous recording. All participants were assigned to instrumentalists, rather than being able to choose them; thus a history of collaboration probably wasn’t consequential in our experiment.
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 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 to be creative and performed better. As one woman (0903FE52) noted, “In the case of the click format, I was completely free. I could sing according to my wish. I missed some notes at a place, but then I caught on with it later on. I had complete independence and it felt like I was flying like a bird.” Lack of interference by colleagues also allowed for improvisation: “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 woman singer (0826FE17) said that singing alone enabled her 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 in creative project teams. Our exploration focused on synchronous and asynchronous recordings by 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 will be 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 the same instrumentalists. Our results show that asynchronous teamwork improves women’s performance—expert evaluations increase nearly 30%—but not that of their men colleagues. Via mediation analysis and qualitative evidence from experimental participants, we further establish creative expression as a key mechanism underlying this pattern.

These findings are stark for two reasons. First, even though women singers had more experience with synchronous performances and recordings, they performed better in the less-familiar asynchronous setting. Second, although the singer typically functions as the leader within a team of musicians, women singers felt more at liberty to express themselves when they recorded asynchronously. The latter finding suggests that in other contexts where women are not in leadership roles, the effects we document are apt to be even more pronounced.

Contributions to Scholarship on Women in Teams
This paper 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 at their full potential (Cohen & Zhou 1991, Ridgeway 1991), and that this phenomenon can affect team performance (Thomas-Hunt & Phillips 2004, Joshi 2014), the conditions under which individual women on teams might 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 & 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 disadvantages that women have long faced in teams, allowing them to put their best foot forward. This conclusion is especially salient at this moment in time, when various industries are experimenting actively with how they organize teams.

Second, this paper highlights a novel mechanism—creative expression—whereby asynchronous teamwork improves women’s performance on a creative project. Working asynchronously and alone affords women greater creative freedom There are various reasons why women might be less likely to express their creativity in synchronous work with men. Given differences by gender in expectations, and bias in evaluations of women’s work (Rivera & Tilesik 2019, Khazan 2019), there is reason to believe that women working synchronously encounter real-time interruptions, disparagement, and criticism that inhibit their ability to be creative. Alternatively, the presence of men team members, even in the absence of negative
feedback, may make gender salient for token women in ways that inhibit performance on traditionally masculine tasks, such as creative expression (Luksyte et al. 2017; Proudfoot et al. 2015). 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 better performances by women on mixed-gender teams than will synchronous teamwork, and that this relationship is mediated by freedom of creative expression. Furthermore, in many organizations synchronicity is being reinstated as a matter of policy, without thoughtful consideration of the types of feedback that synchronous teams are structured to encourage. Thus pointing out the potential benefits of asynchronous teamwork is timely, and can provide insights highly relevant to the future of creative work.

**Contributions to Scholarship on Creativity and Creative Work**

This paper also makes two contributions to the study of creativity. First, in identifying the differential impact of asynchronous recording by gender, this study lies at the intersection of creativity and inequality. Much of the literature implies that creative teamwork cannot be achieved asynchronously, largely because asynchronous teams do not entail the social exchanges that the literature values. As Godart et al. assert, “central to the sociological determinants of creativity are structure, institutions, and context, underlining the idea that most creative endeavors cannot be attributed to individuals in isolation” (2020: 499). However, to Godart et al.’s point, if creativity is inherently social, it is unavoidably affected by social dynamics, such as status inequality between members of creative project teams. Thus, the dynamics of groups within which creative work is performed are crucial to understanding how creativity is generated. When looking at homogenous teams with “safe communication environments,” synchronous
teamwork may foster creativity (Metiu 2006); however, this approach overlooks the ways creativity might be hindered by the presence of others, particularly for low-status team members. Our study helps to fill this gap: our findings show that creative expression on the part of low-status team members, in this case women, can be stifled by synchronous teamwork.

And yet this suppression of creative freedom is not inevitable; it can be ameliorated by reimagining how creative teams’ outputs are generated. Restructuring creative teamwork so that women experience more liberty to take risks and to pursue unorthodox ways of performing their roles ultimately leads to better performances at the individual and group levels. Here, we have used asynchronous restructuring of musical recording to achieve this goal. Our results contribute to the field by showing that, when gender dynamics between creative team members are taken into account, asynchronous work can actually increase creativity and the quality of output.

Second, prior research on gender equality in creative work has focused on two stages in creative project work—hiring and evaluation—but has paid less attention to the stage in the middle: that of actually doing creative work. This project demonstrates how the structure of teamwork can affect women’s ability to be creative and their ultimate performance.

**Contributions to Scholarship on Temporal Restructuring of Teamwork**

This paper makes two contributions to the study of temporal restructuring of work too. First, it investigates the direct impact of asynchronous work arrangements on individual performance within teams. It takes seriously the idea that individual team members might respond to the opportunities afforded by asynchronicity in ways that merit deeper investigation, irrespective of the effects of temporal restructuring on overall team outcomes. Given that asynchronous work arrangements are increasingly widespread, this investigation is important and timely.
Second, this paper studies the heterogeneous performance effects of asynchronous teamwork on men and women. Despite acknowledgement that asynchronous teams are diverse (Neeley 2021), the literature implicitly assumes that men and women transitioning from synchronous to asynchronous teamwork will face identical 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 & Chai 2021), but gender diversity has garnered 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, our experiment’s standardization of the extent to which subjects could control their schedule, the work setting, and their work-family balance highlights the direct impact of asynchronicity itself on women’s work performance.

**Generalizability and Future Research**

We expect our findings to be relevant to a wide array of workplaces. Most immediately, this research shows that, in the music space, a structural change—a shift to asynchronous teamwork—can enhance women’s recording experience and performance. This finding is timely: scholars have called for more research to identify interventions that help address gender inequality in music production (Brereton et al. 2020). It’s also a realistic suggestion; although live music performance is inherently synchronous, recording is increasingly done asynchronously, making this a feasible option for women recording artists in genres from folk to jazz and rock. Apart from singers, women instrumentalists and even composers can benefit from working asynchronously (Biasutti 2018).
We also expect asynchronous teamwork to facilitate creative expression for women in other creative industries. For example, women in men-dominated comedy-writing teams traditionally have been “expected to endure 16-hour workdays together [with other writers] in a single room,” an experience “premised on co-workers sharing common sensibilities about male humor and related considerations that are notoriously difficult for outsiders such as women to penetrate” (Bielby 2009); asynchronous teamwork is likely to benefit women on such teams, as well as screenwriting and songwriting teams. Similarly, women in the visual arts who often work on creative project teams in architectural, product, or graphic design, are likely to experience gender-based microaggressions (Miller 2016, Stokes 2013, 2015), and thus would benefit similarly from asynchronous work. Women in videogame development teams and animation teams for studios like Pixar are likely to benefit as well (Bailey et al. 2021, Catmull 2014).\(^\text{17}\)

Outside of creative industries too, project teams are often formed with a creative goal. We expect that women on these teams will benefit from asynchronous teamwork to the extent that (1) the team is working on a creative project, and (2) is men-dominated. For example, women on an advertising or marketing team assembled to work on a single campaign would be likely to benefit from the opportunity to generate creative ideas asynchronously. Similarly, women in asynchronous scientific teams may offer suggestions to advance research projects more readily than they would on a team that operates synchronously.

We do not expect our findings to be limited to India, given the global consistency with which women’s voices are more constrained than men’s in mixed-gender groups (Karpowitz and Mendelberg 2016). Gender norms within Baul musical teams are likely to be similar to those of

\(^{17}\) Note that in most creative industries, transitions to asynchronous teamwork are top-down, instigated by access to new technology or shifts in corporate policy; it would be interesting for future research to explore contexts where workers can choose whether to work synchronously or asynchronously, and the ensuing effects on performance.
other cultures to the extent that they are gender egalitarian in ideology, but not necessarily behavior. Baul beliefs focus on transcending identities like gender and caste (Dutta & Dutta 2019), and Baul women and men are considered equal in theory (McDaniel 1992), although the reality often diverges (Ghosh 2016). Such disparity between gender ideology at the cultural level and at the individual level is prevalent in many western cultures as well (Otterbach, Sousa-Poza & Zhang 2020); thus our Baul musicians may align more closely with Western cultures than might seem apparent at the outset.

Baul women singers are virtually always the only woman in an ensemble; instrumentalists are nearly all men. The gender dynamics of Baul musical teams might differ if women were not in the minority. Consequently, we generalize our findings only to creative project teams where women are outnumbered. 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. Industries that already enjoy considerable gender equity because of high representation of women, or where women already feel equally empowered in synchronous and asynchronous work environments, might see little improvement.

Beyond gender, other demographic minorities too might experience greater freedom of creative expression when teamwork is asynchronous; this dynamic 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 more generally. Demographic minorities in other artistic professions, ranging from movie production to architecture, may also experience enhancement of their creativity, and hence productivity, with a move to asynchronous teamwork.
We do not view asynchronous work as a panacea for all work inequalities. A mere shift to asynchronous arrangements would not directly tackle the root problem of sexist work environments and team cultures. To maximize gender equality, organizations should continue to develop tools and norms that address women’s disadvantages in the workplace and penalize gender discrimination. For example, training to make synchronous work environments more inclusive—perhaps including videos illustrating what unhealthy gendered interactions look like and the impact of those toxic interactions on the work experiences and performance of women team members—will continue to be extremely important in the future of work. Thus we do not expect asynchronous work to be the sole solution to gender inequality, but one that is particularly expedient, and more practical than ever, given recent technological developments. If asynchronous work can facilitate women’s freedom of expression, it may have a powerful impact on women’s motivation to continue working rather than exiting their field or the workforce in response to the stifling effect of synchronous teamwork. Furthermore, improving women’s performance may help to extinguish the stereotypes that nourish gender bias, indirectly addressing the root cause of gender inequality. Most importantly, amplifying underrepresented voices in creative spaces can provide a way forward to a more equitable future of work.


Lingo, E. L., & Tepper, S, J. (2013). Looking back, looking forward: Arts-based careers and


Perlow, L. A., & Kelly, E. L. (2014). Toward a model of work redesign for better work and
Svensberg, K., Kalleberg, B. G., Mathiesen, L., Andersson, Y., Rognan, S. E., & Sporrong, S. K.
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

Table 1: Recordings by Gender of Singer and by Treatment

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

Note: One woman who had agreed to participate was unable to do so for logistical reasons.
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><strong>Asynchronous</strong></td>
<td>0.285</td>
<td>0.285</td>
</tr>
<tr>
<td></td>
<td>(0.230)</td>
<td>(0.325)</td>
</tr>
<tr>
<td><strong>Woman</strong></td>
<td>-1.879***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.342)</td>
<td></td>
</tr>
<tr>
<td><strong>Asynchronous*Woman</strong></td>
<td>0.955**</td>
<td>0.955*</td>
</tr>
<tr>
<td></td>
<td>(0.314)</td>
<td>(0.444)</td>
</tr>
<tr>
<td><strong>Constant</strong></td>
<td>6.175***</td>
<td>6.108***</td>
</tr>
<tr>
<td></td>
<td>(0.249)</td>
<td>(0.163)</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>0.214</td>
<td>0.816</td>
</tr>
<tr>
<td><strong>Singer Fixed Effects</strong></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 198 198 198
Clusters 99 99 99
R² 0.204 0.231 0.156

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</td>
<td>0.488*</td>
</tr>
<tr>
<td></td>
<td>(0.358)</td>
<td>(0.205)</td>
</tr>
<tr>
<td>Woman</td>
<td>-1.374***</td>
<td>-1.271***</td>
</tr>
<tr>
<td></td>
<td>(0.359)</td>
<td>(0.282)</td>
</tr>
<tr>
<td>Asynchronous*Woman</td>
<td>1.139*</td>
<td>0.451</td>
</tr>
<tr>
<td></td>
<td>(0.522)</td>
<td>(0.297)</td>
</tr>
<tr>
<td>Creative expression</td>
<td></td>
<td>0.442***</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.0739)</td>
</tr>
<tr>
<td>Constant</td>
<td>2.170***</td>
<td>5.215***</td>
</tr>
<tr>
<td></td>
<td>(0.314)</td>
<td>(0.269)</td>
</tr>
<tr>
<td>Observations</td>
<td>198</td>
<td>198</td>
</tr>
<tr>
<td>Clusters</td>
<td>99</td>
<td>99</td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.050</td>
<td>0.495</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.
- 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 by Parentage

<table>
<thead>
<tr>
<th></th>
<th>Singer Performance</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
</tr>
<tr>
<td>Asynchronous</td>
<td>-0.141</td>
<td>0.025</td>
</tr>
<tr>
<td></td>
<td>(0.453)</td>
<td>(0.375)</td>
</tr>
<tr>
<td>Woman</td>
<td>-2.185***</td>
<td>-1.718***</td>
</tr>
<tr>
<td></td>
<td>(0.549)</td>
<td>(0.476)</td>
</tr>
<tr>
<td>Asynchronous*Woman</td>
<td>1.681**</td>
<td>1.518**</td>
</tr>
<tr>
<td></td>
<td>(0.524)</td>
<td>(0.462)</td>
</tr>
<tr>
<td>High tenure</td>
<td>-0.133</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.549)</td>
<td></td>
</tr>
<tr>
<td>Asynchronous*High tenure</td>
<td>0.626</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.522)</td>
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</tr>
<tr>
<td>Woman*High tenure</td>
<td>0.719</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.727)</td>
<td></td>
</tr>
<tr>
<td>Asynchronous<em>Woman</em>High tenure</td>
<td>-1.444*</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.678)</td>
<td></td>
</tr>
<tr>
<td>Baul parent</td>
<td>0.417</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.498)</td>
<td></td>
</tr>
<tr>
<td>Asynchronous*Baul parent</td>
<td>0.433</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.475)</td>
<td></td>
</tr>
<tr>
<td>Woman*Baul parent</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>(0.693)</td>
<td></td>
</tr>
<tr>
<td>Asynchronous<em>Woman</em>Baul parent</td>
<td>-1.176†</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.639)</td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>6.266***</td>
<td>5.925***</td>
</tr>
<tr>
<td></td>
<td>(0.460)</td>
<td>(0.366)</td>
</tr>
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</table>

Observations: 198
Clusters: 99
R²: 0.225 0.236

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 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 is Saiji’s song, which is a common song, so keep it like this 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 woman 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>
</tr>
<tr>
<td>11.30 AM - 12.15 PM [45 m]</td>
<td>Rehearsal: Woman Singer</td>
</tr>
<tr>
<td></td>
<td>Break</td>
</tr>
<tr>
<td>12.20 – 12.35 PM [15 m]</td>
<td>Man Singer &amp; Instrumentalists: Control</td>
</tr>
<tr>
<td></td>
<td>Break</td>
</tr>
<tr>
<td>12.40 – 12.55 PM [15 m]</td>
<td>Woman Singer: Treatment</td>
</tr>
<tr>
<td></td>
<td>Break</td>
</tr>
<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>
</tr>
<tr>
<td></td>
<td>Break</td>
</tr>
<tr>
<td>3.25 – 3.55 PM [30 m]</td>
<td>Harmonium Treatment: Click-Track Songs (2)</td>
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<td></td>
<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></td>
<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 is one of four 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 to which condition they completed first.*
Appendix C: Categories of Creative Expression

Modulation
Are the vocal color and tonal texture appropriate to the song and 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, sustains 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? any clever performance enhancements?
## Appendix D: Robustness Check – Differential Effect of Asynchronous Teamwork on Singers’ Performance, by Gender (with Rating-Level Observations)

<table>
<thead>
<tr>
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<th>Singer performance</th>
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<tr>
<td>Asynchronous</td>
<td>-0.168</td>
</tr>
<tr>
<td></td>
<td>(1.010)</td>
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<tr>
<td>Woman</td>
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<td></td>
<td>(0.342)</td>
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<td>Asynchronous*Woman</td>
<td>1.000**</td>
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<td></td>
<td>(0.315)</td>
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<tr>
<td>Constant</td>
<td>5.508***</td>
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<td>Clusters</td>
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<tr>
<td>R²</td>
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<td>Reviewer Fixed Effects</td>
<td>Yes</td>
</tr>
<tr>
<td>Singer Fixed Effects</td>
<td>No</td>
</tr>
</tbody>
</table>

**Notes.**
- Rating-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).