

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

Aruna Ranganathan^a  and Aayan Das^a

Abstract

Women have traditionally been held back from performing to their full potential in creative project teams, where they typically constitute a minority. However, due to recent technological developments, the structure of teamwork is rapidly evolving. 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 article argues that women will perform better when teamwork is asynchronous rather than synchronous, because working alone will afford them greater freedom for creative expression. We argue that men will not experience the same boost in performance, and thus the 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, men and women, recorded a song both synchronously and asynchronously with the same set of instrumentalists. This article contributes to the study of gender inequality, creativity, and the temporal restructuring of work.

Keywords

asynchronous work, teams, gender inequality, creativity

A wealth of research shows that women in the workplace experience disadvantages in pay, promotion, and performance across a range of industries (see, e.g., Ridgeway 2011). Because of women's lower status in mixed-gender environments, they are prevented from reaching their full potential in work teams (Joshi 2014; Kalev 2009; Thomas-Hunt and Phillips 2004). Women in mixed-gender groups speak less than men, on average, are frequently interrupted, and rarely get credit for their ideas (Henley 2015; Zimmerman and West 1975).

Such gender disparities also affect women in creative project teams, such as screenwriting and songwriting teams, where work is project-based and performance depends on creativity

^aUC-Berkeley

Corresponding Author:

Aruna Ranganathan, Haas School of Business,
UC-Berkeley, 2220 Piedmont Avenue, Berkeley,
CA 94720, USA
Email: arunar@berkeley.edu

(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 (Dellas and Gaier 1970; Smith, Brescoll, and Thomas 2016). Women are thus typecast into subordinate roles in such teams (Bell, Hughes, and Owen-Jackson 2013; Clawson 1999; Larson 2020) and their contributions are undervalued relative to their men colleagues (Heilman and Haynes 2005).

However, ongoing changes in the world of work have the potential to affect gender dynamics in creative project teams. New technologies and digitization are transforming how creative work is performed (Askin and Mol 2018; Nagaraj and Ranganathan 2022). In particular, temporal restructuring of work is proliferating (Perlow and 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 2023). The sociology-of-creativity literature (for a recent review, see Godart, Seong, and Phillips 2020) largely emphasizes 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 effects of gender-related stereotypes and thus help women (Spencer, Logel, and Davies 2016). To seriously consider recent developments in how teamwork is structured and the implications for gender inequality, this article 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 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; women 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 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 article investigates asynchronous teamwork and gender differences in performance in the context of folk-music ensembles in eastern India. 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. Gender norms within Baul musical teams are likely to be similar to those of other cultures to the extent they are gender egalitarian in ideology but not necessarily behavior.

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 (Chatman and Flynn 2005; Fine and Elsbach 2000). 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 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. We also 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, men and women; we brought them to a recording studio to record with a consistent set of instrumentalists, both synchronously and asynchronously. We assessed their musical output under both conditions and had an expert panel evaluate this output. Finally, we conducted detailed interviews to unpack the singers' recording experiences.

This article 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 highlight greater creative freedom for women as a novel mechanism underlying this effect. The article also contributes to the literature on the sociology of creativity by showing that, whereas prior research emphasizes synchronicity as an important determinant of creative performance, lower-status team members, such as women, are actually *more* creative when teamwork is asynchronous. Thus, this article develops our understanding of the underexplored relationship between creativity and inequality in creative teamwork. Finally,

this article contributes to the literature on the temporal structuring of work by studying the direct effects 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, this article contributes to ongoing policy debates on how to structure the future of work to mitigate persistent demographic disadvantages. Our setting, Indian folk music ensembles, departs from typical professional or white-collar settings that are more commonly examined in theorizing the future of work. Music recordings by ensembles are useful to study, however, as they allow for empirically disentangling the effects of changing the structure of work from changing the content of work; in other contexts, a shift from synchronous to asynchronous teamwork could be accompanied by changes to the roles performed by different team members. We expect our findings on the benefits of asynchronous teamwork for women to generalize to other team-based, men-dominated work settings where the team is working on a creative project. Such settings are abundant and can be found in diverse contexts, ranging from the production of scientific knowledge to screenwriting, product design, and advertising.

ASYNCHRONOUS TEAMWORK AND GENDER DIFFERENCES IN PERFORMANCE

Gender and Teamwork

A considerable body of work shows that women are often 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 (Alegria 2019; Berger et al. 1977; Carli 1990; Ridgeway and Diekema 1989; Williams, Muller, and Kilanski 2012). Team members routinely

have different performance expectations for women than for men (Berger, Rosenholtz, and Zelditch 1980; Heilman 2012; Lockheed and Hall 1976; Meeker and Weitzel-O'Neil 1977), and thus the feedback women receive is often more critical and less constructive. Similarly, women are given fewer opportunities to participate (Cannon, Robinson, and Smith-Lovin 2019; Meeker and Weitzel-O'Neil 1977; Ridgeway and Berger 1986), and women who attempt to gain the floor in meetings by interrupting the speaker are less likely than men to succeed (Zimmerman and 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 and Schweers 2017). Women's contributions are also routinely attributed less competence than men's (Eagly and Karau 2002; Foschi 1996; Foschi, Lai, and 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 and Phillips 2004).

Unsurprisingly, women often 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 speak up in environments dominated by men (Born, Raney, and Sandberg 2022; Karpowitz and 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 (Ellemers 2018; Ford et al. 2002; Schmader 2023; Steele 1997). 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 and Zhou 1991; Joshi 2014; Ridgeway 1991). This salience is key to triggering stereotype threat, whereby women made aware of their gender perform worse on an array of tasks (Hoyt and Murphy 2016; Spencer, Steele, and Quinn 1999). Most of this research focuses 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 lower performance than those composed of men experts (Thomas-Hunt and Phillips 2004). Similarly, the proportion of highly educated women in a team is negatively associated with its performance in fields 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 affected. 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 this field tends to be men-dominated and creativity tends to be male-typed (Abdulla Alabbasi et al. 2022; Hora et al. 2022; Proudfoot, Kay, and Koval 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 (Berg 2022; Lingo and Tepper 2013). Some creative teams are long-term, as in advertising (Koppman 2014), but 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; they are often self-managing, meaning “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 and 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 (Bielby and Bielby 1996; de Laat 2019; Friedman and O’Brien 2017; Miller 2016; Yuen 2016; Zuckerman et al. 2003) or siloed into supporting rather than leading roles (Hesmondhalgh and Baker 2015). For example, since the 1980s, women in U.S. and U.K. rock bands have often been relegated to playing the bass, in part because it is a supportive role that men rarely favor (Clawson 1999).² Similarly, Goldin and Rouse (2000) document 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 laypersons 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 (Khazan et al. 2019; Rivera and Tilcsik 2019). Women are less likely to be perceived as leaders by bandmates in performing groups, and their contributions to creative work are undervalued (Heilman and Haynes 2005; Proudfoot et al. 2015).³ 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 women face in the process of actually being creative in project teams. As Godart and colleagues (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 likely influence its creative performance and that of its individual members (Godart et al. 2020). Murningham 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, 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 (Borgo 2006; Hargadon and Bechky 2006; Watson 2007). Working synchronously can encourage individuals to feed off each other’s insights and energy, leading to more brainstorming (Brucks and 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, tends 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 ignores the ways 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 how temporally restructuring creative teamwork may differentially affect the performance of men and women on creative teams.

Temporal Restructuring of Work

This article 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 2023). 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 (de Laat 2015; Skaggs 2019). Many “flexible work arrangements”—whether in creative industries or not—entail asynchronous teamwork (Choudhury, Foroughi, and Larson 2021; Majchrzak et al. 2000); indeed, workers often appreciate such temporal flexibility (Moen, Kelly, and Hill 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 examines differential performance effects by gender. Scholars have long anticipated that temporal restructuring “may affect employees differently depending on their gender” (Kelly, Moen, and Tranby 2011:268; Reid, O’Neil, and Blair-Loy 2018), but this question has not been empirically examined. Nearly 30 years ago, Abbott (1993:193) observed that “there is much speculation about the role of temporal structure, particularly in relation to gender [inequality], but little research”; that assertion still holds true.

Some research suggests women receive less favorable performance evaluations than men in asynchronous work environments (Khazan et al. 2019; Rivera and Tilcsik 2019). However, this work does not compare synchronous to asynchronous work environments and does not actually look at differences in output, but at differences in ratings of the same work when it is attributed to a woman or to a man.⁴ Furthermore, this research looks at women working alone rather than in teams and cannot speak to how the environment in which a work product is created can shape the actual performance of a man or woman on a team. 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 help women (Spencer et al. 2016:427). Identifying

the varied effects 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 each song has many versions and interpretations. The music embodies a long heritage of preaching mysticism in song; through their music, Bauls⁵ seek divine love, a transcendent experience rooted in simplicity, freedom, and humanism, which rejects societal divisions along caste, religious, and other lines (Urban 1999). In India, 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 collaborating with unfamiliar musicians each time they perform and 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, 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 synchronous and asynchronous recordings; the producer facilitates the recording process and the sound engineer manages the technical details of recording. Both synchronous and asynchronous recording processes are still used in India,⁶ 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 and Elsbach 2000; Ranganathan 2018). We first conducted ethnographic fieldwork and semi-structured interviews, which generated our theory and hypotheses. We then tested those hypotheses using a field experiment.

Qualitative Methods

Our qualitative data-collection consisted of three phases: (1) Zoom and telephone interviews, (2) ethnographic observation of musicians in towns and villages 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 ethnomusicologists, contemporary and classical Indian musicians highly familiar with Baul or Baul-fusion music, and Bauls themselves, via videoconferencing or telephone. During this phase of the project, we conducted 17 interviews averaging one 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 the individuals we contacted expressed interest in the project, and 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 Figure A1 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, men and women. We also used these visits to conduct an additional 25 formal semi-structured interviews and seven 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 2016), they were not prone to being intimidated by our academic status. People often behave differently when being observed (McCambridge, Witton, and Elbourne 2014; Pillow 2003), so 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 visited musicians at their 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. A concern persists that men might be more prone to showing off than women, but 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 benefit 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 we 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 experimental setup closely resembled these initial recording sessions: five instrumentalists accompanied each singer; producers and sound engineers facilitated recording; and the musicians participated in an asynchronous and a synchronous recording.

We transcribed and translated all field notes and interviews. The second author is a native speaker of Bengali and supervised transcription and translation of all field notes and interviews, resulting in 628 pages of data. The first author used a grounded theory framework (Charmaz 2014) to inductively analyze this open-ended data via multiple readings, memo-writing, and coding in Atlas.ti, generating hypotheses and an experimental design to test them.

QUALITATIVE FINDINGS

This section describes 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.⁷ 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 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 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 have 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. One man musician (0702FV16) noted:

It has been almost 40 years that I have been performing now. We usually perform with around five to six 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 two to three 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 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) said: “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) described this process:

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 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 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.

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 adapt to each other as they perform.

Men's and Women's Experiences of Synchronous Performance

Our data revealed that men and women singers experienced synchronous performance very differently. Men enjoyed performing synchronously with fellow musicians and felt the group brought out the best in them. One man (0702FV16) said 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 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, "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 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-racking 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 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 she "did not receive as much respect from her fellow musicians as she deserved." Overall, women's experiences working synchronously were more negative than men's, in part due to men's criticism and unconstructive feedback.

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. Women reported abiding by a tacit expectation that they 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,” one woman (0804P207) said. After a particularly difficult synchronous recording experience, the same woman said, “I couldn’t please everyone with my song.” She lamented, “As long as I am not happy with how my song has turned out, how can I expect my listeners to be happy?” An instrumentalist (0804P201) who had performed alongside a woman singer concurred: “The 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 Asynchronously

We also observed singers performing asynchronously, in their homes and in studios

where they recorded their parts to a click track. Our data suggest 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.”

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 . . . don’t come in cases where you are nervous. . . . That sort of emotion 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 their body. The musician goes into a state of trance at that moment, and even if they want to, they 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 the 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 they are more satisfied with.

Hypotheses

The qualitative data prompted us to generate hypotheses 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 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 the following:

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:

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

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

EXPERIMENTAL DESIGN

Experimental Subjects

Our key experimental subjects were *Baul singers*. Ninety-nine singers (50 men and 49 women) from five West Bengal districts—Bankura, Bardhaman, Birbhum, Murshidabad, and Nadia—participated in the experiment.⁸ A map of the singers' home locations appears in Appendix Figure A1. 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 we 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 they would record both synchronously and asynchronously, nor informed about the research question or our hypotheses.

Non-experimental Participants

Producers, instrumentalists, and sound engineers also participated in the studio recordings: we worked with a total of three producers, three sound engineers, and 15 instrumentalists at three recording studios (i.e., one producer, one sound engineer, and five 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.

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 they 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 artists in the control and treatment conditions. They were unaware of the project's hypotheses and research question.⁹

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.¹⁰ The *sound engineers* were provided by the

recording studios and were responsible for operating the digital recording equipment. A team of five research assistants helped execute the experiment. They too remained uninformed about the research question and hypotheses.

Experimental Treatment and Within-Person Research Design

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

In the *control condition*, all musicians recorded live, synchronously (see Figure 1, top panel). In the *treatment condition*, each musician recorded alone, beginning with the singer. The song was then built up layer-by-layer as tracks were combined. When the singer recorded, no other musicians were present (see Figure 1, bottom panel). In short, each singer recorded the same pre-assigned song twice, synchronously (the control condition) and asynchronously (the treatment condition) (see Table 1).

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. Each singer was then 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 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 Figure A2 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 they were 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



Figure 1. The Control and Treatment Conditions

Note: Top panel is the control condition; the singer performs with instrumentalists. Bottom panel is the treatment condition; the singer performs alone.

Table 1. Recordings by Gender of Singer and by Treatment

	Men	Women
Control (Synchronous)	50	49
Treatment (Asynchronous)	50	49

Note: One woman who had agreed to participate was unable to do so for logistical reasons.

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- to 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, two 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 four expert raters, two men and two 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 two 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 two 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 timestamp 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 to 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. Although the coding process adhered to a strict set of guidelines, these metrics ultimately reflect raters' perceptions. Raters remained unaware of whether or not a track was recorded synchronously.¹¹

Dependent and Independent Variables

We consider four dependent variables, each of which can assume a value between 1 and 10: *singer performance* measures the overall performance of the singer; *singer tonal quality* measures the sound quality, or timbre, of the singer's voice; *singer vocal range* assesses the spectrum of musical notes the artist can produce; and *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: *woman* and *treatment*. *Woman* is a dummy variable that assumes a value of 0 when the singer is a man and 1 when the singer is a woman. *Treatment*, a dummy variable that indicates whether a session was asynchronous or synchronous, assumes a value of 0 for synchronous sessions and 1 for asynchronous sessions.

Mediator Variable: Creative Expression

Our measure of *creative expression* consisted of the number of coded timestamps—that is, individual occurrences—of three variables that capture singers' creative choices: modulation, phrasing, and vocal arrangement. The measure is essentially a count of the number of occurrences of creative expression in a performance. *Modulation* indicates how well singers adapt their voice to the essence of a song, creating appropriate and musically interesting variations in loudness and generating dynamic variations. *Phrasing* captures whether the vocal phrases are musically and rhythmically interesting, consistent throughout the song, and relevant to the musical context. *Vocal arrangement* captures whether

singers selected a key suitable to the song and to their 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 Figure A3.)

Moderator Variables

Would all women in the study be equally affected by the experience of asynchronous performance? To address this question, we considered two variables we expected 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 two 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.¹² The women tend to be more highly educated and more likely to be Hindu.¹³ 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.

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.¹⁴ 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 .285 extra points. Given that the mean of *singer performance* is 5.624, asynchronous teamwork improves the performance of women by 17 percent compared to men. 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 (Khazan et al. 2019; Rivera and Tilcsik 2019).¹⁵ Figure 2 offers preliminary support for Hypothesis 1. To ensure the findings are robust to the addition of controls, we ran further specifications, presented in Tables 3, 4, and 5.

In Table 3, overall singer performance is regressed against a dummy variable *asynchronous*, a dummy variable *woman*, and the interaction *asynchronous x woman*. Model 1 presents the main effects for *asynchronous*

Table 2. Descriptive Statistics*Panel A: Singer-Level (n = 99)*

	Men	Women	Difference
Age	48.38 (14.33)	38.61 (13.61)	9.768***
Proportion married	.840 (.370)	.755 (.434)	.085
Proportion with no children	.180 (.388)	.224 (.422)	-.044
Proportion Hindu	.380 (.490)	.653 (.481)	-.273**
Proportion backward castes	.380 (.490)	.449 (.503)	-.069
Years of education completed	9.160 (2.972)	11.08 (4.010)	-1.922**
Monthly earnings from music (in Rupees)	8630.2 (9207.1)	7074.5 (8516.9)	1555.710
Number previous synchronous recordings	7.080 (11.28)	3.449 (8.725)	3.631
Number previous asynchronous recordings	1.600 (2.871)	.735 (1.857)	.865
Tenure (in years)	27.62 (14.47)	15.97 (11.01)	11.651***
Proportion with Baul parent	.600 (.495)	.408 (.497)	.192
Proportion who knew any instrumentalists in experiment	.920 (.274)	.857 (.354)	.063
Number of minutes spent practicing song for experiment	117 (143.0)	117.6 (127.5)	-.551
Observations	50	49	

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

	Both Men and Women	
	Mean	Std. Dev.
Proportion of asynchronous recording sessions	.500	.501
Proportion of sessions with female singer	.495	.501
Number of instrumentalists	5.000	.000
Performance of singer (1 to 10)	5.624	1.804
Tonal quality of singer (1 to 10)	5.176	1.951
Vocal range of singer (1 to 10)	5.384	1.929
Performance of group (1 to 10)	6.183	1.582
Creative expression (count)	1.542	2.220

Note: Backward castes include scheduled castes, scheduled tribes, and other backward castes as defined by the Indian constitution. Mean coefficients; sd are in parentheses. Creative expression is the number of coded timestamps of three variables that capture singers' creative choices: modulation, phrasing, and vocal arrangement.

* $p < .05$; ** $p < .01$; *** $p < .001$ (two-tailed tests).

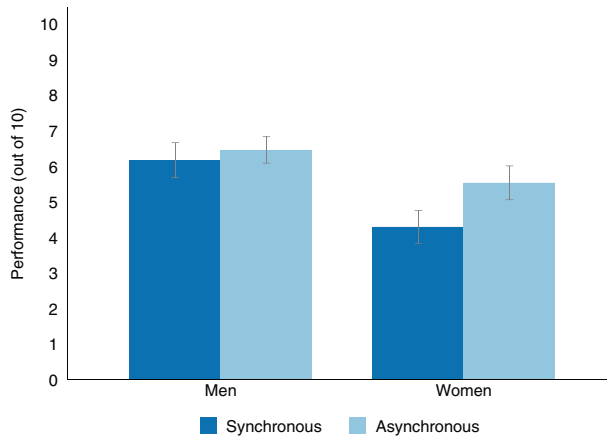


Figure 2. Differential Performance by Singers' Gender and Treatment Condition
Note: 95 percent confidence interval bars are drawn around the mean.

and *woman*; Model 2 includes the interaction *asynchronous x woman*; and Model 3 additionally includes singer fixed effects. 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 percent lower than men when recording synchronously; performing asynchronously enabled them to close this gap by more than half, to 14 percent. The coefficient for the interaction *asynchronous x woman* is .955, statistically significant at the .01 level in Model 2. The results are robust to the inclusion of singer-level fixed effects in Model 3, which controls for individual time-invariant characteristics.¹⁶

As a robustness check, we additionally tested Hypothesis 1 with two other singer-level dependent variables: (1) tonal quality and (2) vocal range. The results for these regressions appear in Table 4, Models 1 to 4. 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 percent lower ratings than men for tonal quality and vocal range, respectively; asynchronous teamwork closed the gaps to 20 and 19 percent, respectively. These results are statistically significant at the .05 level.

We were also curious how asynchronous teamwork would affect evaluations of group

performances by ensembles with women and men singers, which we investigate in Models 5 and 6. 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 percent when recording synchronously, but dropped to 14 percent when recording asynchronously. This result is marginally significant ($p < .10$).

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) the key independent variable (*asynchronous x woman*) is a significant predictor of the dependent variable (*singer performance*); (2) the key independent variable is a significant predictor of the mediator (*creative expression*); and (3) the coefficient for the key independent variable is greatly reduced when adding the potential mediator. Condition 1 is established in Table 3. Condition 2 is established in Table 5, Model 1: when regressing creative expression against *asynchronous*, *woman*, and *asynchronous x woman*, the

Table 3. Differential Effect of Asynchronous Teamwork on Singers' Performance, by Gender

	Singer Performance		
	(1)	(2)	(3)
Asynchronous	.758*** (.164)	.285 (.230)	.285 (.325)
Woman	-1.402*** (.284)	-1.879*** (.342)	
Asynchronous × Woman		.955** (.314)	.955* (.444)
Constant	5.939*** (.221)	6.175*** (.249)	6.108*** (.163)
Observations	198	198	198
Clusters	99	99	99
R ²	.196	.214	.816
Singer Fixed Effects	No	No	Yes

Note: Recording-session-level observations. All estimates are from OLS models. Singer performance: expert rating 0 to 10. Asynchronous: 0/1 = 1 if recording session was asynchronous. Woman: 0/1 = 1 if singer was a woman. Standard errors clustered by singer are in parentheses.

* $p < .05$; ** $p < .01$; *** $p < .001$ (two-tailed tests).

Table 4. Effect of Asynchronous Teamwork on Other Singer and Group Outcomes

	Singer Tonal Quality		Singer Vocal Range		Group Performance	
	(1)	(2)	(3)	(4)	(5)	(6)
Asynchronous	.472* (.182)	.030 (.278)	.788*** (.168)	.400 (.243)	.235 (.153)	-.030 (.212)
Woman	-1.636*** (.306)	-2.082*** (.348)	-1.629*** (.302)	-2.021*** (.344)	-1.196*** (.253)	-1.463*** (.303)
Asynchronous × Woman		.893* (.353)		.784* (.327)		.535 (.302)
Constant	5.749*** (.224)	5.970*** (.254)	5.796*** (.217)	5.990*** (.243)	6.658*** (.195)	6.790*** (.222)
Observations	198	198	198	198	198	198
Clusters	99	99	99	99	99	99
R ²	.191	.204	.221	.231	.149	.156

Note: Recording-session-level observations. All estimates are from OLS models. Tonal quality and vocal range of singer: expert rating 0 to 10. Group performance: expert rating 0 to 10. Asynchronous: 0/1 = 1 if recording session was asynchronous. Woman: 0/1 = 1 if singer was a woman. Standard errors clustered by singer are in parentheses.

* $p < .05$; ** $p < .01$; *** $p < .001$ (two-tailed tests).

coefficient for *asynchronous x woman* is positive, large, and statistically significant. Condition 3 is established in Table 5, Model 2: when we add *creative expression* to the main regression from Table 3, the coefficient for *asynchronous x woman* shrinks in magnitude and in statistical significance. We additionally report the Sobel test statistic, which shows the mediation pathway is statistically significant

(Sobel 1986). Our mediation analysis provides 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

Table 5. Mediation Analysis: Creative Expression Mechanism

	Creative Expression (1)	Singer Performance (2)
Asynchronous	-.460 (.358)	.488* (.205)
Woman	-1.374*** (.359)	-1.271*** (.282)
Asynchronous × Woman	1.139* (.522)	.451 (.297)
Creative expression		.442*** (.0739)
Constant	2.170*** (.314)	5.215*** (.269)
Observations	198	198
Clusters	99	99
R ²	.050	.495
Sobel statistic		.504* (.246)

Note: Recording-session-level observations. All estimates are from OLS models. Singer performance: expert rating 0 to 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 are in parentheses. **p* < .05; ***p* < .01; ****p* < .001 (two-tailed tests).

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 x woman x high tenure* and *asynchronous x woman x Baul parent*. In Model 1, the coefficient *asynchronous x woman x high tenure* takes the value of -1.444, suggesting the benefits of recording asynchronously are more modest among women who have more experience with men instrumentalists. Similarly, the coefficient *asynchronous x woman x Baul parent* in Model 2 takes the

Table 6. Heterogeneity by Tenure in Profession and by Parentage

	Singer Performance	
	(1)	(2)
Asynchronous	-.141 (.453)	.025 (.375)
Woman	-2.185*** (.549)	-1.718*** (.476)
Asynchronous × Woman	1.681** (.524)	1.518** (.462)
High tenure	-.133 (.549)	
Asynchronous × High tenure	.626 (.522)	
Woman × High tenure	.719 (.727)	
Asynchronous × Woman × High tenure	-1.444* (.678)	
Baul parent		.417 (.498)
Asynchronous × Baul parent		.433 (.475)
Woman × Baul parent		-.199 (.693)
Asynchronous × Woman × Baul parent		-1.176 (.639)
Constant	6.266*** (.460)	5.925*** (.366)
Observations	198	198
Clusters	99	99
R ²	.225	.236

Note: Recording-session-level observations. All estimates are from OLS models. Singer performance: expert rating 0 to 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 are in parentheses. **p* < .05; ***p* < .01; ****p* < .001 (two-tailed tests).

value of -1.176, indicating the benefits of asynchronous teamwork are muted for women who grew up observing their Baul parents. This finding further supports our hypothesis that enhanced freedom of creative expression accounts for women’s better performance when recording asynchronously.¹⁷

ADDITIONAL QUALITATIVE EVIDENCE

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 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, "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." Figure 3 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) women singers will uniquely experience a boost in performance when working asynchronously, and (2) 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 percent—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 article makes three key contributions to the study of women in teams. First, although the literature has long acknowledged that women in teams have been held back from performing at their full potential (Cohen and Zhou 1991; Ridgeway 1991), and that this phenomenon can

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)

Figure 3. Women's Experiences When Working Synchronously and Asynchronously

affect team performance (Joshi 2014; Thomas-Hunt and Phillips 2004), the conditions under which individual women on teams might perform better have received less attention. And though, as Wageman, Gardner, and Mortensen (2012:301) note, “the nature of [teams] has been changing at an accelerating pace,” little research has investigated whether newer teamwork arrangements might help women. This article 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 changes to the structure of teamwork can ameliorate some of the disadvantages women have long faced in teams, allowing them to put their best foot forward. If we interpret the overall lower ratings received by women, regardless of the production environment, as evidence for women being held to a higher standard than men, what we learn is that women performers are immersed in an environment where their contributions are chronically undervalued, but by simply removing the most immediate manifestation of that devaluation, they are freer to reach their potential. This conclusion is especially salient at this moment in time, when various industries are experimenting actively with how they organize teams.

Second, this article 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 (Khazan et al. 2019; Rivera and Tilcsik 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, Unsworth, and Avery 2017; Proudfoot et al. 2015). Determining which of these factors is at play in our study is beyond the scope of this article; our argument is simply that asynchronous teamwork will produce better performances by women on mixed-gender teams than will synchronous teamwork, and 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. Pointing out the potential benefits of asynchronous teamwork is thus timely and can provide insights highly relevant to the future of creative work.

Finally, the limited research on the conditions under which individual women can improve their performance on teams has generally been conducted in the lab, offering little insight into how gender dynamics in teams play out in realistic settings. Recent reviews (Eden 2017; Hauser, Linos, and Rogers 2017) have called for greater use of field experiments in teams research to encourage scholarship that is contextually rich while also being causally rigorous. We responded to these calls by using a field experiment to observe women’s individual performance in naturally occurring mixed-gender teams in a creative industry. Furthermore, our experimental design involves performing a realistic task within a real-world setting, thus increasing generalizability of our findings (List and Rasul 2011).

Contributions to Scholarship on Creativity and Creative Work

This article also makes two contributions to the study of creativity. First, in identifying the differential effect 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 and colleagues (2020:499) 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.” However, to their 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 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 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 the process—hiring and evaluation—but has paid less attention to the middle stage: 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 article makes two contributions to the study of temporal restructuring of work. First, we investigated the direct effect of

asynchronous work arrangements on individual performance within teams. We took 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, we studied the heterogeneous performance effects of asynchronous teamwork on men and women. Despite acknowledgment that asynchronous teams are diverse (Neeley 2021), the literature implicitly assumes 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, and Chai 2021), but gender diversity has garnered less attention (Abbott 1993; Kelly et al. 2011). This article 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 effect 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 is 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 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 would likely benefit women on such teams. Similarly, women in the visual arts who 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 from asynchronous work, as would women in videogame development teams and animation teams for studios like Pixar (Bailey, Miyata, and Yoshida 2021).¹⁸

Outside of creative industries, project teams are often formed with a creative goal. We expect 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 might 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 2014). Gender norms within Baul musical teams are likely similar to those of other cultures to the extent they are gender egalitarian in ideology but not necessarily behavior. Baul beliefs focus on transcending identities like gender and caste (Dutta and 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 and individual levels is prevalent in many Western cultures as well (Otterbach, Sousa-Poza, and Zhang 2021); 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 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 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 effect 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.

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 effect

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 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.

APPENDIX

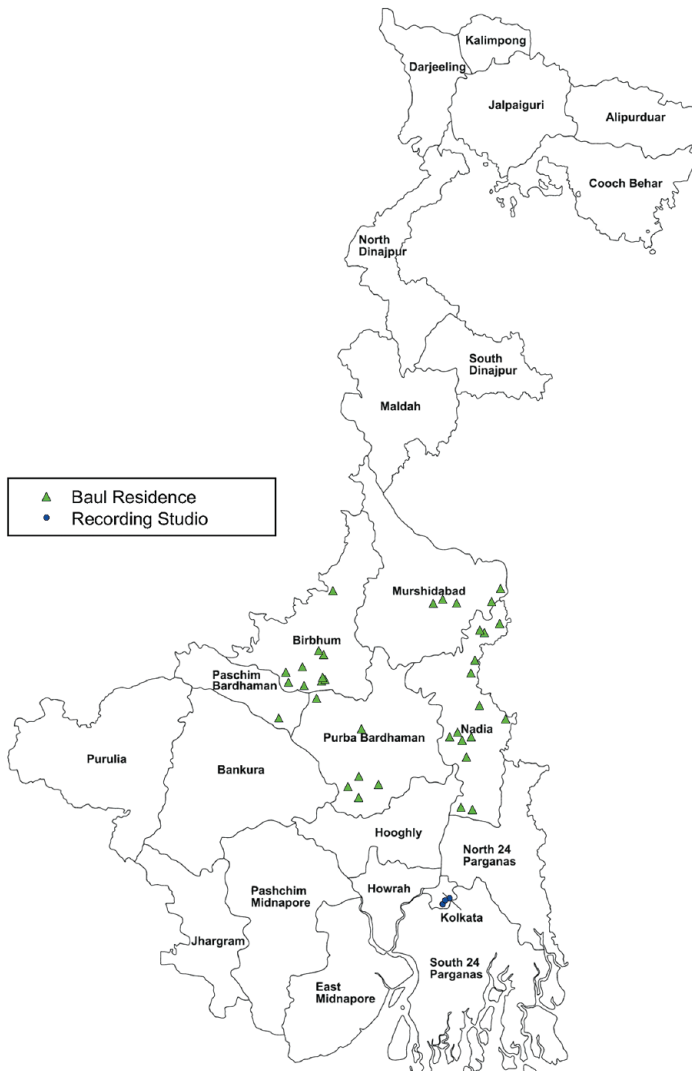


Figure A1. Locations in West Bengal Where Baul Singers Reside

Schedule Version A	Call Time: 10.00 AM
10.00 – 10.45 AM [45 m]	Mic Setup Arrivals & Breakfast Prompt
10.45 – 11.30 AM [45 m]	Rehearsal: Man Singer
11.30 AM – 12.15 PM [45 m]	Rehearsal: Woman Singer
Break 5 Minutes	
12.20 – 12.35 PM [15 m]	Man Singer & Instrumentalists: Control
Break 5 Minutes	
12.40 – 12.55 PM [15 m]	Woman Singer: Treatment
Break 5 Minutes	
1.00 – 1.15 PM [15 m]	Man Singer: Treatment
Break 5 Minutes	
1.20 – 1.35 PM [15 m]	Woman Singer & Instrumentalists: Control
Break 5 Minutes	
1.40 – 2.10 PM [30 m]	<i>Dhol</i> Treatment: Click-Track Songs (2)
Lunch Break 40 Minutes	
2.50 – 3.20 PM [30 m]	<i>Manjira</i> Treatment: Click-Track Songs (2)
Break 5 Minutes	
3.25 – 3.55 PM [30 m]	Harmonium Treatment: Click-Track Songs (2)
Break 5 Minutes	
4.00 – 4.30 PM [30 m]	<i>Dotara</i> Treatment: Click-Track Songs (2)
Break 5 Minutes	
4.35 – 5.05 PM [30 m]	Flute Treatment: Click-Track Songs (2)

Figure A2. Sample Schedule

Note: This is one of four schedules 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.

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?

Figure A3. Categories of Creative Expression

Table A1. Robustness Check – Differential Effect of Asynchronous Teamwork on Singers' Performance, by Gender (with Rating-Level Observations)

	Singer Performance		
	(1)	(2)	(3)
Asynchronous	.329 (1.170)	-.168 (1.010)	.022 (.771)
Woman	-1.401*** (.284)	-1.902*** (.342)	
Asynchronous × Woman		1.000** (.315)	.968** (.361)
Constant	5.260*** (1.179)	5.508*** (1.013)	5.247*** (.747)
Observations	400	400	400
Clusters	99	99	99
R^2	.291	.303	.652
Reviewer Fixed Effects	Yes	Yes	Yes
Singer Fixed Effects	No	No	Yes

Note: Rating-level observations. All estimates are from OLS models. Singer performance: expert rating 0 to 10. Asynchronous: 0/1 = 1 if recording session was asynchronous. Woman: 0/1 = 1 if singer was a woman. Standard errors clustered by singer are in parentheses.

* $p < .05$; ** $p < .01$; *** $p < .001$ (two-tailed tests).

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ORCID iD

Aruna Ranganathan  <https://orcid.org/0000-0003-2110-6798>

Notes

1. This phenomenon is not specific to situations characterized by token representation of women (Mansbridge 1999).
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 and Nault 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.
3. In fact, as women’s representation increases in some creative project teams, such as orchestras, men sometimes become *more* dissatisfied with the group itself (Allmendinger and Hackman 1995).
4. This prior work focuses on how a consistent, asynchronous work product (e.g., the work of a TA or a lecture transcript from a TED talk), when randomly assigned to a man or a woman, is differentially evaluated by a student audience.
5. For concision, we refer to Baul-Fakirs as Bauls, as is common practice in the community.
6. 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.

7. Use of *we* as an indicator of identification with a group has been established by Pennington, Socher, and Manning (2014) and Yang, Goldberg, and Srivastava (2022).
8. One woman who had agreed to participate was unable to do so for logistical reasons.
9. Producers managed technical aspects of the recording, not 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.
10. 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 indicate that many singers knew one or a few members of the team they were assigned to work with, but they had worked together only briefly to achieve the specific objective of recording a song. The questionnaire also asked instrumentalists about their gender attitudes with a widely-used gender ideology scale (Thébaud 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.
11. We could not conceal the gender of the singer from the raters. Although 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.
12. 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.
13. Hindu communities tend to be more gender-egalitarian (Desai and Temsah 2014).
14. Our sample consisted of 49 women and 50 men, resulting in 98 recording sessions with women singers and 100 sessions with men singers.
15. 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. If there is an observer effect, it is thus equal across our subjects, men and women, and across treatments. Even if 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.
16. Appendix Table A1 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 et al. 2023).

17. 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 was not consequential in our experiment.
18. In most creative industries, transitions to asynchronous teamwork are top-down, instigated by access to new technology or shifts in corporate policy. Future research might explore contexts where workers can choose whether to work synchronously or asynchronously, and the ensuing effects on performance.

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- Aruna Ranganathan** is Associate Professor in the Management of Organizations (MORS) at the Haas School of Business, University of California-Berkeley. She received her PhD from the Massachusetts Institute of Technology. Her research combines multiple methods to study how individuals identify with their work and make workplace decisions, and how organizations affect workplace and social inequality.
- Aayan Das** is a researcher at the Haas School of Business, University of California-Berkeley. He received a BA in Economics and East Asian Studies (Chinese) from Stanford University. He uses full-cycle, experimental methods to explore the idea that work can be inherently enjoyable and a source of fulfillment. He is particularly interested in questions of identity, scaling and managing organizations, and inclusive development.