SUPPLEMENTARY FILE

Music Intervention - Details of the Melodic Scales used as Intervention

Miyan ki Todi, the *raga* A of this study, is a Hindustani classical raga that gave its name to the *Todi thaat*, one of the ten modes of Hindustani classical music, also known as *Darbari Todi*, and sometimes Shuddha Todi, is among the more popular morning ragas of Hindustani music. The scale of *Miyan ki Todi* is Arohana: S r g m d N S' or 'd 'N S r g m d N S' or S r g m d P, m d N S' or S r g m P, m d N S' and *Avarohana*: S' N d P m g r S or S' N d P m d m g r g r S. *Vadi* and *Samavadi* are *Komal Dha* and *Komal Ga. Re, ga,* and *dha* are intoned slightly low, and *tivra ma* is very sharp. Bhatkhande pronounces *Komal Dha* as *Vadi* (primarily dominant), but some musicians accord this status to *Komal Ga*. According to him, *Komal Ga and Komal Re* are candidates for the status of *samvadi* (secondary dominant). *Todi* is a *Raga* of the late morning. The prescribed time for the raga is the first 3-h slot after sunrise. The equivalent *raga* in Carnatic music is *Shubhapantuvarali. Miyan ki Todi* predominantly is mostly pervaded by a pensive, mournful mood, which is then relieved in the drut (faster tempo) part by a festive piece, possibly to alleviate the heavy pathos in the earlier stages of rendering, though not always. The composition is such as to afford an artist of high calibre to mould it in either the inherent pensive mood or to entirely present a festive mood. Despite this, the raga has attained a decent presence in the classicist as well as romanticist genres of Hindustani music. The common phrases used in this scale are: N. N. S r g/r g r/r g M^P or r g M^g P/g M^d P/M^g M^d/N d P/d d N S' (or) M^d N S'/N S' r' g' r'/d N S' r' g'/r' g' r' S'/N r' N d P/M^P d M^g (or) N d M^g/r g r S.[1] Popular songs based on this *raga* are: *Bhini bhini bhor (Asha Bhosle's Album Dil Padosi Hai), aeri mai to prem diwani mera dard na jane koi (A meerabai bhajan from the movie – Meera), Watan pe jo fida hoga (movie – Phool bane angaare),*[2] *oora serabahude neenu (title track of T N Seetharam Kannada serial 'magalu jaanaki').*

Raga Malkauns belongs to *Kalyan thaat* and is a majestic and somewhat introverted pentatonic raga. Ma is the pivotal tone of this *raga* and the tone in which the first string of the *tanpura* is usually tuned. *Ga, Dha* and *Ni* may slightly oscillate. *Malkauns* should be performed in a slow and dignified manner, and to bring out its ethos the notes should be linked by glides, in particular N/D, D/M and M/G.[3] Time: Late night, 12–3. *Aarohan* (ascending scale): S G M D N M D S*; *Avaraohan* (descending scale): S* N D M G M G S, D S; * indicates a higher (third) octave. The *Rishabh* and the *pancham* are skipped in the scale. It is an *audhav - audhav* (5 notes in ascent and descent of the scale) *vakra (nishad* is rarely employed in *avaroh).* The *vaadi samavaadi swaras* for this raga are d and g. The *vishranti sthaan* for this scale are G; D; S'; - D; G;. Example of *sanchar* (move/phrases/flow) through this *raga*, S; G M D G M G; M G; G S; D, D S; N, M, D S; S G M D; G M G; M D S'; N M D; G M M G; S; D, D S. It is this preponderance of the *tivra madhyam;* thus, intense training is required to perform this raga. Time for best effects is between (12 night and 3 am): 3rd *prahar* of the night (*Ragas* are divided into *prahaars* whereby each *raga* has a specific period of the day when it is performed). The

For CorrCA, an intersubject correlation strategy was used, as described in previous literature. Some of the key steps are as follows:

- From each subject, power spectral data averaged across each 10min condition provided the subject data matrix (X); X = [frequency x channels]

- Subject data matrices are compiled for each condition separately to form the condition matrix (Y); Y = [X1 X2 X3 ... Xn] where, n = 1 … N for N subjects

- The between-subject covariance (Cb) and the within-subject covariance (Cw) are calculated as follows:

$$C_b = \left(\frac{1}{N(N-1)}\right) \times \sum_{i=1}^{N} \sum_{j=1\ j\neq i}^{N} C_{ij}$$

$$C_w = \left(\frac{1}{N}\right) \times \sum_{i=1}^{N} C_{ii}$$

where Cij = cov(Xi, Xj) is the cross-covariance of EEG power spectral data of subject i and subject j across all EEG channels, and Cii = cov(Xi, Xi) is the auto-covariance of EEG power spectral data of subject i.

- The linear combinations of EEG channels that maximize the correlation across multiple subjects are the solutions to the generalized eigenvalue problem:

$$C_w^{-1} \times C_b \times w = \lambda \times w$$

We kept three solutions of the above equation, w$_k$ (k=1 … 3) corresponding to the first three largest eigenvalues.

- The Inter subject correlation (ISC) is computed as follows:

$$ISC = \frac{w_k^T \times C_b \times w_k}{w_k^T \times C_w \times w_k}$$

Figure S1: Calculation of correlation component analysis.[6]

popular Hindi film songs based on *raga Malkauns* include *Aaye Sur Ke Panchhi Aaye (Movie - Sur Sangam), Adha Hai Chandrama Raat Adhi and Tu Chhupi Hai Kahan (Navrang), Man Tarapat Hari Darshan Ko (Baiju Bawra)*.[3] Malkauns was the *Raga* B in this study.

Raga Puriya is a major hexatonic raga (*Shadhav – Shadhav*) of Hindustani classical music, belonging to the *marwa thaat*. Best performed just after sunset (2nd prahar of the night). What is common among all types of *Puriya raag* are *komal* (flat) *Re*, *shuddha* (natural) *Ga*, *tivra* (sharp) *Ma*, and *shuddha*

Variables	Group A	Group B	Group C	Group D	*P*-Value
Sample	*n*=37 (%)	*n*=36 (%)	*n*=36 (%)	*n*=35 (%)	
Age (Years)					
≤18	9 (24.3)	5 (13.9)	6 (16.7)	4 (11.4)	0.171
19–21	18 (48.6)	18 (50.0)	15 (41.7)	19 (54.3)	
22–24	8 (21.6)	11 (30.6)	11 (30.6)	4 (11.4)	
≥25	2 (5.4)	2 (5.6)	4 (11.1)	8 (22.9)	
Age (years) Mean, SD	20.54, 2.5	20.75, 2.5	21.11, 2.6	21.26, 3.0	0.646
Gender					
Female	29 (78.4)	20 (55.6)	24 (66.7)	25 (71.4)	0.202
Male	8 (21.6)	16 (44.4)	12 (33.3)	10 (28.6)	
Education					
High school/Intermediate	16 (43.2)	7 (19.4)	16 (44.4)	29 (82.9)	<0.001
Graduate/Postgraduate	21 (56.8)	29 (80.6)	20 (55.6)	6 (17.1)	
Marital status					
Married	36 (97.3)	35 (97.2)	35 (97.2)	33 (94.3)	0.875
Single	1 (2.7)	1 (2.8)	1 (2.8)	2 (5.7)	
Diet					
Vegetarian	14 (37.8)	11 (30.6)	7 (19.4)	16 (45.7)	0.112
Non-vegetarian	23 (62.2)	25 (69.4)	29 (80.6)	19 (54.3)	
BMI (kg/m²) Mean, SD	23.17, 3.96	22.96, 4.71	22.16, 3.47	22.47, 4.10	0.714
Music training yes/no (%)	17 (45.9)	14 (38.9)	11 (30.6)	12 (34.3)	0.562

Table S1: Sociodemographic characteristics of participants.[7]

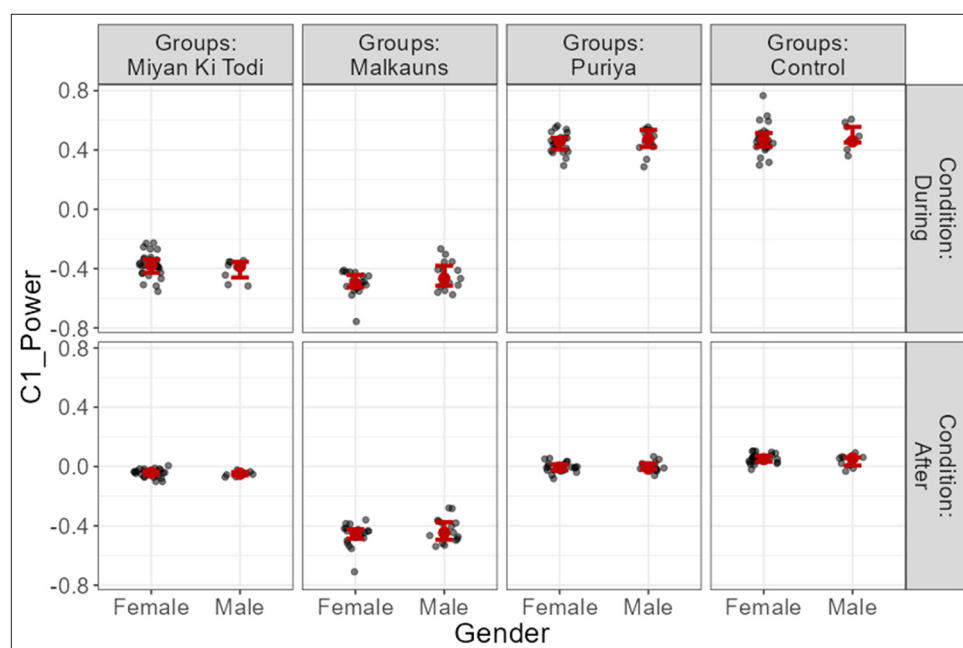BMI: Body mass index, SD: Standard deviation

Figure S2: Gender-based comparison of the correlated components.

(natural) *Ni.* Aarohan: N r G M D N r S and avarohan: S N D M G r S N or r N D M Gg, M G r S. *Pancham Varjya. Rishabh Komal, Madhyam Teevra.* Rest all *Shuddha Swaras.* Mandra Saptak Nishad is the Nyas swar in Puriya. Illustrative combinations are: N r G; G r, N, D, N; N, M, D S; G M D N; N M G; G M D G M G; r S; G M D N D S'; N r' N M G; G M D G M G r S.[4] In this *raga*, N-M and D-G *sangati* is observed. Nishad is often skipped in Aaroh like G M D N D S'. *Raag Puriya* is often referred to as the king of night *ragas*. The rasa/emotions related to this raga are *Shanti* (equanimity/peace) and *Gambhir* (seriousness).[5] *Puriya* was the *Raga* C in this study. Pure *Puriya* has not been very commonly used for film music.

Sociodemographic Characteristics of the Participants[7]

Gender-Based Comparison of the Correlated Components

Statistically, no differences were observed based on gender, or interaction with the conditions and groups.

Table S2: Gender-based comparison of the correlated components

Robust ANOVA	Q	P
Gender	0.53043	0.47000
Groups	3928.04162	0.00010
Condition	199.53663	0.00100
Gender*Groups	3.18750	0.40100
Gender*Condition	0.47769	0.49300
Groups*Condition	1492.65500	0.00100
Gender*Groups*Condition	1.47195	0.70700

Note: ANOVA: Analysis of variance; Method of trimmed means, trim level 0.2.

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