

Documentation of the Sahand Emotional Speech Database

SES



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Preface

This report is the documentation of the design, recording and verification of the **Sahand** Emotional Speech database (SES). The database is recorded at ``Artificial Intelligence and Information Analysis'' lab, Department of Electrical Engineering, Sahand University of Technology. The database is available for academic purposes upon request. The report is written by Mohammad Hossein Sedaaghi (sedaaghi@sut.ac.ir, sedaaghi@yahoo.com, Tel.: (+98)4123459370, Fax: (+98)4123224950).

M.H. Sedaaghi, June 2008

1. SES project

There are two valuable databases related to emotional speech. The first one is the Danish Emotional Speech database (Engberg & Hansen, 1996). DES employs 4 actors as speakers. The complete database comprises approximately 30 minutes of speech with five emotions: neutral, anger, sadness, happiness and surprise. The second one is the German Emotion Speech (Burkhardt et. Al., 2005). An emotional database comprising 6 basic emotions (anger, joy, sadness, fear, disgust and boredom) as well as neutral speech is recorded. Ten professional native German actors (5 female and 5 male) have simulated these emotions, producing 10 utterances (5 short and 5 longer sentences).

The aim of the current project is to develop a database comprising five basic emotions in utterances. One of the objectives of the SES project is to provide sufficient speech data with complete and accurate labels to allow a systematic study of emotion recognition in speech. SES contains 10 speakers and has got an almost even distribution regarding gender, age. SES database contain 10 speakers (5 male and 5 female) expressing 5 emotions (neutral, surprise, happiness, sadness and anger), each emotion for 59 sec, thus totalling 295 sec for each speaker and about 50 minutes for all speakers. These 10 speakers have been selected from 26 primarily interested speakers. Then, all speakers evaluated their own utterances with respect to recognizability to replace any bad-spoken utterance until they confirmed the validity of the emotions in utterances. Then 24 listeners listened all utterances while they were being shuffled and played back randomly. They had chance to listen to every utterance only once. The 42% accuracy for correct evaluation of SES proves its validity.

The project is funded by Sahand University of Technology.

2. Speakers

In order to investigate emotional speech as deviation from neutral speech it is necessary to record the same utterance in different emotional situations. Therefore, the recording has to be done systematically under laboratory conditions.

We have employed the students of the Department of Electrical Engineering as speakers as good natural candidates, because it is not advisable to use stage actors instead, as they tend to exaggerate some features to make the emotional content very clear which makes the utterances sound unnatural. Table 1 shows the information about the final speakers among 26 interested students.

Code	Name	Gender	Age	Height (cm)	Weight (Kg)	Smoker ?	Date
Sp1 (Abdl_N)	Abdollahi, N	F	21	167	64	N	17.12.2007
Sp2 (Bari_A)	Barikbinan, A	M	23	185	127	Y	26.11.2007
Sp3		M	20	178	68	N	20.11.2007
Sp4 (Emam_M)	Emambakhsh_M	M	24	173	70	N	07.04.2008
Sp5		F	24	166	53	N	03.05.2008
Sp6 (Jeda_A)	Jedari, A	F	21	162	47	N	26.11.2007
Sp7 (Khri_R)	Kheirollahi_R	M	25	181	83	N	06.04.2008
Sp8 (Mona_M)	Monajati, M	F	21	168	53	N	08.12.2007
Sp9 (Seif_M)	Seifaei,M	M	21	178	77	N	06.04.2008
Sp10 (Tavk_B)	Tavakoli, B	F	21	163	55	N	12.12.2007

Table 1: The information about 10 speakers of SES.

Column 1 is about the speaker code (Sp1-Sp10). We have omitted the names of the third and fifth speakers as their utterances were evaluated by the listeners as the worst ones. Column 2 show the real names of the speakers. Columns 3 up to 8 demonstrate their gender, age, height, weight, smoking habit and the starting date of the cooperation, respectively.

3. Recording of the Database

3.1 Prompting Text

For the SES the following is recorded:

- 10 single words
- 12 sentences and
- 2 passages.

The utterances above are spoken by the ten speakers once for each of the five emotions.

The words, sentences and passages (in Farsi) are as follows:

- 1- بله (بلی)
- 2- نه
- 3- چرا؟
- 4- البتہ
- 5- باشه (باشد)
- 6- کجا؟
- 7- کی؟ (چه وقت)
- 8- امروز
- 9- سلام
- 10- فردا
- 11- هوا خیلی گرم (گرم است).
- 12- شما کجاید؟
- 13- چه ساعتی بر می گردی؟
- 14- با من بیا.
- 15- بازم تو (باز هم تو)!
- 16- اشکال نداره (اشکال ندارد).
- 17- من نمی تونم (نمی توانم).
- 18- اصلا باور کردنی نیست.
- 19- خیلی قشنگ (قشنگ است).
- 20- امکان نداره (ندارد).
- 21- من تو امتحان 15 گرفتم.
- 22- این دیگه چیه؟
- 23- سلام! بیا تو. می خواهم بہت بگم امروز چه اتفاقی افتاد. وقتی به ایستگاه رفتم، علی رو (را) دیدم که داشت دنبالم می گشت.
- 24- من اصلا از فیلم جنگی خوشم نمی بیاد (نمی آید)، ولی فیلم خندهدار را خیلی دوست دارم. راستی، علی نظر تو چیه (چیست)؟ تو از چه فیلمی خوشت می بیاد (نمی آید)؟

The translation of the utterances into English are as follows.

- 1.** Yes.
- 2.** No.
- 3.** Why?
- 4.** Of course.
- 5.** Alright.
- 6.** Where?
- 7.** When?
- 8.** Today.
- 9.** Hello.
- 10.** Tomorrow.
- 11.** The weather is very hot.
- 12.** Where are you?
- 13.** What time will you be back?
- 14.** Come with me.
- 15.** You again!
- 16.** No problem.
- 17.** I can't.
- 18.** It is unbelievable.
- 19.** It is very beautiful.
- 20.** It is impossible.
- 21.** I got 15 in the exam.
- 22.** What is this?
- 23.** Hello. Come in. I want to tell you what happened today. When I went to the station, I met Ali while he was looking for me.
- 24.** I don't like action movie at all, but I love comics. By the way, Ali, How do you think? What kind of film do you like?

3.2 Emotions

Each utterance should be spoken with each of the emotions under investigation. The following emotions are investigated:

- Neutral (code 1)
- Surprise (code 2)
- Happiness (code 3)
- Sadness (code 4)
- Anger (code 5)

It is advisable to read all the utterances with one emotion and then change the emotion and start over again. In that way, the speakers will not have to change emotions more than five times.

3.3 File names format

An example of the file name is **Bari_A_M_23_14_HAP.wav**. Every file name contains five “_” characters.

1. The speaker code starts from the first character of the file name up to second “_” (**Bari_A_M_23_14_HAP.wav**).
2. The speaker’s gender (M for male and F for female) is revealed as the character between the second and third “_” (**Bari_A_M_23_14_HAP.wav**).
3. The age of the speaker is determined as characters between the third and fourth “_” (**Bari_A_M_23_14_HAP.wav**).
4. The characters between the fourth and fifth “_” show the sentence number“_” (**Bari_A_M_23_14_HAP.wav**).
5. The emotion in utterance is demonstrated by the three characters after the last “_” (**Bari_A_M_23_14_HAP.wav**).
6. The file extension is .wav indicating that the file format is wave file.

3.4 Evaluating the utterances by speakers

Every speaker was required to evaluate his (her) utterances several times with respect to recognizability until he (she) was able to recognize the emotions in all of his (her) own utterances 100%. His (her) utterances were played randomly by another person in order to enable him (her) to evaluate the emotions without any bias and pre-judgement.

3.5 Evaluation forms

The following forms were used by listeners to determine the emotions in 1200 utterances.

Documentation of the Sahand Emotional Speech data base

چیزی ننویسید	جمله	خنثی	متعجب	عصباتی	غمگین	شاد
	1					
	2					
	3					
	4					
	5					
	6					
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	11					
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	43					
	44					
	45					
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	47					
	48					
	49					
	50					
X	جمله	خنثی	متعجب	عصباتی	غمگین	شاد

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چیزی ننویسید	جمله	خنثی	متعجب	عصباتی	غمگین	شاد
	51					
	52					
	53					
	54					
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	97					
	98					
	99					
	100					
X	جمله	خنثی	متعجب	عصباتی	غمگین	شاد

4. Listening Test

The following listeners were selected as final ones among other interested students. The name of four listeners are now revealed as they were the worst evaluators.

L1: Mirsadeghi
L2: Ghasemi
L3: Torkamani
L4: Esmaeili
L5: -
L6: Seifaei
L7: Shariatpanah
L8: Taheri
L9: Gholizadeh
L10: -
L11: Ramazanzadeh
L12: Yousefian
L13: -
L14: Lotfi
L15: Abedini
L16: Seifi
L17: Esmzad
L18: Ghadyani
L19: Ahmadzadeh
L20: Eskandari
L21: Habibi
L22: -
L23: Gholami
L24: Soleimannetaj

All utterances were randomly shuffled and played back for listening tests during 4 subsequent weeks, 300 utterances each week .

Table 3 illustrate their test results while the utterances were played back only once. Column 1 shows the utterance number. The speaker code appears in column 2. The sentence number is illustrated in column 3. The real emotion in utterance has been demonstrated in column 4. Columns 5-16 show the listeners evalution containing the emotion code. The blank means that the listener has no idea or has not participated in the test.

No	Speaker	Sent	Em	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10	L11	L12
1	Sp9	21	1	2	4	1	4	2	1	4	1	1	4	1	1
2	Sp9	13	2	5	2	2	2	4	2	2	1	2	2	1	1
3	Sp7	11	3	3	2	1	3		3	3	3	3	1	3	3
4	Sp6	20	5	5	5	5	2	5	5	5	5	3	5	2	2
5	Sp7	3	5	2	1	2	1	3	1	2	1	4	2	2	4
6	Sp10	21	4	4	1	4	4	4	4	4	4	4	4	4	4
7	Sp2	9	2	1	4	2	1	4	4	2	2	1	1	4	4
8	Sp7	6	2	3	3	2	3	3	3	3	3	2	2	3	3
9	Sp7	11	1	2	1	1	1	1	4	4	4	1	4	1	4
10	Sp7	1	3	3	3	3	3	1	1	3	1	3	1	5	3
11	Sp8	19	4	5	4	2	4	5	4	4	2	1	2	4	4
12	Sp8	6	3	3	2	3	3	3	3	3	4	3	3	2	3
13	Sp1	14	4	1	1	1	3	4	1	4	1	1	4	4	4
14	Sp3	12	5	3	4	3	1	3	3	2	1	1	4	3	3
15	Sp2	5	2	2	1	1	2	4	1	3	5	1	2	3	3
16	Sp1	4	5	5	5	5	5	5	5	5	5	5	5	5	5
17	Sp5	1	4	4	1	4	4	4	4	4	4	4	4	4	4
18	Sp2	16	2	3	3	3	1	1	3	3	1	1	3	3	1
19	Sp6	16	1	5	4	1	4	1	1	1	1	3	1	5	5
20	Sp5	19	3	5	2	1	1	1	1	3	2	1	4	4	1
21	Sp6	3	4	2	4	2	4	2	2	4	4	4	2	4	4
22	Sp7	24	3	3	3	3	1	1	3	3	1	3	3	3	3
23	Sp8	4	1	4	1	1	1	4	1	1	4	1	4	4	4
24	Sp6	8	1	1	4	1	2	4	1	1	4	1	1	1	4
25	Sp4	24	5	1	3	5	3	1	5	3	3	1	1	3	1
26	Sp4	19	4	5	5	2	2	2	2	2	2	2	1	2	
27	Sp5	14	3	1	4	3	3	1	1	1	1	1	1	1	1
28	Sp2	10	4	4	1	4	3	4	4	4	4	4	1	1	4
29	Sp1	16	3	3	3	1	1	3	5	1	1	3	1	3	5
30	Sp7	12	1	2	4		2	1	1	1	1	4	1	1	4
31	Sp2	18	5	2	2	2	2	2	2	4	2	5	2	2	2
32	Sp6	24	2	3	5	5	3	5	5	5	5	5	5	5	5
33	Sp2	18	1	4	2		2	4	4	2	4	2	2	2	2
34	Sp5	14	2	3	2	3	3	1	1	3	1	3	2	3	
35	Sp8	1	3	2	4	3	4	2	4	4	4	4	4	4	1
36	Sp1	11	1	4	3		4	4	2	4	2	4	4	2	1
37	Sp1	18	5	3	5	2	2	2	2	3	4	2	2	2	2
38	Sp8	24	5	5	4	5	5	5	5	5	5	5	1	5	5
39	Sp6	14	5	5	5	5	5	1	5	3	1	5	2	5	5
40	Sp9	15	1	4	3	3	4	4	1	4	2	1	3	4	4
41	Sp5	8	3	1	1		1	4	1	1	1	4	2	4	1
42	Sp5	8	1	4	1	1	4	1	4	1	1	1	4	1	1
43	Sp2	16	1	4	3	3	3	1	1	4	1	1	4	4	4
44	Sp8	21	3	3	3	3	4	5		3	3	2	3	2	3
45	Sp3	9	2	4	4	4	4	1	4	4	4	4	4	3	4
46	Sp8	20	4	4	4	4	4	4	4	4	4	4	4	4	4
47	Sp9	7	2	2	3	2	2	2	2	2	2	3	2	2	2
48	Sp8	17	3	3	3	3	3	3	2	4	1	3	3	3	3
49	Sp6	15	1	2	4	2	2	3	2	4	4	4	2	4	2
50	Sp2	17	4	4	1	1	3	4	1	1	1	4	4	1	4
51	Sp5	3	5	4	3	2	4	4	1	2	2	4	2	5	1
52	Sp2	3	1	5	3	2	3	1	1	3	1	1	3	3	4
53	Sp9	22	3	2	3	3	3	3	2	2	3	3	3	2	3
54	Sp10	18	4	4	2	4	4	1	4	4	4	4	2	4	4
55	Sp7	6	4	2	1	3	2	4	4	4	1	1	2	1	4
56	Sp10	7	5	1	3	1	2	4	5	3	4	2	1	3	1
57	Sp10	2	3	3	5	4	4	3	1	1	1	4	3	1	4
58	Sp2	16	5	5	5	1	5	1	1	1	5		4	1	1
59	Sp9	14	1	4	4	1	1	1	1	1	1	1	1	1	1
60	Sp4	9	2	5	5	2	5	2	5	5	5	5	5	5	5
61	Sp10	16	3	3	2	4	4	4	4	1	1	4	1	5	1
62	Sp4	4	3	1	3	3	1	3	3	3	1	3	5	3	3
63	Sp3	10	5	4	4	4	4	4	4	4	4	4	4	4	4

64	Sp9	9	1	1	1	1	1	4	1	4	5	1	1	4	1
65	Sp3	21	2	1	3	2	2	2	2	2	1	2	2	2	2
66	Sp4	8	5	5	5	2	5	2	5	5	5	5	5	5	2
67	Sp2	23	1	4	4	1	4	4	4	4	1	4	4	1	4
68	Sp1	9	2	5	5	5	5	2	5	5	5	5	5	2	2
69	Sp6	21	2	5	2	5	5	2	2	5	5	5	5	5	2
70	Sp8	10	1	4	4	2	4	4	4	4	4	4	4	4	4
71	Sp3	3	2	2	4	4	3	2	2	2	2	4	2	2	2
72	Sp8	18	1	4	4	4	2	2	4	4	4	4	4	4	4
73	Sp2	19	3	4	3		2	4	1	3	1	3	2	1	1
74	Sp1	14	3	3	3	3	5	3	5	3	3	3	3	3	5
75	Sp9	1	2	2	5	1	1	1	1	2	1	1	1	1	1
76	Sp3	20	2	4	4	4	4	4	2	4	4	4	4		4
77	Sp1	9	1	1	1	1	4	1	1	5	1	5	1	1	4
78	Sp9	17	1	1	4	4	4	4	1	3	1	4	3	3	3
79	Sp3	7	3	2	3		2	2	2	2	2	1	2	2	
80	Sp8	3	1	2	2	2	4	2	2	4	4	4	2	2	4
81	Sp5	11	4	4	3	1	1	1	1	1	1	1	4	1	1
82	Sp10	13	4	3	3	3	4	3	1	4	1	1		1	4
83	Sp1	5	4	4	4	4	4	4	4	4	4	4	4	4	4
84	Sp6	9	1	5	5	5	5	5	5	5	5	5	1	5	5
85	Sp9	2	2	4	1		2	1	2	2	2	4	4	2	2
86	Sp5	11	3	3	3	3	3	1	3	3	1	1	2	3	1
87	Sp10	10	4	1	4	4	1	1	4	4	4	4	4	4	4
88	Sp10	8	4	1	4		1	1	1	3	1	1	2	4	1
89	Sp10	14	4	4	4	4	4	4	4	1	4	4	4	4	4
90	Sp9	12	2	2	2	2	2	4	2	2	2	2	1	2	2
91	Sp8	12	3	3	5	3	2	3	2	3	5	3	3	3	5
92	Sp6	14	2	3	5	5	5	5	5	5	1	3	1	3	5
93	Sp5	1	1	3	4	4	4	1	1	3	4	1	2	1	4
94	Sp4	15	3	3	3	3	3	3	3	3	3	3	3	3	3
95	Sp3	2	4	2	4	2	1	4	4	1	2	1	4	4	2
96	Sp4	7	2	2	2	2	2	2	2	2	2	2	2	2	2
97	Sp5	21	3	1	1	3	2	4	5	1	3	1	1	3	1
98	Sp5	1	5	2	4		4	4	4	3	1	3	3	4	4
99	Sp8	19	1	1	4	4	4	1	1	4	4	4	4	4	1
100	Sp2	23	4	4	3	3	4	4	4	3	1	4	4	3	1
101	Sp4	6	1	3	3	3	2	3	1	3	3	3	3	3	3
102	Sp5	3	1	4	4	4	4	4	1	4	1	4	4	4	4
103	Sp6	2	2	2	2	2	2	2	2	2	2	2	2	2	2
104	Sp3	23	4	4	4	4	4	4	4	4	4	4	4	1	4
105	Sp2	1	3	3	3	3	3	3	1	3	3	1	3	3	3
106	Sp8	6	4	4	4	4	2	4	4	4	4	2	2	4	4
107	Sp9	8	4	1	2	4	2	1	1	4	4	4	2	4	4
108	Sp4	22	4	2	2	2	3	3	2	2	2	2	3	2	1
109	Sp3	7	5	2	3	2	2	2	2	2	2		2	4	
110	Sp10	21	5	5	5	5	5	5	5	5	5	1	5	5	5
111	Sp9	11	2	2	2	2	1	2	2	1	4	1	4	2	2
112	Sp4	10	4	3	3	3	3	1	3	3	1	4	2	3	
113	Sp2	17	1	4	4	4	4	1	4	4	4	4	4	4	4
114	Sp8	24	3	3	3	1	2	1	5	3	1	1	1	4	1
115	Sp9	14	4	4	4	1	4	4	4	1	4	4	4	1	1
116	Sp10	7	4	2	4	4	4	1	2	2	1	4	2	4	1
117	Sp9	18	1	2	2	4	2	4	2	4	2	4	1	2	4
118	Sp5	13	2	2	1		2	2	2	3	1	1	2	3	1
119	Sp10	10	3	5	5		4	1	1	1	5		3	2	5
120	Sp10	12	4	2		2	4	4	4	4	4		2	4	4
121	Sp10	9	2	1	5	5	4		5	5	5	5	3	5	5
122	Sp7	5	1	5	1	1	1	3	4	2	1	4	4	1	1
123	Sp5	10	2	2	4	2	2	4	5	4	2	4	1	2	2
124	Sp9	6	1	2	1	2	2	4	4	2	1	4	2	2	4
125	Sp6	21	3	3	5	3	4	2	5	4	3	3	3	5	3
126	Sp7	18	4	4	2	4	2	4	4	1	4	4	4	4	4
127	Sp7	10	2	2	3	2	2	2	3	3	2	2	2	2	1
128	Sp8	21	4	4	4	4	4	4	4	4	4	4	4	4	4
129	Sp5	7	1	3	4	1	3	2	1	4	1	4	2	3	4

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130	Sp7	5	3	3	5	3	3	1	5	3	3	5	2	3	3
131	Sp4	19	3	5	3		2	5	3	3	5	5	5	5	3
132	Sp5	23	1	1	4	1	2	4	1	1	1	1	1	1	1
133	Sp3	5	3	5	4	3	4	1	1	1	1	4	1	4	
134	Sp3	1	3	4	4	4	4	1	1	4	2	4	4	4	
135	Sp6	14	4	4	4	4	4	4	4	4	4	4	4	4	4
136	Sp4	9	3	5	3	3	5	5	3	3	3	5	5	5	3
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138	Sp2	3	5	2	2	2	2	1	2	1	2	2	2	2	2
139	Sp10	15	2	3	3	2	2	2	2	3	2	2	2	2	2
140	Sp2	21	3	3	3	3	3	1	3	3	5	5	5	5	3
141	Sp4	8	4	4	4	3	3	2	3	3	4	4	1	3	4
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155	Sp2	14	2	3	3		2	1	1	3	5	1	3	3	
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173	Sp6	22	5	2	3	2	2	3	2	5	2	3	2	2	5
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187	Sp9	13	1	2	4	1	4	4	4	4	1	4	2	1	1
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208	Sp1	2	2		2	2	2	2	4	2	2	1	2	4	4	
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235	Sp3	14	3		3	3	4	2	1	3	4	3	4	3	3	
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237	Sp8	7	2		2	2	3	5	2	2	2	2	2	5	3	
238	Sp8	16	5		5	5	5	5	5	4	5	5		1	5	
239	Sp1	15	5		3	2	5	3	2	2	2		2	3	3	
240	Sp3	11	1		4	1	4		4	1	1		4	1	1	
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258	Sp2	14	5		5	1	4	4	4	4	1	3	2	1	1	
259	Sp5	3	3		3	3	3	3	1	4	2	1	1	3	3	
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261	Sp2	12	3		3	3	1	1	3	2	1	3		4	3	

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266	Sp8	13	1		3	2	4	4	1	5	1	1	1	3	1
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268	Sp4	2	3		3	3	3	2	3	3	3	4	3	3	4
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271	Sp1	7	3		3	2	3	3	3	2	2	3	2	2	3
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273	Sp9	22	5		5	2	4	2	2	2		3	1	2	
274	Sp4	3	3		3	3	3	3	3	3	3	3	3	3	3
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279	Sp1	10	5		5	5	5	4	5	4	5	1	5	5	5
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305	Sp6	17	3				3	3	5	3	3		3	3	3
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391	Sp7	13	4			4	1	4	4	4		5	4	4
392	Sp6	4	1			4	4	1	1	4		2	4	1
393	Sp7	5	2			5	1	1	5	5		1	5	5

394	Sp1	6	4			4	2	2	2	2		4	2	4
395	Sp6	10	1			2	4	1		1		1	4	1
396	Sp3	15	1			4	3	2	2	4		3	4	2
397	Sp9	14	3			3	1	3	3	1		3	3	3
398	Sp3	3	1			2	2	4	1	4		2	2	4
399	Sp2	2	5			2	1	4		1		4	4	1
400	Sp5	3	2			2	4	4	4	1		5	5	4
401	Sp1	22	4			4	2	4	4	4		2	4	2
402	Sp4	17	5			3	3	1	3	3		1	3	3
403	Sp1	22	5			2	2	2	2	2		2	2	2
404	Sp9	3	2			2	2	5	2	2		4	2	3
405	Sp10	1	3			4	1	1	3	1		3	4	4
406	Sp7	21	3			3	1	3	3	3		3	3	3
407	Sp7	2	4			4	1	4	4	4		4	4	4
408	Sp9	16	2			3	3	2	2	2		2	2	2
409	Sp2	7	5			1	2	2	2	2		4	2	1
410	Sp9	17	5			1	1	1	1	1		4	4	4
411	Sp8	1	1			1	1	4	3	4		4	5	4
412	Sp4	13	2			2	2	3	3	1		1	3	3
413	Sp1	14	5			5	1	5	5	5		3	3	5
414	Sp2	1	4			3	1	4	3	4		1	1	4
415	Sp9	19	1			1	1	4	1	4		4	1	1
416	Sp4	3	2			3	3	3	3	3		3	3	3
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418	Sp8	20	2			4	2	2		2		4	2	2
419	Sp9	11	5			3	1	5	1	1		5	5	1
420	Sp6	12	3			3	3	3	5	3		3	3	3
421	Sp3	21	3			4	4	1	1	4		1	2	
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423	Sp3	1	1			4	4	4	1	4		3	1	4
424	Sp4	23	3			3	3	3	3	3		3	3	3
425	Sp2	19	5			2	5	2	5	5		4	2	2
426	Sp10	3	4			4	4	1	1	4		2	1	1
427	Sp3	13	1			4	1	3	3	1		1	1	1
428	Sp10	20	4			4	2	4	4	4		4	2	1
429	Sp10	1	4			4	4	4	1	4		4	4	4
430	Sp6	16	5			5	5	5	5	5		2	5	5
431	Sp8	4	4			4	4	4	4	4		4	4	4
432	Sp1	23	2			2	2	5	5	5		2	2	2
433	Sp2	15	4			3	4	3	3	3		3	4	4
434	Sp10	13	1			3	1	1	3	1		3	3	3
435	Sp10	2	5			3	5	1	3	5		3	3	3
436	Sp3	17	5			4	4	4	4	4		4	4	4
437	Sp4	7	4			2	3	2	2	2		2	3	2
438	Sp10	19	3			1	3	1	1	5		5	5	3
439	Sp5	5	4			4	1	4	4	1		4	4	4
440	Sp9	3	5			2	1	1	2	5		2	2	1
441	Sp10	18	5			2	5	2	3	3		5	5	5
442	Sp10	10	2			4	4	1	1	4		4	4	4
443	Sp4	7	5			2	2	2	3	2		3	2	2
444	Sp4	9	1			1	1	1	3	1		1	3	3
445	Sp9	3	3			4	1	3	3	3		3	4	3
446	Sp4	11	3			3	3	3	3	3		3	3	3
447	Sp3	12	3			1	3	2	1	4		4	1	1
448	Sp10	17	3			3	1	4	1	1		3	4	1
449	Sp10	20	3			4	1	1	4	1		2	3	3
450	Sp1	20	5			5	5	5	5	5		5	5	2
451	Sp1	18	4			4	4	4	4	4		2	4	4
452	Sp5	21	1			4	1	1	1	1		1	1	1
453	Sp8	15	1			2	3	2	2	2		4	2	2
454	Sp6	1	5			5	5	2	3	5		5	5	5
455	Sp1	8	5			2	2	5	1	5		5	2	1
456	Sp9	24	1			4	4	4	4	4		4	4	4
457	Sp10	16	5			1	5	5	1	5		3	5	1
458	Sp7	13	1			4	4	1	2	1		1	4	1
459	Sp10	19	4			4	4	4	1	4		4	4	4

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462	Sp9	7	4			4	4	4	4	4		4	4	4
463	Sp8	23	4			4	4	4	4	4		4	4	4
464	Sp9	19	3			2	2	2	5	5		5	5	
465	Sp3	15	2			2	3	2	2	2		1	3	3
466	Sp8	18	2			2	4	2	4	2		4	4	2
467	Sp2	2	2			4	2	4	4	1		1	4	
468	Sp4	21	1			3	4	4	4	1		4	4	4
469	Sp4	18	5			3	3	3	3	3		5	2	2
470	Sp8	22	2			2	2	2	2	2		2	3	2
471	Sp8	6	5			5	4	2	5	2		1	2	5
472	Sp3	16	1			1	1	1	1	4		2	1	4
473	Sp10	22	5			2	3	2	5	5		3	5	3
474	Sp7	5	4			4	1	4	1	4		4	4	4
475	Sp6	11	2			2	3	2	4	2		3	3	1
476	Sp6	23	2			2	2	5	5	5		1	5	5
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478	Sp10	24	5			5	5	2	2	5		5	5	5
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485	Sp3	7	4			1	3	3	3	1		3	1	
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487	Sp9	14	2			2	5	2	2	2		2	3	2
488	Sp1	13	4			4	4	4	4	1		4	4	4
489	Sp6	23	4			4	4	4	4	4		5	4	4
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492	Sp2	9	1			4	1	1	1	1		1	4	4
493	Sp10	16	1			5	5	5		5		2	5	2
494	Sp3	16	4			4	4	4	1	4		4	4	4
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496	Sp2	10	3			1	1	3	3	3		2	4	4
497	Sp7	20	5			5	2	2	3	1		4	3	5
498	Sp9	18	5			2	1	2	4	1		5	5	1
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500	Sp1	17	3			3	3	3	3	3		3	3	3
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502	Sp3	12	1			3	3	3	3	3		4	3	3
503	Sp10	16	2			5	5	2	5	5		5	5	5
504	Sp5	6	1			4	4	4	4	4		4	4	4
505	Sp3	2	5			4	4	4	1	4		3	1	4
506	Sp2	8	3			3	3	3	4	3		3	1	3
507	Sp1	6	5			2	2	2	2	2		2	2	5
508	Sp4	10	2			2	3	2	3	3		2	2	2
509	Sp3	17	1			4	4	4	4	1		4	3	4
510	Sp1	19	1			1	1	1	5	5		1	1	4
511	Sp2	6	1			2	1	1	3	3		3	3	3
512	Sp3	23	3			4	4	4	4	2		4	4	4
513	Sp1	6	2			2	2	2	2	2		5	3	2
514	Sp9	23	5			5	2	5	5	5		5	5	2
515	Sp3	4	1			4	4	4	4	4		4	1	4
516	Sp10	12	5			3	3	2	5	3		3	3	3
517	Sp6	10	4			4	4	4	4	4		4	4	4
518	Sp2	11	4			3	4	4	3	4		4	3	1
519	Sp7	4	3			1	5	3	3	1		5	5	3
520	Sp2	2	3			4	1	4	1	1		1	1	2
521	Sp2	13	4			4	4	4	1	1		1	1	1
522	Sp6	1	1			4	4	4	4	1		1	4	1
523	Sp2	1	1			3	1	4	3	4		1	5	3
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527	Sp4	12	2			2	1	2	1	1		3	3	1
528	Sp1	11	2			2	4	2	4	2		2	2	2
529	Sp1	24	1			1	1	1	1	1		1	1	1
530	Sp1	16	1			4	4	1	4	4		4	4	4
531	Sp4	22	1			3	3	2	3	3		3	5	3
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533	Sp7	17	4			4	4	4	4	4		4	4	4
534	Sp4	3	5			2	3	3	2	2		4	5	2
535	Sp9	18	4			4	2	4	4	4		2	2	4
536	Sp2	9	5			2	1	1	2	1		5	1	1
537	Sp2	21	5			4	1	1	1	1		4	1	
538	Sp4	20	4			2	2	2	1	2		3	2	1
539	Sp7	11	4			1	4	4	4	1		4	4	4
540	Sp2	16	3			4	4	4	1	4		2	4	4
541	Sp4	11	2			2	3	2	2	2		3	3	3
542	Sp9	24	3			3	3	2	3	3		3	3	3
543	Sp10	18	1			2	2	2	2	2		4	2	2
544	Sp2	1	5			2	1	5	2	1		2	1	1
545	Sp6	8	2			2	3	2	2	2		3	2	2
546	Sp4	6	5			3	3	3	3	3		5	3	3
547	Sp9	20	5			2	1	1	1	4		2	2	1
548	Sp1	11	5			1	4	2	4	1		3	4	1
549	Sp7	19	3			3	1	1	5	5		5	5	5
550	Sp2	9	3			1	4	4	1	4		4	4	4
551	Sp9	2	5			4	4	1	1	4		4	1	4
552	Sp10	8	5			5	3	5	1	5		5	5	5
553	Sp10	5	3			1	1	1	5	5		4	1	5
554	Sp5	20	5			2	1	4	4	4		4	4	1
555	Sp2	3	4			4	1	4	3	3		3	3	4
556	Sp2	8	2			2	3	2	2	2		2	2	2
557	Sp4	22	5			2	1	1	3	2		1	1	1
558	Sp1	8	2			2	3	2	2	2		2	2	4
559	Sp6	2	4			4	2	4	4	4		4	4	4
560	Sp4	14	4			4	4	1	4	1		1	3	5
561	Sp4	16	4			1	1	1	1	1		2	1	1
562	Sp1	16	2			1	2	5	1	5		5	3	2
563	Sp5	4	3			4	5	5	1	1		1	5	1
564	Sp4	19	1			3	4	4	3	5		4	5	3
565	Sp1	5	1			4	4	4	4	4		4	4	4
566	Sp9	1	1			3	1	4	1	1		4	5	1
567	Sp7	15	3			3	3	3	3	3		3	3	3
568	Sp6	10	2			2	2	2	2	2		2	2	2
569	Sp9	20	2			2	2	2	1	4		2	3	2
570	Sp4	20	5			3	3	3	1	2		3	3	3
571	Sp3	7	2			4	1	2	2	1		4	1	2
572	Sp6	9	4			4	1	4	4	4		4	5	4
573	Sp10	2	2			4	4	1	2	5		4	5	3
574	Sp3	8	4			1	1	2		4		4	1	
575	Sp2	20	4			3	4	4	3	3		2	3	4
576	Sp7	22	2			3	3	2	3	1		2	2	3
577	Sp10	7	1			4	4	1	4	4		3	5	1
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582	Sp10	3	5			3	4	2	2	3		3	3	3
583	Sp9	3	1			4	3	4		4		4	1	4
584	Sp7	14	4			1	2	4	4	1		2	4	4
585	Sp3	19	2			1	4	4	4	4		2	1	4
586	Sp7	22	5			3	4	2	4	5		3	5	5
587	Sp1	10	4			4	3	4	4	4		4	4	4
588	Sp9	4	2			2	4	2	2	1		4	1	1
589	Sp10	24	1			1	5	1	1	5		3	3	5
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591	Sp9	11	4			4	4	4	4	1		2	4	1

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597	Sp9	21	2			2	2	5	5	5		4	5	2
598	Sp8	3	3			4	4	4	4	4		2	4	4
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601	Sp3	4	5			4	1		4			2	4	
602	Sp2	11	2			3	2		1			3	3	
603	Sp5	12	1			1	1		4			1	1	
604	Sp5	6	5			3	1		3			3	3	
605	Sp1	19	3			3	2		5			3	5	
606	Sp5	22	4			4	2		4			2	3	
607	Sp4	18	1			1	1		4			4	4	
608	Sp7	17	3			3	1		5			3	3	
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610	Sp6	24	3			3	1		4			3	3	
611	Sp4	16	1			3	1		1			2	3	
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614	Sp6	6	3			3	2		1			1	4	
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627	Sp4	21	4			3	2		1			5	3	
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633	Sp7	17	2			3	3		3			3	3	
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636	Sp7	23	3			4	3		3			1	3	
637	Sp10	12	2			3	2		1			3	4	
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651	Sp9	20	3			2	2		3			2	2	
652	Sp10	13	2			1	2		1			5	5	
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655	Sp9	9	2			1	5		4			1	4	
656	Sp1	24	5			5	5		5			5	5	
657	Sp3	21	5			4	4		4			4	1	

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663	Sp7	22	3				3	3		3		3	3	
664	Sp4	24	3				3	3		3		3	3	
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676	Sp5	7	4				4	4		4		4	1	
677	Sp9	6	3				3	3		3		3	1	
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691	Sp1	7	5				5	2		2		2	2	
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Documentation of the Sahand Emotional Speech data base

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1025	Sp6	15	3	3		2	2	3		3	3	2
1026	Sp1	20	4			3	4	4		2	4	4
1027	Sp9	20	4	3		4	5	1		2	1	1
1028	Sp2	8	5	4		4	1	4		1	4	1
1029	Sp7	4	2	5		5	2	5		5	3	2
1030	Sp9	5	4	4		4	4	4		1	4	4
1031	Sp3	3	5	3		3	2	1		4	1	1
1032	Sp1	20	1	5		1	1	1		3	4	2
1033	Sp5	4	4	3		4	4	1		2	4	4
1034	Sp9	20	1	4		1	2	4		1		1
1035	Sp6	18	5	5		3	2	2		5	3	2
1036	Sp2	22	5	3		2	2	2		2	2	2
1037	Sp6	16	2	5		3	2	5		3	5	5
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1039	Sp4	7	1	3		3	3	3		3	3	3
1040	Sp6	12	1	4		4	5	5		3	2	5
1041	Sp9	18	2	3		4	2	4		2	4	1
1042	Sp2	3	2	3		3	2	1		3	5	2
1043	Sp4	12	1	4		3	1	3		1	3	3
1044	Sp5	8	5	3		4	1	1		1	4	4
1045	Sp2	5	4	4		1	4	4		1	4	4
1046	Sp9	15	5	3		2	5	5		2	2	2
1047	Sp8	2	4	4		1	4	4		4	3	5
1048	Sp2	4	4	4		4	4	1		4	1	4
1049	Sp3	24	4	4		3	4	4		3	3	1
1050	Sp2	10	1	1		3	4	1		1	1	1
1051	Sp6	4	3	2		4	3	1		2	4	3
1052	Sp1	3	4	4		2	4	4		4	4	4
1053	Sp5	18	2	2		4	2	2		2	2	2

1054	Sp8	1	5	5		5	5	5	1	5	5
1055	Sp10	11	4	4		4	2	4	4	4	1
1056	Sp8	24	2	4		4	2	1	2	3	2
1057	Sp1	2	4	2		4	4	4	2	4	2
1058	Sp8	15	3	3		3	2	3	3	3	3
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1060	Sp10	5	1	3		3	5	5	5	5	5
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1062	Sp9	2	3	3		1	1	1	3	3	3
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1066	Sp5	10	4	5		1	1	4	1	1	1
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1068	Sp8	5	3	3		4	3	5	1	3	3
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1082	Sp10	6	2	3		5	2	3	3	3	5
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1085	Sp2	9	4	1		1	4	4	4	4	4
1086	Sp4	20	1	3		3	4	3	4	3	3
1087	Sp3	14	5	4		1	1	5	4	1	1
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1089	Sp7	13	3	3		3	3	3	5	3	3
1090	Sp10	17	5	3		3	3	1	3	3	1
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1092	Sp2	22	2	2		2	2	2	2	2	2
1093	Sp7	19	2	2		1	2	5	5	5	5
1094	Sp3	8	3	2		4	1	1	4	4	4
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1099	Sp1	13	1	4		4	4	4	4	1	1
1100	Sp8	4	3	3		5	2	5	3	5	2
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1102	Sp5	23	5	1		1	5	5	1	1	5
1103	Sp3	13	3	3		3	2	3	4	4	3
1104	Sp1	12	1	4		1	2	1	2	3	1
1105	Sp7	23	2	5		5	5	5	5	5	5
1106	Sp7	10	3	4		1	4	3	1	5	3
1107	Sp7	24	2	3		4	2	1	2	3	3
1108	Sp10	11	5	3		5	3	1	4	3	1
1109	Sp5	19	2	5		4	2	2	5	5	2
1110	Sp7	2	1	4		4	4	4	2	4	4
1111	Sp8	23	1	4		4	4	4	4	4	5
1112	Sp7	8	2	2		3	2	3	2	2	1
1113	Sp3	15	5	3		3	3	4	3	3	2
1114	Sp1	16	4	4		4	4	4	1	4	4
1115	Sp4	5	3	3		3	3	3	3	3	3
1116	Sp4	2	4	2		2	2	1	2	2	2
1117	Sp5	11	1	1		4	2	1	4	1	1
1118	Sp9	8	2	2		4	2	4	2	2	2
1119	Sp2	13	2	1		2	2	3	2	1	1

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1121	Sp2	4	3	1		1	1	1		1	4	3
1122	Sp1	13	5	3		3	3	3		3	5	3
1123	Sp10	2	4	4		4	4	4		2	4	1
1124	Sp9	11	1	4		4	4	4		4	4	1
1125	Sp7	20	2	3		3	3	3		3	3	3
1126	Sp9	1	3	1		1	4	1		1	1	4
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1128	Sp8	14	3	5		1	1	2		2		5
1129	Sp6	22	3	3		2	1	3		4	2	3
1130	Sp4	17	3	3		3	3	3		3	3	3
1131	Sp6	10	5	5		5	5	5		5	4	5
1132	Sp7	16	3	5		3	1	1		4	3	3
1133	Sp8	14	4	4		4	4	4		4	4	4
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1137	Sp7	8	1	2		4	4	4		4	4	4
1138	Sp7	24	1	5		1	1	1		1	3	1
1139	Sp5	22	2	3		1	3	2		2	2	2
1140	Sp5	10	5	5		4	1	5		1	5	5
1141	Sp4	23	2	5		3	2	5		5	5	5
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1147	Sp10	8	3	4		1	1	4		1	5	3
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1149	Sp9	16	5	4		5	5	5		2	5	5
1150	Sp3	9	1	4		1	4	4		1	4	4
1151	Sp8	16	3	3		5	5	5		2	5	5
1152	Sp4	12	3	3		3	3	3		3	3	3
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1154	Sp10	22	3	3		1	4	4		2	4	3
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1159	Sp2	12	4	4		4	4	4		2	4	4
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1165	Sp9	13	3	3		4	3	3		3	5	3
1166	Sp6	6	2	5		5	2	2		3	2	2
1167	Sp2	5	5	4		1	1	5		1	3	5
1168	Sp10	1	5	5		5	3	5		1	3	3
1169	Sp8	1	2	5		5	2	1		1	5	5
1170	Sp4	3	4	3		3	4	3		2	3	1
1171	Sp5	7	2	3		1	1	4		3	2	4
1172	Sp9	3	4	4		4	4	4		4	4	1
1173	Sp8	7	3	4		3	1	1		3	3	3
1174	Sp9	10	3	3		1	1	5		4	4	1
1175	Sp2	11	3	5		1	3	3		4	3	3
1176	Sp8	17	1	3		1	1	1		1	4	4
1177	Sp10	6	3	4		2	1	4		1	5	4
1178	Sp4	24	2	3		3	1	3		3	3	3
1179	Sp8	8	1	4		1	4	4		1	4	4
1180	Sp6	13	3	5		2	2	1		3	3	5
1181	Sp10	22	2	3		2	2	2		2	2	2
1182	Sp1	3	3	3		1	2	1		3	5	2
1183	Sp6	18	4	4		4	4	4		4	4	4
1184	Sp10	12	1	3		1	3	3		2	3	3
1185	Sp7	3	1	4		1	4	1		4	1	4

1186	Sp3	19	5	4		1	4	5	4	5	1
1187	Sp3	10	2	2		3	2	1	3	2	2
1188	Sp6	9	2	5		5	5	5	5	5	5
1189	Sp5	14	4	4		1	1	1	4	4	1
1190	Sp4	20	3	3		3	3	3	3	3	3
1191	Sp5	22	1	4		4	4	4	2	2	2
1192	Sp1	5	2	5		1	2	5	1	5	2
1193	Sp2	11	5	4		3	2	1	4	4	1
1194	Sp7	16	2	3		3	2	5	5	3	5
1195	Sp8	2	5	5		5	5	1	1	4	5
1196	Sp5	5	1	4		1	1	1	1	1	1
1197	Sp2	24	2	4		1	5	1	2	5	5
1198	Sp8	21	1	4		4	4	4	4	4	1
1199	Sp3	20	1	4		4	4	4	4	4	4
1200	Sp5	12	3	3		5	1	1	2	1	1

No	Speaker	Sent	Em	L13	L14	L15	L16	L17	L18	L19	L20	L21	L22	L23	L24
1	Sp9	21	1	1	1	1	2	4	4	4	1	4	1	2	1
2	Sp9	13	2	1	1	2	2	5	5	2	2	2	2	5	5
3	Sp7	11	3	2	3	3	3	3	3	3	3	1	3	1	1
4	Sp6	20	5	5	2	5	5	5	2	5	5	2	5	5	5
5	Sp7	3	5	3	4	3	2	2	1	4	4	1	2	4	2
6	Sp10	21	4	4	4	4	4	4	4	4	4	4	4	4	4
7	Sp2	9	2	5	5	5	4	4	4	4	1	4	1	4	4
8	Sp7	6	2	2	2	3	2	3	2	3	3	2	2	3	2
9	Sp7	11	1	4	1	1	1	1	1	4	1	1	1	1	1
10	Sp7	1	3	1	3	3	3	3	1	3	3	3	3	3	1
11	Sp8	19	4	2	5	4	4	4	4		4	4	2	4	4
12	Sp8	6	3	2	4	3	3	2	3	1	3	2	3	3	4
13	Sp1	14	4	1	1	1	4	1	4	1	5	4	5	4	4
14	Sp3	12	5	3	4	3	4	3	1	3	2	3	3	3	2
15	Sp2	5	2	2	5	4	2	1	2	2	1	1	1	2	1
16	Sp1	4	5	5	5	5	5	5	5	5	5	5	5	5	5
17	Sp5	1	4	4	4	4	1	4	1	4	4	4	4	4	4
18	Sp2	16	2	1	3	3	3	1	1	3	3	3	1	3	3
19	Sp6	16	1	4	4	3	4		1	1	1	1	1	1	1
20	Sp5	19	3	5	1	3	3	1	1	5	1	1	2	1	3
21	Sp6	3	4	2	4	4	4	4	4	4	4	2	2	4	4
22	Sp7	24	3	3	3	3	3	3	3	3	3	3	1	3	3
23	Sp8	4	1	4	4	4	2	4	4	1	4	4	4	4	4
24	Sp6	8	1	1	2	1	1		5	3	1	1	1	1	1
25	Sp4	24	5	1	5	1	3	5	5	5	1	1	1	2	1
26	Sp4	19	4	5	2	4	1	1	4	2	1	5	5	4	1
27	Sp5	14	3	1	1	1	1	4	1	4	1	1	4	4	4
28	Sp2	10	4	1	4	4	1	4	1	4	4	4	2	4	4
29	Sp1	16	3	5	5	1	5	5	1	3	3	3	1	5	5
30	Sp7	12	1	1	1	1	1	3	1	2	3	1	2	1	1
31	Sp2	18	5	4	2	2	2		4	4	2	2	2	1	2
32	Sp6	24	2	4	5	3	1	5	5	1	5	5	5	5	5
33	Sp2	18	1	2	4	1	2	4	4	4	4	2	4	2	2
34	Sp5	14	2	5	3	1	1	3	1		3	3	1	1	1
35	Sp8	1	3	1	4	4	4		4		1	4	4	3	4
36	Sp1	11	1	4	1	1	1	2	4	4	2	1	4	1	1
37	Sp1	18	5	2	5	5	5	2	3	2	5	2	3	3	5
38	Sp8	24	5	5	5	5	5	5	5	5	5	1	5	5	5
39	Sp6	14	5	5	5	5	5	5	5	5	5	1	5	5	5
40	Sp9	15	1	4	2	4	2		4	4	4	4	4	3	4
41	Sp5	8	3	4	4	1	1	4	1	4	1	4	1	1	4
42	Sp5	8	1	3	1	1	1	1	1	1	3	1	2	3	1
43	Sp2	16	1	4	1	4	4	1	4	4	1	4	1	4	1
44	Sp8	21	3	3	3	3	3	3	3	3	2	3	3	3	3
45	Sp3	9	2	4		4	4		4		4	4	4	4	4
46	Sp8	20	4	4	4	4	4	4	4	4	4	4	4	4	2
47	Sp9	7	2	2	1	2	2	3	2	2	2	2	2	2	2
48	Sp8	17	3	4	3	3	3	4	4	3	1	3	3	3	1

49	Sp6	15	1	4	2	2	4	2	3	4	3	2	4	2	4
50	Sp2	17	4	4	4	3	3	3	3	3	4	3	4	1	1
51	Sp5	3	5	1	5	1	4	4	2	3	2	1	3	4	2
52	Sp2	3	1	1	2	1	3		2	2	1	1	1	3	1
53	Sp9	22	3	2	2	2	3	2	2	3	3	1	3	3	3
54	Sp10	18	4	2	4	1	4	4	4	4	4	4	4	2	4
55	Sp7	6	4	4	4	3	4	1	4	4	1	4	1	4	1
56	Sp10	7	5	1	5	1	4	1	3	1	5	1	2	4	1
57	Sp10	2	3	4	1	1	1	4	1	1	1	1	1	3	1
58	Sp2	16	5	2	4	1	1	1	1	5	1	1	5	5	4
59	Sp9	14	1	1	1	4	1		4	1	1	1	1	4	4
60	Sp4	9	2	5	5	5	5	5	5	5	5	5	5	2	5
61	Sp10	16	3	5	1	4	5	5	1	1	1	1	1	4	5
62	Sp4	4	3	4	3	3	3	1	1	3	3	1	3	3	3
63	Sp3	10	5	1	4	4	4	4	4	4	4	4	4	4	4
64	Sp9	9	1	4	1	4	4	4	5	1	1	4	1	1	1
65	Sp3	21	2	2	2	4	4		2	2	2	4			2
66	Sp4	8	5	5	5	5	5	5	2	5	5	5	5	5	5
67	Sp2	23	1	4	1	4	4	4	1	4	1	4	4	4	1
68	Sp1	9	2	5	5	5	5	5	5	5	5	2	5	5	5
69	Sp6	21	2	3	5	5	3	3	3	2	5	5	5	5	5
70	Sp8	10	1	4	4	4	4	4	4	4	4	4	4	4	1
71	Sp3	3	2	3	2	2	4	4	3	4	3	2	2	3	2
72	Sp8	18	1	2	4	4	4	4	4	4	4	4	4	2	2
73	Sp2	19	3	1	1	3	4	5	1	1	1	1	4		3
74	Sp1	14	3	1	3	3	3	3	1	3	2	1	3	3	5
75	Sp9	1	2	1	1	4	1		5	1	1	1	4	1	5
76	Sp3	20	2	2	4	3	4	4	2	2	4	4	4	4	2
77	Sp1	9	1	5	5	4	5	5	5	1	1	1	5	4	5
78	Sp9	17	1	4	3	1	4	3	4	3	4	4	1	3	4
79	Sp3	7	3	4	4	3	2	4	3	4	3	1	2	4	1
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81	Sp5	11	4	1	1	1	1	2	1	1	1	1	1	4	1
82	Sp10	13	4	1	1	1	4	4	3	4	4	1	1	4	4
83	Sp1	5	4	4	4	4	4	4	4	4	4	4	4	5	4
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86	Sp5	11	3	1	3	3	3	1	3	3	3	1	3		1
87	Sp10	10	4	1	2	4	4	4	1	4	1	1	4	4	1
88	Sp10	8	4	4	1	1	1	1	1	4	1	1	1	2	4
89	Sp10	14	4	4	4	4	1		4	1	4	4	1	4	4
90	Sp9	12	2	2	5	3	2	2	2	2	5	2	3	3	5
91	Sp8	12	3	3	3	3	3	3	2	3	3	5	3	3	5
92	Sp6	14	2	5	5	5	5	5	5	5	5	5	5	5	5
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94	Sp4	15	3	3	3	2	3	3	3	3	3	3	3	3	3
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96	Sp4	7	2	4	2	5	2	2	2	2	2	2	2	2	2
97	Sp5	21	3	1	1	1	1	4	1	1	1	1	2	4	1
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617	Sp3	24	2		4		1	1		1	1				2
618	Sp6	20	4		4		4	4		4	4				4
619	Sp10	23	2		1		1	1		1	1				5
620	Sp10	15	1		2		5	3		1	5				5
621	Sp9	12	5		2		5			5	2				5
622	Sp6	6	1		3		2	2		5	1				4
623	Sp1	6	1		4		4	4		4	1				4
624	Sp10	21	3		3		3	1		4	1				1
625	Sp5	20	3		2		2	1		4	3				3
626	Sp5	8	4		4		4	1		4	4				1
627	Sp4	21	4		3		3	1		3	3				2
628	Sp5	9	2		1		5			1	5				5
629	Sp4	2	1		3		3	4		1	3				3
630	Sp4	8	2		3		2	2		2	2				2
631	Sp1	2	1		4		4	4		5	1				1
632	Sp9	4	1		1		4	1		4	4				1
633	Sp7	17	2		3		3	3		3	3				3
634	Sp6	24	1		1		1	5		1	1				4
635	Sp1	17	1		4		4	3		1	5				1
636	Sp7	23	3		3		3	3		3	3				1
637	Sp10	12	2		2		5			2	2				1
638	Sp1	7	4		2		2	2		2	1				4
639	Sp5	5	2		5		5	1		3	1				1
640	Sp6	11	1		1		1	2		1	1				4
641	Sp1	22	2		2		2	2		3	2				2
642	Sp7	9	1		5		4	1		1	1				1

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643	Sp6	15	2		3		3	3		2	3			2
644	Sp3	6	2		2		3	1		3	4			1
645	Sp10	8	1		5		3	3		3	3			3
646	Sp5	18	3		2		2			4	3			3
647	Sp4	16	2		2		5	4		5	1			3
648	Sp1	1	4		4		4	1		1	4			4
649	Sp7	11	5		5		5	1		4	1			1
650	Sp7	1	1		1		1	1		1	1			1
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652	Sp10	13	2		1		5	5		2	5			5
653	Sp10	13	3		4		3	1		3	1			1
654	Sp8	8	2		2		4			3	2			1
655	Sp9	9	2		1		1	1		2	2			5
656	Sp1	24	5		5		5	5		5	5			5
657	Sp3	21	5		4		4	4		1	1			1
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659	Sp8	13	2		5		5	1		2	5			4
660	Sp3	11	3		2		1	2		4	1			1
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662	Sp2	20	2		3		2	3		2	3			2
663	Sp7	22	3		3		3			3	3			3
664	Sp4	24	3		3		3	3		3	3			3
665	Sp9	8	5		4		5	1		5	4			5
666	Sp5	15	1		2		1	4		4	1			4
667	Sp9	7	3		4		2			4	4			1
668	Sp6	5	3		4		4	4		4	1			1
669	Sp7	10	5		5		5			4	5			5
670	Sp6	8	4		4		4	4		4	4			1
671	Sp4	6	2		2		2	2		2	2			2
672	Sp10	18	2		2		2			5	2			1
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674	Sp7	21	5		1		5	5		5	1			1
675	Sp7	14	3		3		3	3		3	1			1
676	Sp5	7	4		4		4	4		1	4			4
677	Sp9	6	3		3		2	3		3	1			1
678	Sp3	17	2		4		4	4		4	4			4
679	Sp4	8	1		1		1	1		3	1			1
680	Sp3	1	2		4		4			4	4			5
681	Sp6	18	1		2		2	4		4	1			4
682	Sp1	9	3		5		5	1		1	1			5
683	Sp1	23	4		4		4	1		4	4			4
684	Sp4	22	3		3		3	3		3	3			3
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686	Sp6	17	5		5		5	3		5	5			1
687	Sp3	22	3		4		2			2	4			3
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690	Sp7	15	1		3		3	3		3	1			3
691	Sp1	7	5		5		2	2		2	5			2
692	Sp8	14	2		1		1	1		2	2			5
693	Sp5	20	4		4		4	4		4	1			4
694	Sp1	6	3		3		3	2		3	2			5
695	Sp9	4	5		5		5	5		5	5			5
696	Sp9	8	3		1		4			4	4			1
697	Sp2	18	2		2		2	4		4	2			5
698	Sp4	16	5		1		4	1		1	1			3
699	Sp6	7	1		1		1	2		4	1			1
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702	Sp10	23	5		5		1	5		2	5			5
703	Sp1	20	2		2		2	2		2	2			4
704	Sp8	5	5		5		5	5		5	5			5
705	Sp6	17	4		4		4	4		4	4			4
706	Sp7	2	2		1		1			1	2			1
707	Sp3	17	4		4		4	4		4	4			3
708	Sp3	9	4		4		1	4		1	4			1

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712	Sp3	21	4		4		4	4		4	4			1
713	Sp5	10	3		3		5	1		3	1			1
714	Sp8	18	4		4		4	4		4	4			4
715	Sp3	24	5		2		5	1		3	1			1
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717	Sp1	9	4		4		4	4		4	4			4
718	Sp10	21	2		5		5	5		1	1			5
719	Sp1	15	1		2		2	3		2	2			4
720	Sp5	17	3		3		3	3		3	1			3
721	Sp6	6	4		4		4	4		4	4			4
722	Sp9	9	4		1		4	4		1	1			1
723	Sp1	10	1		5		1	4		1	4			5
724	Sp2	15	5		3		2	3		2	1			3
725	Sp6	1	2		5		5	5		5	5			5
726	Sp4	15	1		4		3	3		3	4			3
727	Sp2	18	3		3		3	3		3	3			3
728	Sp7	4	1		5		1	1			1			1
729	Sp9	5	2		2		2	4		5	1			5
730	Sp4	10	5		3		3	1		3	2			5
731	Sp4	14	2		3		3	1		5	2			5
732	Sp9	6	5		1		2	2		5	2			5
733	Sp2	17	2		3		4	2		4	1			2
734	Sp8	16	4		4		4	4		4	4			4
735	Sp1	12	3		3		3	3		3	3			5
736	Sp7	3	3		1		2	1		4	1			3
737	Sp6	5	5		5		5	5		5	5			5
738	Sp3	4	2		4		1			1	1			1
739	Sp6	5	4		4		4	4		4	4			4
740	Sp8	13	3		5		1	1		2	1			5
741	Sp7	12	5		2		5	4		2	3			1
742	Sp4	13	3		3		3			3	3			3
743	Sp3	13	4		4		1	1		1	1			1
744	Sp4	15	2		2		2	3		3	2			2
745	Sp5	15	5		4		4	4		4	1			1
746	Sp1	24	2		2		5	1		1	2			5
747	Sp8	21	2		3		2	4		5	2			2
748	Sp5	18	5		1		2	4		2	1			1
749	Sp3	11	4		4		4	1		1	4			1
750	Sp3	6	4		4		3			3	3			3
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752	Sp3	16	3		1		1			1	1			3
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754	Sp7	17	5		3		3	3		3	3			5
755	Sp10	11	1		5		5	5		3	3			5
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757	Sp2	15	1		2		2	3		4	2			3
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760	Sp3	23	5		1		5	1		3	1			1
761	Sp10	24	3		1		3	3		3	1			3
762	Sp5	17	4		4		4	4		1	4			1
763	Sp10	10	5		3		5			3	5			5
764	Sp8	8	4		4		4			4	4			4
765	Sp7	7	4		4		2	4		4	1			1
766	Sp5	22	5		5		1	2		3	1			5
767	Sp9	13	4		1		1	4		4	1			4
768	Sp6	19	4		4		4	4		4	4			4
769	Sp4	13	1		3		2	1		1	1			1
770	Sp6	13	5		5		1	5		5	5			5
771	Sp1	7	2		2		2	2		2	2			2
772	Sp2	23	2		2		2	2		2	2			1
773	Sp6	24	4		4		4	4		4	4			4
774	Sp9	10	4		1		4			4	4			1

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775	Sp10	11	2		2		5			4	2			1
776	Sp2	12	5		2		2	1		3	2			3
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778	Sp2	5	3		3		3	1		1	3			5
779	Sp8	6	1		2		2	4		1	2			4
780	Sp10	7	2		4		2	4		4	1			4
781	Sp3	10	4		4		4	1		4	4			4
782	Sp9	19	2		2		5			2	5			5
783	Sp7	8	5		3		3			3	4			1
784	Sp5	24	2		1		1			1	1			1
785	Sp8	10	5		5		5	5		3	5			5
786	Sp7	10	1		2		1	1		1	1			1
787	Sp7	1	4		4		4	4		4	4			1
788	Sp3	16	2		4		4	4		1	1			1
789	Sp3	15	4		2		2	3		3	4			1
790	Sp9	21	5		1		5	5		4	1			5
791	Sp9	16	1		4		4	4		1	4			4
792	Sp5	4	2		5		5	5		5	5			5
793	Sp6	18	3		3		3	3		3	3			3
794	Sp5	17	5		3		4	3		3	2			5
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796	Sp1	22	3		3		3	3		3	3			3
797	Sp5	6	4		4		4	4		4	1			1
798	Sp9	11	3		3		1	1		1	2			3
799	Sp1	5	3		3		4	4		1	4			3
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803	Sp3	1	5		4		4	4		1	4			1
804	Sp2	5	1		1		1	4		4	1			1
805	Sp6	13	2		5		2	5		2	5			5
806	Sp5	13	1		2		1	4		3	1			1
807	Sp7	15	4		4		4	3		3	4			4
808	Sp8	10	2		2		5	5		5	5			5
809	Sp6	8	5		2		3	2		5	2			5
810	Sp8	9	1		4		4	4		1	4			1
811	Sp6	19	2		5		5	5		5	5			5
812	Sp3	6	3		2		2			3	4			1
813	Sp10	17	1		1		4	3		3	1			3
814	Sp8	9	4		4		4	4		4	4			4
815	Sp1	17	2		3		1	2		2	2			5
816	Sp7	20	4		4		4	4		4	4			3
817	Sp5	12	2		1		2			3	1			1
818	Sp5	6	2		4		4	4		4	2			4
819	Sp9	12	3		3		3			3	1			1
820	Sp3	20	5		4		1	4		1	3			1
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822	Sp2	20	3		3		3	3		4	3			3
823	Sp7	15	2		3		3	3		3	2			3
824	Sp5	18	4		4		2	4		4	1			1
825	Sp5	1	3		3		1	1		4	5			1
826	Sp8	18	5		5		5	5		5	2			5
827	Sp3	3	4		4		4	4		4	1			4
828	Sp1	8	4		1		4			4	1			1
829	Sp1	18	1		2		2	1		2	2			5
830	Sp6	13	4		1		2	4		4	2			4
831	Sp1	1	5		5		5	5		5	5			5
832	Sp2	17	5		2		4	1		1	1			1
833	Sp2	14	3		1		3	4		1	4			1
834	Sp10	22	4		4		4	2		3	3			3
835	Sp6	5	2		5		1	5		1	2			1
836	Sp5	18	1		1		2	4		4	1			1
837	Sp2	7	3		3		2	3		3	3			3
838	Sp10	4	4		4		1	4		4	4			4
839	Sp2	19	2		2		5	5		5	2			5
840	Sp7	3	2		4		4	1		3	1			1

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842	Sp10	2	1		5		3	3		3	1			3
843	Sp1	24	4		4		4	1		4	4			4
844	Sp6	2	1		3		5	3		1	5			5
845	Sp1	20	3		2		2	1		2	5			5
846	Sp8	4	2		4		1	4		4	2			1
847	Sp3	16	5		4		1	5		1				1
848	Sp2	20	5		2		2	2		2	2			1
849	Sp10	5	4		1		5	4		1	1			5
850	Sp3	19	3		4		4	1		4	4			1
851	Sp3	22	5		4		4	2		2	4			3
852	Sp7	4	5		5		5	5		5	5			5
853	Sp4	10	1		3		1	3		3	3			1
854	Sp4	5	4		1		2			1	1			1
855	Sp1	24	3		3		1	1		3	1			3
856	Sp5	20	1		4		4	4		4	2			1
857	Sp3	19	4		4		4			5	1			1
858	Sp4	2	5		3		3			2	3			1
859	Sp8	14	1		1		1	4		1	1			1
860	Sp4	1	4		3		3			1	3			1
861	Sp1	19	5		5		5	5		5	5			5
862	Sp8	2	1		4		1	4		3	1			3
863	Sp8	13	4		4		4			4	4			4
864	Sp4	2	2		1		2	1		2	3			3
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866	Sp6	6	5		5		2	5		5	5			5
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868	Sp5	9	3		1		1	1		1	1			1
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870	Sp3	18	3		4		2	3		2	1			3
871	Sp2	19	4		1		5			4	4			1
872	Sp4	21	2		3		3	1		5	3			1
873	Sp9	17	4		4		4	4		4	4			4
874	Sp8	11	1		2		4	4		4	4			4
875	Sp5	24	4		1		4	4		1	4			1
876	Sp4	18	4		3		2	3		2	2			1
877	Sp8	1	4		4		4	4		4	4			4
878	Sp4	1	3		3		3	3		3	3			3
879	Sp10	6	4		1		4	4		5	4			1
880	Sp9	12	4		2		4	1		4	2			4
881	Sp8	15	4		4		2	4		4	2			4
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883	Sp2	12	2		3		2	3		3	2			1
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887	Sp9	16	3		3		3			1	3			5
888	Sp3	13	2		2		2	1		2	2			2
889	Sp10	22	1		1		3	2		2	3			1
890	Sp3	2	3		4		4	4		2	4			2
891	Sp3	11	2		2		1			3	1			1
892	Sp6	15	4		4		4			3	4			4
893	Sp6	23	1		4		1			1	1			4
894	Sp2	6	2		2		2	1		2	2			1
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896	Sp1	3	2		2		2	2		2	2			2
897	Sp7	16	1		4		5	5		5	1			5
898	Sp1	12	4		2		4	4		4	4			4
899	Sp3	22	2		4		2	2		4	4			4
900	Sp9	16	4		4		1	4		1	4			4
901	Sp9	19	4			1	4	1		4	1		1	5
902	Sp7	7	5			1	2	2		2	2		4	5
903	Sp2	13	5			1	3	1		1	2		1	1
904	Sp1	16	5			5	5	5		5	5		1	4
905	Sp10	18	3			3	4	4		4	2		4	2
906	Sp8	15	5			2	2	3		2	5		2	4

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908	Sp3	22	4			4	3	3		4	3			4	3
909	Sp5	16	5			4	1	1		1	1			1	5
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911	Sp10	9	4			1	1	1		1	1			4	5
912	Sp5	2	3			3	3	4		3	1			4	1
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914	Sp4	4	5			3	3	1		3	3			1	3
915	Sp10	5	2			1	2	1			4			4	1
916	Sp7	13	5			3	3			1	5			1	1
917	Sp4	23	4			4	4	1		1	1			4	1
918	Sp1	7	1			1	2	2		1	5			4	1
919	Sp9	24	2			1	1	5		2	5			1	1
920	Sp7	12	2			3	3	3		3	3			3	5
921	Sp1	11	3			3	4	3		3	3			1	3
922	Sp5	24	1			1	1	1		1	1			4	1
923	Sp10	1	2			5	5	5		5	5			1	5
924	Sp5	13	5			1	1	1		1	1			1	1
925	Sp7	14	5			3	3	5		5	3			4	1
926	Sp7	24	5			4	5	3		5	4			1	5
927	Sp2	10	2			4	4	4		4	3			4	1
928	Sp8	6	2			2	2			2	2			4	5
929	Sp4	12	4			4	1	3		3	2			3	4
930	Sp4	9	5			5	5			1	5			1	5
931	Sp7	16	5			5	5	5		5	5			5	5
932	Sp5	21	2			5	1			5	1			1	5
933	Sp6	1	3			4	4			1	4			4	4
934	Sp7	10	4			4	4	4		4	4			4	1
935	Sp10	4	3			1	5	5		1	1			1	1
936	Sp8	16	1			5	5	1		5	1			3	5
937	Sp3	18	1			4	2	3		4	2			3	3
938	Sp5	19	1			4	4	5		1	1			1	1
939	Sp7	14	1			1	4	4		4	1			1	1
940	Sp8	7	1			4	2	4		4	2			4	1
941	Sp1	8	1			4	1	4		1	4			1	1
942	Sp4	1	2			3	3	3		3	3			3	3
943	Sp9	7	1			4	2	4		4	4			2	2
944	Sp9	21	3			3	1	5		4	1			4	3
945	Sp7	12	3			3	3	3		3	3			3	3
946	Sp7	19	5			1	5			5	1			1	5
947	Sp8	19	2			4	4	5		5	2			4	4
948	Sp2	11	1			1	1	1		4	1			1	1
949	Sp6	20	1			4	2	4		1	4			2	5
950	Sp3	5	4			4	2	4		4	4			4	1
951	Sp6	18	2			5	1	3		5	5			5	5
952	Sp1	12	5			5	5	5		5	5			1	5
953	Sp7	17	1			1	4	4		3	4			4	1
954	Sp7	23	5			1	1	1		2	2			4	5
955	Sp10	19	5			5	5	5		5	5			5	5
956	Sp8	21	5			5	5	5		5	5			5	5
957	Sp3	12	2			3	2			2	4			3	1
958	Sp1	9	5			5	5	5		5	5			1	5
959	Sp1	2	3			1	4	4		3	1			3	5
960	Sp10	19	1			1	3	5		5	5			1	5
961	Sp10	12	3			1	3			3	1			1	
962	Sp9	2	1			1	1	1		3	1			1	5
963	Sp8	9	5			5	4	5		5	5			5	5
964	Sp7	14	2			1	3	3		3	5			3	5
965	Sp3	23	1			4	4	1		3	4			4	1
966	Sp6	8	3			4	4			4	1			4	4
967	Sp6	2	5			3	3	3		3	2			4	4
968	Sp4	20	2			2	3	3		3	3			2	3
969	Sp2	22	4			2	3	2		3	3			2	3
970	Sp9	5	1			1	4	4		4	4			4	1
971	Sp3	19	1			4	5	1		4	1			4	1
972	Sp7	7	1			1	2	2		2	2			4	1

973	Sp4	10	3			3	3	3		3	3			3	3
974	Sp5	23	4			4	1	4		1	4			4	1
975	Sp1	14	1			1	5	1		1	5			1	5
976	Sp7	24	4			4	4	1		4	4			4	1
977	Sp3	5	2			4	5	1		5	1			1	1
978	Sp7	8	4			4	1			4	4			1	1
979	Sp2	8	4			3	3	3		4	1			1	1
980	Sp4	24	4			1	4	1		1	1			4	1
981	Sp5	14	1			1	1	1		1	4			1	5
982	Sp9	15	3			2	2	3		2	2			2	3
983	Sp9	10	1			1	1	4		4	4			4	1
984	Sp1	21	2			3	5	2		5	2			5	2
985	Sp2	6	5			1	2	3		2	1			2	1
986	Sp5	15	3			2	2	4		2	4			2	4
987	Sp8	9	2			1	2	1		2	2			4	5
988	Sp6	3	3			5	2	2		2	2			2	3
989	Sp1	11	4			4	4	4		4	4			4	4
990	Sp1	21	1			5	1	1		1	1			1	1
991	Sp5	15	2			2	2	4		3	2			2	4
992	Sp6	7	3			3	3	1		3	1			1	3
993	Sp3	20	3			4	2	2		3	4			2	3
994	Sp4	9	4			3	3	1		3	5			1	1
995	Sp10	14	2			1	1	1		1	1				1
996	Sp5	23	3			1	1	1		1	1			1	1
997	Sp4	21	3			3	3	3		3	3			3	3
998	Sp3	9	5			4	4	4		4	4			4	1
999	Sp1	18	2			2	2	4		4	2			1	1
1000	Sp9	1	5			1	5	5		3	5			1	5
1001	Sp6	19	5			5	5	5		5	5			5	5
1002	Sp4	11	1			1	4	1		3	2			4	1
1003	Sp6	4	5			5	5	5		5	5			2	5
1004	Sp10	14	3			1	3	3			1			1	5
1005	Sp6	2	3			3	4	4		1	4			3	4
1006	Sp3	17	3			4	4	4		4	4			4	3
1007	Sp1	18	3			3	3	3		3	3			2	3
1008	Sp1	23	1			4	1	1		2	2			4	1
1009	Sp7	6	5			1	2	1		5	2			3	5
1010	Sp4	11	4			3	3	4		4	3			1	1
1011	Sp2	14	1			1	4	4		1	1			1	1
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1013	Sp9	5	5			5	5	5		5	5			1	5
1014	Sp10	5	5			5	5	5		5	5			1	5
1015	Sp2	24	5			1	1	1		2	1			1	5
1016	Sp8	24	4			4	4	4		4	4			4	4
1017	Sp3	13	5			1	1			3	2			1	3
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1019	Sp4	5	2			3	3			3	3			1	3
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1021	Sp8	9	3			4	4	4		4	4			1	1
1022	Sp5	3	4			1	4	4		4	4			4	1
1023	Sp4	6	4			3	3	3		3	3			3	3
1024	Sp4	23	1			1	4	4		4	1			4	4
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1026	Sp1	20	4			4	4	4		2	4			2	4
1027	Sp9	20	4			4	1	4		4	1			1	1
1028	Sp2	8	5			1	2	1		4	1			1	3
1029	Sp7	4	2			3	5	5			5			2	5
1030	Sp9	5	4			4	4	4		4	4			1	4
1031	Sp3	3	5			2	2	2		2	2			1	3
1032	Sp1	20	1			5	2	1		2	1			1	5
1033	Sp5	4	4			1	4			4	4			4	4
1034	Sp9	20	1			4	2	2			4			2	1
1035	Sp6	18	5			5	2	2		5	4			2	5
1036	Sp2	22	5			2	2	2			3			2	3
1037	Sp6	16	2			2	5	5		5	5			5	5
1038	Sp7	16	4			4	4	4		4	1			4	1

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1039	Sp4	7	1		4	3	3	1		3	3			4	3
1040	Sp6	12	1		1	5	2	5		3	4			3	5
1041	Sp9	18	2		2	2	2	4		4	5			4	1
1042	Sp2	3	2		4	2	2	1		2	3			3	3
1043	Sp4	12	1		3	1	3	3		3	2			3	1
1044	Sp5	8	5		4	1	1			3	1			1	5
1045	Sp2	5	4		1	4	2	4		4	4			1	1
1046	Sp9	15	5		2	2	3	3		5	2			2	1
1047	Sp8	2	4		4	4	4	4		4	1			1	5
1048	Sp2	4	4		4	4	4	3		4	4			4	1
1049	Sp3	24	4		4	4	3	1		3	1			4	1
1050	Sp2	10	1		1	4	1	4		4	4			4	1
1051	Sp6	4	3		1	1	4	1		4	1			2	1
1052	Sp1	3	4		2	2	4	4		2	2			4	4
1053	Sp5	18	2		2	2	2	2		2	2			2	2
1054	Sp8	1	5		5	5	5	5		5	5			5	5
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1056	Sp8	24	2		2	1	1	5		2	3			4	5
1057	Sp1	2	4		4	4	2	4		4	5			2	3
1058	Sp8	15	3		2	3	3	3		3	3			3	1
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1060	Sp10	5	1		5	1	5	5		5	5			1	5
1061	Sp5	2	1		1	1	1			3	1			1	1
1062	Sp9	2	3		3	3	3	3		3	3			3	3
1063	Sp9	17	3		1	1	3	1		3	3			4	3
1064	Sp10	15	5		3	3	3	3		3	3			3	3
1065	Sp9	24	4		4	4	4	1		4	2			4	1
1066	Sp5	10	4		1	1	1	1		1	1			1	1
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1068	Sp8	5	3		3	3	5	5		3	3			3	
1069	Sp2	6	4		4	3	3	3		4	3			4	1
1070	Sp7	12	4		1	4	4	4		4	1			4	4
1071	Sp5	5	3		3	1	5	5		1	1			2	5
1072	Sp1	10	2		2	1	1	2		3	4			4	1
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1074	Sp1	13	2		2	2	2	2		1	2			4	1
1075	Sp1	4	1		1	1	4	1		1	1			3	1
1076	Sp4	4	1		3	3	1	1		3	3			4	3
1077	Sp6	10	3		3	1	4	1		2	5			4	4
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1080	Sp9	22	4		2	2	4	2		4	2			4	3
1081	Sp7	3	4		4	4	4	4		4	4			1	1
1082	Sp10	6	2		2	2	2			2	3			5	1
1083	Sp1	21	5		5	5	5	5		5	5			5	5
1084	Sp10	20	5		5	5	5	5		5	5			4	3
1085	Sp2	9	4		4	4	4	4		4	4			2	1
1086	Sp4	20	1		3	3	3			3	3			1	3
1087	Sp3	14	5		4	1	1			4	4			4	5
1088	Sp6	9	3		1	1	4	1		1				3	1
1089	Sp7	13	3		3	3	3	2		3	3			1	3
1090	Sp10	17	5		3	1	4	3		3	5			4	3
1091	Sp5	23	2		1	4	5	1		1				1	
1092	Sp2	22	2		2	2	2	2		2	3			3	
1093	Sp7	19	2		2	5	5	5		5	5			5	5
1094	Sp3	8	3		2	1	2	2		2	2			2	2
1095	Sp7	23	4		4	4	4	4		4	4			4	1
1096	Sp8	12	4		2	4	4	4		4	4			4	4
1097	Sp5	4	5		1	1	1	5		1	1			1	1
1098	Sp3	24	3		4	4	3	1		3	2			1	3
1099	Sp1	13	1		2	1	4	4		4	5			4	1
1100	Sp8	4	3		3	3	2	5		2	5			2	5
1101	Sp10	20	2		2	5	2	2		2	2			2	5
1102	Sp5	23	5		1	1	1	1		5	1			4	5
1103	Sp3	13	3		4	2	3	3		3	4			3	3
1104	Sp1	12	1		2	2	4	4		3	3			3	1

1105	Sp7	23	2		5	5	5	5		2	5			5	5
1106	Sp7	10	3		1	1	1	3		3	1			1	1
1107	Sp7	24	2		1	1	3	3		2	3			1	5
1108	Sp10	11	5		4	1	5	2		4	4			1	1
1109	Sp5	19	2		5	1	5	5		5	5			2	5
1110	Sp7	2	1		2	4	4	4		4	4			4	1
1111	Sp8	23	1		4	1	4			4	2			4	4
1112	Sp7	8	2		3	2	3	3		2	2				1
1113	Sp3	15	5		2	3	3	3		3	3				3
1114	Sp1	16	4		4	4	4	4		4	4				4
1115	Sp4	5	3		3	3	3	3		3	3			2	3
1116	Sp4	2	4		3	2	2			2	2			1	1
1117	Sp5	11	1		1	1	1	2		1	1			1	1
1118	Sp9	8	2		2	2	2	2		2	2			1	2
1119	Sp2	13	2		1	1	2	1		2	1			5	1
1120	Sp5	9	1		2	5	5	1		1	5				5
1121	Sp2	4	3		1	1	3	4		4	3				1
1122	Sp1	13	5		5	5	2	5		3	5				5
1123	Sp10	2	4		4	1	4	4		4	4			4	4
1124	Sp9	11	1		4	1	4	4		4	4			4	1
1125	Sp7	20	2		3	3	3	3		3	3			3	3
1126	Sp9	1	3		4	1	4	4		4	4			4	3
1127	Sp4	5	1		3	3	1	1		3	1				3
1128	Sp8	14	3		1	1	5	2		5	2			1	5
1129	Sp6	22	3		2	2	2	2		3	3			3	3
1130	Sp4	17	3		3	3	3	3		3	3			3	3
1131	Sp6	10	5		5	5	5	5		5	5			3	5
1132	Sp7	16	3		3	1	3	3		5	3				3
1133	Sp8	14	4		4	4	4	4			4			1	4
1134	Sp7	6	3		3	3	3	3		3	3			3	3
1135	Sp3	23	2		4	4	4	5		1	3			4	2
1136	Sp10	3	1		2	1	3	4		2	3			3	3
1137	Sp7	8	1		4	4	4	4		4	4			4	1
1138	Sp7	24	1		1	1	4			5	1			4	1
1139	Sp5	22	2		2	2	2	2		2	2			2	2
1140	Sp5	10	5		3	5	1	1		1	5			1	3
1141	Sp4	23	2		3	5	1	5		3	5			2	2
1142	Sp1	10	3		5	1	4	1		3	2			1	3
1143	Sp8	17	4		4	4	4	4		4	4			4	4
1144	Sp10	23	1		5	5		5		5	5			5	5
1145	Sp4	13	5		1	1	2	5		1	2			1	1
1146	Sp7	22	1		2	2	3	2		3	3			2	3
1147	Sp10	8	3		1	1	1	1			1			1	5
1148	Sp8	11	4		4	4	4	4		4	4			4	4
1149	Sp9	16	5		4	5	1	5		5	5			5	5
1150	Sp3	9	1		4	4	4	4		1	4			4	1
1151	Sp8	16	3		5	5	5	5		5	5			5	5
1152	Sp4	12	3		3	3	3	3		3	3			3	3
1153	Sp1	2	5		5	5	5	5		5	5			5	5
1154	Sp10	22	3		4	2	3	4		3	3			2	3
1155	Sp5	7	3		4	1	2			4	4			1	1
1156	Sp5	13	3		4	1	3	3			2			3	1
1157	Sp9	17	2		2	2	4	3		3	4			2	1
1158	Sp8	18	3		1	4	3	5		5	2			2	5
1159	Sp2	12	4		4	4	4	4		4	3			4	1
1160	Sp3	2	1		4	1	4	4		4	1			4	4
1161	Sp3	20	4		4	1	4	4		4	4			4	1
1162	Sp10	17	4		3	1	4	4		4	4			4	1
1163	Sp3	22	1		4	4	3	2		4	4			4	3
1164	Sp10	15	4		4	2	2	4		2	2			4	4
1165	Sp9	13	3		3	3	3	5		3	3			3	3
1166	Sp6	6	2		2	5	2	5		2	2			1	5
1167	Sp2	5	5		4	1	2	4		5	1			4	5
1168	Sp10	1	5		5	3	5	5		5	5			5	5
1169	Sp8	1	2		5	5	5	5		5	2			5	5
1170	Sp4	3	4		2	1	3	3		3	3			3	2

1171	Sp5	7	2		2	4	2	2		2	2			2	1
1172	Sp9	3	4		4	1	4	4		4	4			1	1
1173	Sp8	7	3		3	3	3	2		2	2			1	4
1174	Sp9	10	3		4	1	1	4		4	1			4	1
1175	Sp2	11	3		3	3	3	1		1	3			1	1
1176	Sp8	17	1		4	1	4	4		4	3			4	4
1177	Sp10	6	3		2	3	5	3		3	2			3	5
1178	Sp4	24	2		3	3	3	1		3	3			5	1
1179	Sp8	8	1		4	1	4	4		4				1	1
1180	Sp6	13	3		2	4	2	1		2				1	1
1181	Sp10	22	2		2	2	3	4		3	2			2	2
1182	Sp1	3	3		3	2	2	4		2	2			1	2
1183	Sp6	18	4		4	4	4	4		4	4			4	4
1184	Sp10	12	1		3	3	3	3		3	3			4	3
1185	Sp7	3	1		4	4	4	4		4	4			4	1
1186	Sp3	19	5		4	4	4	5		5	4			4	1
1187	Sp3	10	2		2	2	2	2		2	2			2	1
1188	Sp6	9	2		5	5	5	5		5	5			5	5
1189	Sp5	14	4		4	4	4	4			1			1	1
1190	Sp4	20	3		3	3	3	3		3	3			3	3
1191	Sp5	22	1		4	2	2	4		3	4			2	1
1192	Sp1	5	2		2	5	5	5		5	5			1	5
1193	Sp2	11	5		1	1	1	1		4	1			2	1
1194	Sp7	16	2		5	3	3	5		3	5			5	3
1195	Sp8	2	5		1	5	4			2	5			5	5
1196	Sp5	5	1		1	4	1	4		1	4			4	5
1197	Sp2	24	2		1	1	5	1		5	1			1	5
1198	Sp8	21	1		4	4	4	4		4	4			4	1
1199	Sp3	20	1		2	4	2	4		4	4			2	1
1200	Sp5	12	3		1	1	4	3		2	1			3	4

Table 2: The results of the evaluation by 24 listeners.

5. Results

It is understood from Table 2 that the average percentage of correctly identified emotions by 24 listeners for 10 speakers are as follows:

1. Speaker 1: 48.95%
2. Speaker 2: 35.95%
3. Speaker 3: 25.26%
4. Speaker 4: 37.59%
5. Speaker 5: 34.09%
6. Speaker 6: 47.74%
7. Speaker 7: 47.70%
8. Speaker 8: 50.95%
9. Speaker 9: 46.29%
10. Speaker 10: 37.27%

Therefore, the worst speakers from the listener evaluation point of view are the speakers 3 and 5.

Also, the worst sentences correctly identify their emotions are sentences 13, 22, 10 and 5, respectively with 35.69%, 36.31%, 37.20% and 37.73% for all speakers in 5 emotional states.

Table 3 illustrates the confusion matrix for all 24 listeners. The first column of each subtable shows the listener code, and five emotions (neutral (NEU), surprise (SUR), anger (ANG), sadness (SAD), happiness (HAP)) as real stimulus (inside the utterances) and total correct evaluation rate plus total evaluated utterances by the listener. For example, the total correct rate the listener 1 (L1) has evaluated the utterances is 38.56% in 200 cases he has considered. The responses by the listeners have been revealed in columns 2-6 of every sub tables of Table 3. It is concluded that the listeners 5, 10, 13 and 22 are the worst ones while the best evaluators are the listeners 3, 6, 12 and 17.

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L1	NEU	SUR	ANG	SAD	HAP		L2	NEU	SUR	ANG	SAD	HAP
NEU	14.29	23.81	11.90	40.48	9.52		NEU	14.75	8.20	19.67	45.90	11.48
SUR	10.26	35.90	25.64	10.26	17.95		SUR	6.09	20.87	33.04	16.52	23.48
ANG	10.87	13.05	50	8.70	17.39		ANG	7.25	14.49	49.28	17.39	11.59
SAD	9.52	21.43	7.14	57.14	4.76		SAD	15.93	6.19	12.38	61.95	3.54
HAP	12.90	29.03	9.68	12.90	35.48		HAP	6.36	7.27	24.55	17.27	44.55
Total	38.56 /200						Total	38.28 /598				
L3	NEU	SUR	ANG	SAD	HAP		L4	NEU	SUR	ANG	SAD	HAP
NEU	38.18	18.18	16.36	23.64	3.64		NEU	14.75	17.21	16.39	48.36	3.28
SUR	5.77	46.15	17.31	13.46	17.31		SUR	7.83	47.83	19.13	12.17	13.04
ANG	12.5	6.25	67.19	9.38	4.69		ANG	18.03	13.93	42.62	22.13	3.28
SAD	12.96	16.67	12.96	57.41	0		SAD	12.39	7.96	12.39	67.26	0
HAP	16.33	26.53	12.24	6.12	38.78		HAP	11.72	26.56	17.97	11.72	32.03
Total	49.54 /274						Total	40.90 /600				
L5	NEU	SUR	ANG	SAD	HAP		L6	NEU	SUR	ANG	SAD	HAP
NEU	44.77	9.62	10.04	30.13	5.44		NEU	42.02	14.29	5.88	33.19	4.62
SUR	15.48	23.43	23.43	23.85	13.81		SUR	11.39	62.45	7.17	6.33	12.66
ANG	32.35	10.50	32.77	18.49	5.88		ANG	23.85	20.08	34.73	16.74	4.60
SAD	21.34	9.21	8.37	59.41	1.67		SAD	12.5	8.33	4.17	74.58	0.42
HAP	22.08	12.92	17.92	18.75	28.33		HAP	21.43	23.95	7.98	10.50	36.13
Total	37.74 /119						Total	49.98 /1192				
L7	NEU	SUR	ANG	SAD	HAP		L8	NEU	SUR	ANG	SAD	HAP
NEU	25.42	11.86	21.19	33.90	7.63		NEU	35.83	9.17	6.25	37.5	11.25
SUR	5.26	45.61	22.81	10.53	15.79		SUR	26.25	30.83	10	11.67	21.25
ANG	19.83	9.09	51.24	11.57	8.26		ANG	35	10.42	32.92	12.92	8.75
SAD	21.43	8.04	13.39	56.25	0.89		SAD	22.5	9.17	5	60.42	2.92
HAP	19.69	18.90	21.26	11.81	28.35		HAP	25.42	14.58	9.58	9.58	40.84
Total	41.37 /592						Total	40.17 /120				
L9	NEU	SUR	ANG	SAD	HAP		L10	NEU	SUR	ANG	SAD	HAP
NEU	42.60	3.70	7.41	35.19	11.11		NEU	28.99	18.07	14.29	34.03	4.62
SUR	29.82	24.56	12.28	15.79	17.54		SUR	14.29	34.45	19.33	15.13	16.81
ANG	28.79	7.58	34.85	15.15	13.64		ANG	21.43	15.13	39.50	17.23	6.72
SAD	13.46	5.77	5.77	73.08	1.92		SAD	13.39	28.03	7.11	50.21	1.26
HAP	24.44	15.56	17.78	8.89	33.33		HAP	18.64	22.03	14.41	12.29	32.63
Total	41.68 /274						Total	37.16 /118				
L11	NEU	SUR	ANG	SAD	HAP		L12	NEU	SUR	ANG	SAD	HAP
NEU	28.99	9.24	15.55	34.03	12.18		NEU	32.79	8.20	14.76	37.70	6.56
SUR	10.46	32.22	23.01	9.62	24.69		SUR	15.06	45.18	14.46	9.64	15.66
ANG	15.13	7.14	44.12	18.49	15.13		ANG	19.23	9.89	47.25	16.48	7.14
SAD	18.75	5.42	9.17	62.92	3.75		SAD	19.05	4.17	6.55	69.05	1.19
HAP	15.83	14.58	19.58	16.25	33.76		HAP	29.19	15.66	10.81	8.65	35.69
Total	40.40 /119						Total	45.99 /884				
L13	NEU	SUR	ANG	SAD	HAP		L14	NEU	SUR	ANG	SAD	HAP
NEU	21.31	17.21	4.92	36.07	20.49		NEU	27.54	15.46	14.01	33.82	9.18
SUR	4.35	36.52	10.43	18.26	30.43		SUR	12.09	39.53	19.53	11.63	17.21
ANG	23.14	10.74	16.53	25.62	23.97		ANG	20.09	11.68	44.39	16.82	7.01
SAD	15.93	18.58	0	54.87	10.62		SAD	15.09	9.43	4.72	69.81	0.94
HAP	10.16	21.09	6.25	16.41	46.09		HAP	15.46	17.87	15.46	15.94	35.27
Total	35.06 /599						Total	43.31 /105				
L15	NEU	SUR	ANG	SAD	HAP		L16	NEU	SUR	ANG	SAD	HAP
NEU	42.16	4.86	10.27	38.38	4.32		NEU	24.27	16.74	12.13	36.82	10.04
SUR	20.71	31.36	15.38	14.79	17.75		SUR	14.58	35.42	15.83	12.08	22.08

ANG	28.65	9.19	43.78	15.14	3.24		ANG	10.83	12.08	47.08	19.58	10.42
SAD	18.02	6.98	7.56	66.86	0.58		SAD	10.42	10	11.25	67.5	0.83
HAP	30.11	9.14	17.20	11.83	31.72		HAP	13.75	17.08	13.75	13.75	41.67
Total	43.18 /897						Total	43.19 /119				
L17	NEU	SUR	ANG	SAD	HAP		L18	NEU	SUR	ANG	SAD	HAP
NEU	100	0	0	0	0		NEU	42.37	10.17	8.47	30.51	8.47
SUR	18.41	23.88	16.42	17.41	23.88		SUR	16.95	38.98	13.56	8.47	22.03
ANG	20.19	9.13	39.42	17.31	13.94		ANG	35.14	9.46	36.49	8.11	10.81
SAD	17.22	5.26	8.61	67.94	0.96		SAD	29.09	5.45	9.09	56.36	0
HAP	18.84	14.01	10.63	11.59	44.93		HAP	20	22	12	8	38
Total	55.23 /104						Total	42.44 /297				
L19	NEU	SUR	ANG	SAD	HAP		L20	NEU	SUR	ANG	SAD	HAP
NEU	29.82	11.40	17.98	35.53	5.26		NEU	41.60	11.34	10.08	28.99	7.98
SUR	9.53	44.16	20.78	8.66	16.88		SUR	12.97	40.59	18.83	9.21	18.41
ANG	15.04	12.83	49.12	18.14	4.87		ANG	33.89	11.30	38.49	11.72	4.60
SAD	13.91	7.39	10.87	66.09	1.74		SAD	20.50	7.11	10.46	60.25	1.67
HAP	15.88	19.31	15.02	11.16	38.63		HAP	25.83	20	8.33	9.58	36.25
Total	45.56 /114						Total	43.44 /119				
L21	NEU	SUR	ANG	SAD	HAP		L22	NEU	SUR	ANG	SAD	HAP
NEU	40.35	12.28	12.28	31.58	3.51		NEU	31.03	15.52	8.62	32.76	12.07
SUR	24.14	36.21	8.62	15.52	15.52		SUR	25	31.67	6.67	16.67	20
ANG	23.29	16.44	39.73	13.70	6.85		ANG	32.88	19.18	36.99	9.59	1.37
SAD	30.19	11.32	7.55	49.06	1.89		SAD	26.79	8.93	7.14	48.21	8.93
HAP	32.65	22.45	12.24	4.08	28.57		HAP	19.61	19.61	17.65	11.76	31.37
Total	38.78 /290						Total	35.86 /298				
L23	NEU	SUR	ANG	SAD	HAP		L24	NEU	SUR	ANG	SAD	HAP
NEU	25.27	14.29	13.19	44.51	2.75		NEU	51.25	5	12.08	17.92	13.75
SUR	20.37	32.72	12.96	17.90	16.05		SUR	30.54	25.52	5.86	9.21	28.87
ANG	24.72	13.48	43.82	12.92	5.06		ANG	34.58	7.5	36.67	8.33	12.92
SAD	16.05	6.79	8.02	67.90	1.23		SAD	35.42	3.75	7.08	50.83	2.92
HAP	27.17	15.22	11.96	14.67	30.98		HAP	27.92	7.92	8.33	4.58	51.25
Total	40.1 /868						Total	43.10 /119				

Table 3: Confusion matrix based on the evaluation of 24 listeners.

Table 4 demonstrates the total confusion matrix for all listeners without normalization. The last column shows the total utterances in specific emotion that have been tested. 19478 utterances have been listened and evaluated by the listeners.

Response → Stimulus ↓	Neutral	Surprise	Anger	Sadness	Happiness	Sum
NEU	1443	441	456	1278	301	3919
SUR	593	1384	630	492	740	3839
ANG	929	466	1639	628	341	4003
SAD	699	353	309	2396	76	3833
HAP	796	657	525	469	1437	3884
Total	19478					

Table 4: Confusion matrix for whole SES database (without normalization).

Table 5 is about the normalized confusion matrix for all speakers evaluated by all speakers. The total 42.66% accuracy for evaluating the real emotions in utterances is an acceptable rate while the listeners had a chance of listening each utterance only once.

Response → Stimulus ↓	Neutral	Surprise	Anger	Sadness	Happiness
NEU	36.8206	11.2529	11.6356	32.6104	7.6805
SUR	15.4467	36.0511	16.4105	12.8158	19.2759
ANG	23.2076	11.6413	40.9443	15.6882	8.5186
SAD	18.2364	9.2095	8.0616	62.5098	1.9828
HAP	20.4943	16.9156	13.517	12.0752	36.9979
Total	42.6647%				

Table 5: Normalized confusion matrix for whole SES database.

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