Unimodal and Multimodal Feedback
In Chinese and Swedish Mono-cultural and Intercultural Interactions
(a pilot study)

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Abstract

Communicative feedback in human-human and human-computer interaction is of interest to both language and ICT researchers. In this study, unimodal and multimodal feedback, produced by Chinese and Swedish interlocutors, has been investigated in four Chinese-Chinese, four Swedish-Swedish, and eight Chinese-Swedish informal dyadic video-recorded dialogs. We are investigating two issues: First, what are the typical unimodal and multimodal feedback expressions used by Chinese and Swedes in mono-cultural interactions? Second, what type of feedback do they use when they speak English in inter-cultural interactions? On the basis of our investigation, we describe similarities and differences between Chinese and Swedish participants in using unimodal and multimodal feedback.

Key Words:

Feedback, gestural/vocal-verbal, unimodal/ multimodal, Chinese, Swedish, mono-/inter-cultural interaction

1   Introduction

In this paper, communicative feedback refers to unobtrusive vocal and bodily expressions, which are used to give and elicit information concerning contact, perception, understanding, and emotional/attitudinal reactions to messages from interlocutors. There are a number of previous studies on feedback within the area of Interactive Communication Management (ICM) (Allwood, 2008), analyzing the functions of feedback, describing various ways of producing feedback (Clark & Schaefer, 1989), analyzing affective aspects of feedback (Navarretta, Paggio & Jokinen, 2008; Poggi & Merola, 2003), or exploring the relation between gestural and vocal-verbal feedback in either human-human or human-computer interaction (Allwood, Ahlsén, & Nivre, 1992; Cerrato & Skhiri, 2003). This paper is a pilot study on investigating features of unimodal and multimodal feedback expressions in Chinese and Swedish mono-cultural and intercultural interactions.

2   Purpose

The main purpose of this study is to investigate two issues. First, what are the typical unimodal and multimodal feedback expressions used by Chinese and Swedish communicators in mono-cultural interactions? Second, what feedback expressions are used when they communicate in English in an intercultural setting?

3   Data and Method

The study is based on four Chinese-Chinese, four Swedish-Swedish, and eight Chinese-Swedish video-recordings of face-to-face dyadic dialogs. Four Chinese and four Swedish participants took part in the recordings. The languages used are Chinese, Swedish, and English respectively. The subjects are university students studying in Sweden, and their task is to get acquainted with each other. In order to eliminate as much as possible the influence of factors like prior acquaintance and physical environment, strangers who had no earlier acquaintance were filmed by three video cameras (left-, center-, and right-posited) in a standing position. Each video recording lasts approximately seven to ten minutes, and the entire conversation is analyzed in this study. Information concerning the length of time and the number of words of each transcription is presented in Table 1. Our data was transcribed and checked according to the GTS (Göteborg Transcription Standard) version 6.2 (Nivre, 1999) and manually annotated according to the MUMIN multimodal coding

scheme for feedback (Allwood, Cerrato, Jokinen, Navarretta & Paggio, 2007).

Recording	Time length (min.)	No. of words
Chi-chi 1	07:49	1608
Chi-chi 2	06:45	1475
Chi-chi 3	07:12	1571
Chi-chi4	06:30	1432
Total of CN-CN	27:36	6086
Chi-swe 1	11:44	2070
Chi-swe 2	07:56	1380
Chi-swe 3	09:04	1309
Chi-swe 4	10:29	1555
Chi-swe 5	08:11	1122
Chi-swe 6	06:52	983
Chi-swe 7	06:08	943
Chi-swe 8	04:44	678
Total of CN-SE	64:47	10040
Swe-swe 1	06:29	1294
Swe-swe 2	07:01	1604
Swe-swe 3	08:10	1889
Swe-swe 4	08:14	1908
Total of SE-SE	29:54	6695

Table 1: Time length and number of words in the analyzed recordings. In Swedish, words were operationalized as a sequence of graphs between two spaces occurring in transcribed utterances while in Chinese, we used verbal units that have traditionally been regarded as words. CN = Chinese and SE = Swedish

Inter- and intra-coder reliability checking was done between six Chinese and Swedish transcribers and annotators. First one Chinese and two Swedish transcribers/annotators coded a sample of 100 occurrences together in order to establish a common procedure that was used by all transcribers. Each transcription was transcribed as well as coded by one person and then checked by two other persons.

4   Analysis and Results

We will now first present the results concerning the Chinese and Swedish mono-cultural interactions and then turn to the intercultural ones, ending with a summary and comparison of feedback used by Chinese and Swedish in the three types of interactions.

4.1 Feedback in Chinese and Swedish Mono-cultural Interactions

As we can see from Table 2, Swedish interlocutors use more feedback of all types than Chinese interlocutors. In the table, the frequency

column provides the number of feedback units of a specific type. A unit can contain more than one contiguous word or gesture or be multimodal with a combination of a word and a gesture, so that e.g. '*ja ja*' ('yes yes') or a '*ja*'+nod is counted as a unit. The per word column is derived by dividing the total number of vocal words in the CN-CN or SE-SE recordings by the total number of feedback units of a particular type in the same recordings. The per minute column is derived similarly by dividing the total number of minutes for the CN-CN and SE-SE recordings by the number of feedback units of a particular type. Thus, Table 2, for instance, shows us that there are 139 vocal-verbal feedback units in the CN-CN recordings and that on an average, there are 5.08 such units per minute and 2.28 units per 100 words.

Modality	Chinese			Swedish		
	Freq.	Per 100 words	Per min.	Freq.	Per 100 words	Per min.
VFB only	139	2.28	5.08	307	4.59	10.27
GFB only	59	0.97	2.16	145	2.17	4.85
Unimodal total	198	3.25	7.24	452	6.75	15.12
VFB+GFB	226	3.71	8.26	267	3.99	8.93
Total	424	6.97	15.50	719	10.74	24.05

Table 2: The use of feedback in four Chinese and four Swedish mono-cultural interactions (GFB= gestural feedback, VFB= vocal-verbal feedback)

4.1.1 Unimodal Gestural FB in Chinese and Swedish Mono-cultural Dialogs

As can be seen in Table 3, below, the most common unimodal gestural feedback expressions in the Chinese-Chinese interactions are nods, smile, gaze sideways, and single nod. Over and above this, there are many unimodal gestural feedback expressions that occur only once or twice. These are lumped together as 'others' in the table.

Unimodal GFB expression	Raw freq.	Per 100 words	Per min.
Nods	18	0.30	0.66
Smile	9	0.15	0.33
Gaze sideways	6	0.10	0.22
Single Nod	3	0.05	0.11
Others (freq.≤2)	23	0.37	0.84
Total	59	0.97	2.16

Table 3: Chinese unimodal gestural FB types,[1] in four mono-cultural Chinese dialogs

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[1] In this study, unimodal gestural feedback refers to gestural feedback without vocal-verbal accompaniment.

In Excerpts 1, 2, and 3 below, we exemplify how nods, smile, and gaze sideways are used by the Chinese subjects to express feedback functions which are coded using the abbreviations C, P and U[2]. Besides this, many feedback expressions also have emotional/attitudinal functions which are coded with the abbreviations E/A, e.g. friendliness and hesitation in Excerpts 2 and 3.

Excerpt[3] 1: (example of Chinese unimodal FB nods)

Original transcription	English correspondence
Cf2: <1 | > 1 <2 dui >2	$Cf2: <1 | > 1 <2 right >2
$@ <1 GFB general face: laughter; CPUE/A friendliness/agreement >1	
@ <2 VFB; CPUE/A agreement >2	
$Cf1: <1 | >1	$Cf1: <1 | >1
@ < **GFB head: nods; CPU** >	

Excerpt 2: (example of Chinese unimodal FB smile)

Original transcription	English correspondence
$Cm2: <1 dui dui dui >1 <2 da san >2 <3 ying gai shi ran hou /// >3	$Cm2: <1 right right right >1 <2 but >2 <3 should be and then /// >3
@ <1 VFB; CPU confirmation >1, <1 GFB head: nod; CPU >1	
@ <2 VFB; CPU confirmation >2	
@ <3 GFB general face: smile; CPUE/A friendliness >3, <3 head move slightly to the left >3	
$Cf1: < | >	$Cf1: < | >
@ <**GFB general face: smile; CPUE/A friendliness**>	

Excerpt 3: (for Chinese unimodal gaze sideways)

Original transcription	English correspondence
$Cm1: ni ke yi xuan ze hao duo zhong lei you furniture dui ba hai you wang ye she ji hai you dong hua she ji	$Cm1: you have many options there are furniture and web design as well as flash or animation design
$Cm2: < | >	$Cm2: < | >
@ < **GFB gaze: sideways**; **CPUE/A hesitation** >	

Nods, smile, single nod, and up-nods are the most common unimodal gestural feedback expressions in the Swedish-Swedish dialogs (cf. Table 4, below). They are sometimes used to express CPU, or CPU with agreement or amusement (see Excerpts 4, 5 and 6).

Unimodal GFB	Freq.	Per 100 words	Per min.
nods	76	11.35	2.54
smile	24	3.58	0.80
single nod	9	1.34	0.30
up-nods	7	1.04	0.24
eyebrow raise	4	0.59	0.13
eyebrow frown	4	0.59	0.13
head shakes	3	0.45	0.10
gaze sideways	3	0.45	0.10
others (freq.≤2)	15	2.31	0.51
Total	145	21.7	4.85

Table 4: Unimodal gestural FB in four Swedish mono-cultural dialogs

Excerpt 4: (example of Swedish unimodal GFB nods)

Original transcription	English correspondence
$K: De{t} beror ju på så mycke{t} på vem man < hamnar me{d} också om man trivs me{d} dom sådär >	$K: It also depends so much on who you < end up with if you're happy with them and stuff >
@ < **GFB head: S nods; CPU agreement** >	

Excerpt 5: (example of unimodal Swedish GFB smile)

Original transcription	English correspondence
$K:…där föräldrarna skulle skriva under att vi fick e1dricka ett glas vin <3 elle{r} ett / glas cider elle{r} en öl <4//>4 <5 e1 de{t} stoppades>5 >3	$K: … where the parents would sign a paper that we could eh drink a glass of wine <3 or a / glass of cider or a beer <4 //>4 <5 eh it was stopped >5 >3
@ <3 **GFB general face: J smile; CPUE/A amusement >**3	
@ <4 general face: chuckle >4	
@ <5 GFB eyebrows: J raise; CPUE/A surprise >5	

Excerpt 6: (for Swedish unimodal GFB up-nods)

Original transcription	English correspondence
$S: … å0 så / <2 sa han att han behövde svens-kar >2 <3//så då>3	$S: … and then / <2 he said that he needed swedes >2 <3 // so then >3
@ <2 GFB head: L nods; CPU >2	
@ <3 **GFB head: L up-nods; CPU >**3, <3 head start: nods >3	

4.1.2 Unimodal Vocal-verbal FB in Chinese-Chinese and Swedish-Swedish Dialogs

The most frequent vocal-verbal FB expressions in Chinese mono-cultural dialogs are 'dui' ('right'), 'a:' ('ah:/ yeah'), 'en' ('yes/ right/ ok'), and 'a' ('ah/ yes') (see Table 5). 'Dui' ('right'), 'a' ('ah:/yeah'), and 'en' ('yes/right/ok') are used to express CPU, and sometimes to confirm or agree 'yes, you are right' (cf. Excerpts 7, 8, and 9).

VFB	Translation	Freq.	Per 100 words	Per min.
dui	right	21	0.35	0.77
a:	ah:/ yeah	12	0.20	0.44
en	yes/right/ok	10	0.16	0.37
a	ah/ yes	8	0.13	0.29
others (freq.≤2)		88	1.44	3.21
Total		**139**	**2.28**	**5.08**

Table 5: Unimodal vocal-verbal FB used in four Chinese mono-cultural dialogs

Excerpt 7: (example of Chinese unimodal 'dui')

Original transcription	English translation
$Cm2: ta men ke neng /// ta men ying gai ye kao lv na ge ba ///	$Cm2: they may /// they should also think about that I think ///
$Cm1: <1 **dui** >1 ...	$Cm1: <1 **right** >1 ...
@ <1 **VFB; CPU agreement** >1...	

Excerpt 8: (example of Chinese unimodal 'a')

Original transcription	English translation
$Cm1: na ni shao shu min zu	$Cm1: then you are from minority nationality
$Cf2: <1 **a** >1 <2 meng zu >2	$Cf2: <1 **yes** >1 <2 Mongolian >2
@ <1 **VFB; CPU confirmation** >1	
@ <2 comment: answer to the question >2	

Excerpt 9: (example of Chinese unimodal 'en')

Original transcription	English translation
$Cm1: … jia zhang ke neng you yi xie wen ti	$Cm1: …our parents may have some problems
$Cf2: <1 **en** >1 <2 ni shi na li ren >2	$Cf2: <1 **yes** >1 <2 where are you from >2
@ <1 **VFB; CPU** >1	
@ <2 eliciting >2, <2 eye brow raise >2	

The most common Swedish unimodal vocal-verbal feedback expressions are '{j}a' ('yeah'), 'm' ('uhu'), 'nä' ('no'), 'okej' ('ok'), and 'ja' ('yes') (see Table 6). As can be seen from Excerpts 10 and 11, '{j}a' ('yeah') and 'm' ('uhu') can be used to express CPU with agreement or hesitation.

VFB & *'translation'*	F.	Per 1000 words	Per min.
{j}a *'yeah'*	80	11.95	2.68
m 'uhu'	45	6.72	1.51
nä *'no'*	14	2.09	0.47
okej *'ok'*	12	1.79	0.40
ja *'yes'*	11	1.64	0.37
hja *'yes'*	9	1.34	0.30
jo *'yes'* (disagreement w. negative statement)	6	0.90	0.20
{j}a: *'yeah'*	6	0.90	0.20
m: 'uhu'	6	0.90	0.20
oj *'whoops-wow-really?'*	5	0.75	0.17
{j}a jo *'yes-I agree'*	4	0.60	0.13
{j}a {j}a *'yeah yeah'*	3	0.45	0.10
ja elle{r} hu{r} *'yes is that not right'*	3	0.45	0.10
Others (freq.≤2)	103	15.42	3.44
Total	**307**	**45.90**	**10.27**

Table 6: Swedish Unimodal vocal-verbal FB

Excerpt 10: (Use of the Swedish unimodal vocal FB word '{j}a')

Original transcription	English correspondence
$K: de{t} tror ja{g} e0 väldi{g} klokt	$K: i think that's very wise
$S: < **{j}a** >	$S: < **yeah** >
@ < **VFB; CPUE/A agreement** >	

Excerpt 11: (Use of the Swedish unimodal vocal FB word 'm')

Original transcription	English correspondence
$S: ja{g} vill e1 komma in hä{r} // så	$S: i want to eh be get in here // so
$L: < **m** >	$L: < **uhu** >
@ < **VFB; CPUE/A thoughtful/ hesitation** >	

4.1.3 Multimodal Feedback in Chinese and Swedish Mono-cultural Interactions

The multimodal vocal-verbal plus gestural feedback expressions used in the Chinese and Swedish mono-cultural interactions are shown in Table 7. The most common multimodal feedback units used by the Chinese speakers are 'en' ('yes/right/ok') +nods, laughter [4], 'a' ('ah/ yes')+nods, 'en' ('yes/ right/ok')+nod, and

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[4] Laughter is regarded as one multimodal unit, consisting of sound and facial gesture.

chuckle[5]. Instances of 'a' ('ah/yeah')+nods and 'en' ('yes/right/ok')+nods are presented in Excerpt 12. These multimodal feedback units are primarily used to express CPU, and sometimes, in addition, with confirmation or agreement.

VFB & *translation*	GFB	F.	Per 100 words	Per min.
en *'yes/right/ok'*	nods	30	0.49	1.10
laughing	laughter	16	0.26	0.58
a 'ah/ yes'	nods	15	0.25	0.55
en 'yes/right/ok'	nod	8	0.13	0.29
chuckling	chuckle	6	0.10	0.22
a 'ah/ yes'	nod	4	0.07	0.15
dui 'right'	nods	4	0.07	0.15
a: 'ah:/ yeah'	nods	3	0.05	0.11
e 'eh'	smile	3	0.05	0.11
Others (frequency≤2)		137	2.24	5.00
Total		**226**	**3.71**	**8.26**

Table 7: Multimodal feedback used in four Chinese mono-cultural dialogs (F.=raw frequency, w=word, m=minute)

Excerpt 12: (Chinese multimodal feedback units 'a' ('ah/yes')+nods and 'en' ('yes/right/ok')+nods)

Original transcription	English correspondence
$Cf1: … ni men ke neng zai er lou ba shi bu shi // $Cf2: <1 **a** /// >1 wo men ying gai jiu yi qian jiu zong zai si lou ran hou /// wo ying gai <2 zhe bu shi suan di er nian ma >2	$Cf1: … you are on the second floor aren't you // $Cf2: <1 **yes** /// >1 before we used to be on the second floor and then /// I should be <2 this is my second year so >2
@ <1 **VFB; CPU confirmation >1, <1 GFB head: nods; CPU confirmation** >1 @ <2 eliciting >2	
$Cf1: < **en** >	$Cf1: < **yes** >
@ < **VFB; CPUE/A agreement >, < GFB head: nods; CPUE/A agreement R** >	

The most common multimodal feedback units in the Swedish-Swedish dialogs (cf. Table 8) are: 'm' ('uhu')+nods, chuckle, {j}a ('yeah')+ nods, and {j}a ('yeah')+up-nods. Examples are given in Excerpts 13, 14, and 15.

Excerpt 13: (for Swedish multimodal FB unit 'm'+nods)

Original transcription	English correspondence
$S: nä men de{t} gick bra så men e1 vi va{r} verkligen oj: // $L: < **m** >	$S: no but it went well so eh we were really like wo:w // $L: < **okay** >
@ <**VFB; CPUE/A empathy>, <GFB head: nods; CPU**>	

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[5] Chuckle is also treated as a multimodal unit.

VFB expression		GFB expression	Raw Freq.	Per 1000 words	Per min.
Swedish	Translation				
m	uhu	nods	20	2.99	0.67
chuckle	(chuckle)	chuckle	14	2.09	0.47
{j}a	yeah	nods	13	1.94	0.44
{j}a	yeah	up-nod	10	1.49	0.33
{j}a	yeah	nod	9	1.34	0.30
m	uhu	up-nod	8	1.19	0.27
laughter	(laughter)	laughter	7	1.05	0.23
ja	yes	nod	7	1.05	0.23
{j}a	yeah	up-nods	6	0.90	0.20
m	uhu	up-nods	5	0.75	0.17
m	uhu	nod	4	0.60	0.13
okej	okay	up-nod	4	0.60	0.13
{j}a	yeah	smile	3	0.45	0.10
{j}a	yeah	tilt	3	0.45	0.10
{j}a okej	yeah okay	nods	3	0.45	0.10
ja	yes	nods	3	0.45	0.10
mhm	uhuh	up-nods	3	0.45	0.10
Others (frequency≤2)			145	21.66	4.86
Total			**267**	**39.90**	**8.93**

Table 8: Multimodal feedback used in four Swedish mono-cultural dialogs

Excerpt 14: (Swedish multimodal unit '{j}a'+up-nod)

Original transcription	English correspondence
$L: … de{t} e1 blir kontor då för dig eller	$L: … it'll eh be the office for you then right
$J: < **{j}a** >	$J: < **yeah** >
@ < **VFB; CPUE/A confirmation >, < GFB head: up-nod; CPUE/A confirmation R** >	

Excerpt 15: (Swedish multimodal unit '{j}a'+nods)

Original transcription	English correspondence
$S: ja{g} vill komma … $K: <1 **{j}a** >1 då e0 de{t} svårt <2 | >2	$S: i want to come … $K: <1 **yeah** >1 then it's hard <2 | >2
@ <1 **VFB; CPU >1, <1 GFB head: nods; CPU** >1 @ <2 general face: chuckle >2	

4.2 Feedback in Chinese-Swedish Intercultural Interactions

Below, we present the unimodal and multimodal feedback expressions used by four Chinese and four Swedish participants in eight Chinese-Swedish intercultural interactions.

Modality	Chinese			Swedish		
	F.	Per 1000 words	Per min.	F.	Per 1000 words	Per min.
VFB only	203	20.22	3.13	138	13.79	2.13
GFB only	165	16.43	2.55	178	17.73	2.75
Unimodal total	368	36.65	5.68	316	31.47	4.88
VFB+GFB	250	24.90	3.86	354	35.26	5.46
Total	**618**	**64.54**	**9.54**	**670**	**66.73**	**10.34**

Table 9: Chinese and Swedish uses of feedback in eight intercultural interactions (F.= frequency)

Table 9 shows that the Swedish participants, overall, in the intercultural dialogs, give more feedback than the Chinese participants (670–618). Specifically, the Swedes give more multimodal feedback and slightly more unimodal gestural feedback, while the Chinese give more unimodal vocal-verbal feedback.

4.2.1 Unimodal Gestural FB in Chinese-Swedish Intercultural Interactions

The Swedes used slightly more unimodal gestural feedback than the Chinese in their intercultural interactions (see Table 10). The most frequent unimodal gestural feedback expressions used by both Chinese and Swedish speakers were: nods, single nod, smile, and up-nod. They are used to express CPU, or CPU with confirmation, agreement, or other emotions[6] (see Excerpt 16).

Chinese				Swedish			
GFB	F.	Per 1000 words	Per min.	GFB	F.	Per 1000 words	Per min.
nods	89	8.86	1.37	nods	117	11.65	1.80
nod	20	1.99	0.31	nod	12	1.20	0.19
smile	18	1.79	0.28	up-nods	10	1.00	0.15
up-nod	11	1.10	0.17	smile	9	0.90	0.14
head shakes	4	0.40	0.06	up-nod	8	0.80	0.12
head tilt	4	0.40	0.06	eyebrow raise	3	0.30	0.05
up-nods	3	0.30	0.05	Others (F.≤2)	19	1.88	0.3
others(F.≤2)	16	1.59	0.25				
Total	165	16.43	2.55	Total	178	17.73	2.75

Table 10: Unimodal gestural FB in Chinese-Swedish intercultural interactions (F.=frequency)

Excerpt 16: (for (co-activated) unimodal up-nod)

$Cf2: i also co{me} from // in+ inner mongolia yeah (you know)
$Sf2: <1 mhm >1 <2 | >2
@ <1VFB; CPUE/A surprise/interest>1
@ <2**GFB head: up-nod; CPUE/A surprise/interest** R>2, <2**GFB head: L up-nod**; CPU>2

4.2.2 Unimodal Vocal-verbal FB in Intercultural Interactions

The Chinese participants used more unimodal vocal-verbal feedback than the Swedish in the

Chinese-Swedish dialogs. The most common unimodal vocal-verbal feedback expressions used by both Chinese and Swedish participants are: 'yeah', 'okay', and 'm', expressing CPU, or CPU with agreement (see below Table 11).

Chinese				Swedish			
VFB	F.	Per 1000 words	Per min	VFB	F.	Per 1000 words	Per min
yeah	60	5.98	0.93	yeah	36	3.59	0.56
okay	25	2.49	0.39	m	17	1.69	0.26
m	14	1.39	0.22	okay	15	1.49	0.23
yes	9	0.90	0.14	ah	7	0.70	0.11
uhu	7	0.70	0.11	Others (F.≤5)	63	6.32	0.97
yeah yeah yeah	6	0.60	0.09				
Others (F.≤5)	82	8.16	1.25				
Total	203	20.22	3.13	Total	138	13.79	2.13

Table 11: Unimodal (English) vocal FB words used by Chinese and Swedish participants in Chinese-Swedish interactions (F.=frequency)

4.2.3 Multimodal Feedback in Chinese-Swedish Intercultural Interactions

In the Chinese-Swedish interactions, the Swedish participants used more multimodal feedback than the Chinese. The Chinese participants used chuckle and laughter to express CPU with amusement or friendliness, 'yeah'+ nod and 'yeah'+nods to express CPU or CPU with confirmation or agreement, as the most common multimodal feedback units; while, the Swedish participants used 'yeah'+nods, 'm'+ nods, and chuckle most frequently (see Table 12).

Chinese				Swedish			
VFB+GFB	F.	Per 1000 words	Per min	VFB+GFB	F.	Per 1000 words	Per min
chuckle	28	2.79	0.43	yeah+nods	45	4.48	0.69
yeah+nod	23	2.29	0.36	m+nods	25	2.49	0.39
yeah+nods	17	1.69	0.26	chuckle	18	1.79	0.28
laughter	10	1.00	0.15	m+up-nods	9	0.90	0.14
okay+nods	9	0.90	0.14	yeah+nod	9	0.90	0.14
mhm+nod	8	0.80	0.12	yeah+up-nods	8	0.80	0.12
okay+nod	7	0.70	0.11	okay+up-nod	7	0.70	0.11
mhm+nods	6	0.60	0.10	yeah+up-nod	7	0.70	0.11
Others (F.≤5)	142	14.13	2.19	laughter	6	0.60	0.09
				m+up-nod	6	0.60	0.09
				Others (F.≤5)	214	21.30	3.30
Total	250	24.90	3.86	Total	354	35.26	5.46

Table 12: Multimodal FB units used by Chinese and Swedish in the Chinese-Swedish interactions (F.=frequency)

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[6] Emotions and attitudes of feedback expression, such as surprise, politeness, embarrassment, uncertainty, certainty, amusement, happiness, agreement, disagreement, and so on, have been found and coded in our data. However, in the present study, only a few of them are presented in the examples.

5. Discussion

Feedback in the Chinese and the Swedish mono-cultural interactions is discussed first, followed by the Chinese-Swedish intercultural interactions.

5.1 Mono-cultural Interaction

We have already seen (cf. Table 2) that the Swedish participants, in the mono-cultural interactions, used all types of feedback expressions more than the Chinese participants. They used unimodal feedback more than twice as many times as the Chinese participants both gesturally and vocal-verbally (with a frequency of 307 compared to 139 and 145 to 59) (Table 2), and they also used slightly more multimodal feedback expressions than the Chinese (267 to 226). This clearly suggests that the Swedish participants use both more unimodal and multimodal feedback than the Chinese in the mono-cultural first acquaintance dialogs.

If we turn to similarities, both Chinese and Swedish participants used nods, single nod, and smile as the most common type of unimodal gestural feedback to express CPU in mono-cultural interactions, sometimes with an additional function of confirmation or other emotional/ attitudinal functions such as agreement or/and friendliness. Another similarity is that both Chinese and Swedish participants used chuckle as the most frequent type of multimodal feedback. Possibly, this is because both Swedes and Chinese want to show friendliness and agreement, in a first encounter.

Regarding differences, the Swedish participants used up-nods very often in mono-cultural interactions, while the Chinese participants rarely used this in Chinese-Chinese dialogs. The Chinese participants gazed sideways very frequently to express hesitation or uncertainty in the mono-cultural interactions, probably because of the insecurity or uncertainty that they may feel in a first acquaintance dialog. The Swedish participants did not gaze sideways as much as the Chinese in mono-cultural dialogs. This might be because gazing sideways is not used to express hesitation or uncertainty in Swedish communication, or because the Swedish participants felt more secure when they were filmed for this project in Sweden.

Concerning vocal-verbal feedback, Chinese 'dui' ('right' in English), 'a:' ('ah:/ yeah'), 'en' ('yes/ right/ ok'), 'a' ('ah/ yes'), and Swedish '{j}a' ('yeah'), 'm' ('yes/I agree'), 'nä' ('no'), 'okej' ('okay'), and 'ja' ('yeah') are the most common unimodal vocal-verbal feedback expressions used by Chinese and Swedish participants in mono-cultural interactions. Regarding multimodal feedback, the Chinese participants used 'en' ('yes/right/ok')+nods, laughter, 'a' ('ah/yes')+nods, and 'en' ('yes/ right/ ok')+nod as the most common multimodal feedback units, while 'm' ('uhu')+nods, '{j}a' ('yeah')+nods, and '{j}a' ('yeah')+up-nods are the most frequent Swedish multimodal units.

5.2 Intercultural Interaction

In the Chinese-Swedish intercultural interactions, Chinese participants used more unimodal vocal-verbal feedback than Swedes (203 compared to 138, see Table 9). However, the Swedish participants used slightly more unimodal gestural and more multimodal feedback expressions than the Chinese (178 to 165, and 354 to 250). Overall, Chinese participants seem to increase their feedback in the intercultural situation, while the Swedes decrease theirs.

Regarding similarities, the most frequent unimodal gestural feedback for both Chinese and Swedish participants are: nods, nod, smile and up-nod. However, as we have already noted, Chinese did not use up-nod at all in their mono-cultural interactions, but used this gesture in the intercultural interactions. This change is probably due to the adaptation and co-activation with the Swedish interlocutors. Chinese and Swedish participants both used 'yeah', 'okay', 'm' as the most common unimodal vocal-verbal feedback, and chuckle and 'yeah'+nods as the most common multimodal feedback.

Concerning differences, in the intercultural interactions, besides chuckle and 'yeah'+nods, the Chinese participants used laughter and 'yeah'+nod as the most frequent multimodal feedback; whereas, for the Swedish participants 'm'+nods was the most common.

Thus, both Chinese and Swedish participants showed more similarities in intercultural interactions than in mono-cultural interactions. Probably, this is because they were mutually

influencing each other, and co-activation, therefore was possible.

6. Conclusions

This paper primarily addresses two questions, i.e. what are the typical unimodal and multimodal feedback expressions used by Chinese and Swedish speakers in mono-cultural interactions, and what expressions do they use when communicating in English in intercultural interactions.

In mono-cultural interactions, we found that Swedish participants used more unimodal and multimodal feedback than Chinese participants. In these interactions, both Chinese and Swedish participants used nods, single nod, and smile as the most common unimodal gestural feedback, and chuckle as the most frequent type of multimodal feedback. Concerning unimodal gestural feedback, gaze sideways is typical of Chinese feedback behavior, and up-nod(s) are typical of Swedish behavior. Chinese 'dui' ('right' in English), 'a:' ('ah:/ yeah'), 'en' ('yes/ right/ ok'), 'a' ('ah/ yes'), and Swedish '{j}a' ('yeah'), 'm' ('yes/I agree'), 'nä' ('no'), 'okej' ('okay'), and 'ja' ('yeah') are the most common unimodal vocal-verbal feedback expressions. Besides chuckle, Chinese participants used 'en' ('yes/ right/ ok')+nods, laughter, 'a' ('ah/ yes')+nods, and 'en' ('yes/ right/ ok')+nod as the most common type of multimodal feedback, and Swedes used 'm' ('yes-I agree')+nods, '{j}a' ('yeah')+nods, and '{j}a' ('yeah)+up-nods most frequently.

In the Chinese-Swedish intercultural interactions, possibly because of second language interference, Chinese participants used more unimodal vocal-verbal feedback than the Swedish participants. However, the Swedish participants used more multimodal feedback and slightly more unimodal gestural feedback than the Chinese. Regarding similarities, both the Chinese and Swedish participants most frequently used the following types of unimodal gestural feedback; nods, single nod, smile, up-nod, and types of unimodal vocal-verbal feedback; 'yeah', 'okay', 'm', and multimodal feedback; chuckle and 'yeah'+nods.

Besides chuckle and 'yeah'+nods, the Chinese participants used laughter and 'yeah'+nod, while the Swedish participants used 'm'+nods as the most frequent multimodal feedback.

Finally, we note that since the size of this study is relatively small, it still necessitates further study.

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