

Smile as Feedback Expressions in Interpersonal Interaction

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Abstract

Introduction: the number of studies carried out to investigate the nature of smiling as communicative feedback are extremely small. Therefore, the study is aimed at investigating the nature of smiling as communicative feedback. The study is theoretically built on previous research about feedback expressions and the nature of smiles and laughter in general.

Method: the study is based on a video-recorded first acquaintance context. Different kinds of smiles were coded from the participants' interaction and was thereafter statistically analysed.

Result: feedback smiles are compared with non-feedback smiles. Time measurement and variance within each category of expression are tested. About 30 % of the coded smiles are feedback expressions. Very few of the feedback expressions are pure laughter. The differences between feedback expressions and non-feedback expressions are presented in terms of time length and displayed variance.

Conclusion: feedback expressions are typically short and unobtrusive. This is also the case with feedback smiles and laughter. The time is short and the variance is low.

Keywords: feedback, smile, turn management, interpersonal communication, facial expressions

1. Introduction

Some studies have been carried out in order to investigate the nature of smiling and laughter. And studies have been carried out in order to investigate the nature of communicative feedback (also called listeners' response or back-channelling). The number of studies carried out to investigate the nature of smiling as communicative feedback is extremely small. It has been suggested, to begin with, that smiles are used as feedback expressions. The next step is to find out if smiles used while giving feedback are of a specific kind.

1.1 The Purpose

It is known that some types of smile have certain characteristics like being long or short, stable or varied. The nature, or specific characteristics, of feedback smiles has not yet been established. The purpose of the present study is therefore to find measurable characteristics of feedback smiles. What characteristics can be found about smiling when it is used as feedback expressions? Since smiles sometimes are intertwined with laughter, versions of laughter are also included. Smile and laughter have first been coded as feedback expressions or non-feedback expressions, and then measured in time length and variance. These measurements will help deciding if the feedback expressions are specific compared to the non-feedback expressions. The question will be answered in a quantitative manner.

2. Research Background

This background will offer some theoretical information about feedback expressions in general, a section about smiling and laughter in general and a section about smiling and laughter as feedback expressions.

2.1 Feedback Expressions

The communicators in a conversation take turns in being speaker and listener. Feedback expressions (also called listeners' response, listeners' comments, regulators or back-channeling) are part of the turn management (Argyle,

1988; Burgoon, Buller, & Woodall, 1996; Duncan, 1974; Frank, Maroulis, & Griffin, 2013; Kopp, Allwood, Grammer, Ahlsén, & Stocksmeier, 2008).

Feedback consists of unobtrusive (usually short) expressions whereby a recipient of information informs the contributor about her/his ability and willingness to communicative (have *contact*), to *perceive* the information, and to *understand* the information (Kopp et al., 2008, p. 2).

If the listener doesn't give feedback regularly the speaker might think the listener wants to end the conversation or lacks interest in the current topic (Argyle, 1988). Feedback is mostly used to indicate that the listener allows and encourages the speaker to go on (Andersen, 1999). Sometimes the listener signals understanding and/or agreement. Typical feedback signals are (Allwood, Nivre, & Ahlsén, 1992; Argyle, 1988):

- short words like “yes”, “no”, “okay”, “yeah”, “I see”, “right”, “really?”
- short sounds like “em”, “uh-huh”,
- short bodily signals like head nods, head shakes and smiles.

Feedback signals are almost always overlapping the speakers' communicative acts. Reaction eliciting feedback becomes a turn and, thus, has a multiple function.

2.2 Smile and Laughter

It has been suggested that smiles can both be (1) an expression of happiness and (2) an expression of friendliness or social compliance (e.g., Kraut & Johnston, 1979; Feldman & Tyler, 2006; Frank & Ekman, 1993; Hall, 2006). The first case is the expression of an experienced emotion (happiness) and the second case is independent of experienced emotion and is rather just a social cue. This means that smiles can be an expression of experienced emotion and a social cue at the same time, indicating friendliness (e.g., Fridlund & Russell, 2006), or just an expression of experienced emotion without the social aspect of it (e.g., Frank & Ekman, 1993) or just an expression of friendliness without the emotional aspect of it (e.g., Kraut & Johnston, 1979). In the latter case a smile can express friendliness even though the individual expressing the smile can experience incongruent emotions like anger, fear or sadness. Smile as an expression of friendliness seems to be correlated with liking. People who like each other smile more than people who feel neutral affections (Argyle, 1988; Berger & Calabrese, 1975). Maybe it is also the case that people that smile a lot in a conversation come to like each other even if they felt no affection to begin with. In the case of laughter it also seems have a similar functions as smile being a symptom of amusement or purely social/strategic (Brock, 2010).

2.2.1 Expressing and Managing Emotions

Andersen and Guerrero (1998) (Guerrero & Floyd, 2005; also Ekman, Friesen, & O'Sullivan, 1988; Planalp, 1999; Ruch, 1995; Matsumoto & Hwang, 2013) describe five ways to manage emotions. The unmanaged emotion is an experienced emotion that is congruent with the expressed emotion.

You feel happy and express happiness with a smile and/or laughter.

- 1) The first way to manage emotion is to intensify the experienced emotion. You feel little happiness but you express strong happiness (maybe laughing out loud).
- 2) The second way to manage emotion is to deintensify the experienced emotion. You feel strong happiness but you express mild happiness (a simple smile).

There is still congruency between experienced emotion and expressed emotion in both the first and the second way to manage emotion.

The following ways to manage emotion is non-congruent.

- 3) The third way to manage emotion is to mask an experienced emotion by expressing a different emotion. You feel sad but you express happiness. Women, more often than men, smile to mask that they are nervous, worried or shy (Frances, 1979).
- 4) The fourth way to manage emotion is to inhibit the experienced emotion. You feel happy but you express nothing that can be traced to an emotional state.
- 5) The fifth way to manage emotion is to express some emotion without experiencing any particular emotion. You feel nothing special but you express happiness. This is called simulation.

Congruent smiles are expressions of experienced happiness as unmanaged, intensified or deintensified. This category of smiles can be just expressions of happiness or expressions of happiness and friendliness at the same

time. The masked and simulated smiles are only expressions of friendliness (or readiness to appease [Fridlund & Russell, 2006]).

2.2.2 The Possible Functions of Smile and Laughter

What is the difference in function between smiling and laughter? Some laughter represents stronger expressions of happiness than a smile. The function is simply enhanced. Some laughter may have a slightly different function than smiling or expressing a particular kind of happiness (Kraut & Johnston, 1979). Laughter is louder, meaning that it can be heard even at a distance. It can thus have a stronger social function and draw attention to the person that expresses this emotion. Both smiling and laughter are the most common responses to humour (Frank & Ekman, 1993).

2.2.3 The Physiology of Smiling

There are physiological ways to describe smiles of a different kind. We normally use two muscles (on each side of the face: Orbicularis oculi and Zygomatic major) when we smile a congruent smile, but only one muscle (Zygomatic major) when we smile a non-congruent smile (Ekman, Friesen, & O'Sullivan, 1988; Frank & Ekman, 1993; Frank, Ekman, & Friesen, 1993; Planalp, 1999; Hall, 2006). The true or congruent smile is also called Duchenne smile (the French anatomist G. B. Duchenne noted in 1862 that the muscle Orbicularis oculi is recruited in spontaneous smiles but not in posed smiles) and it is produced by the Zygomatic major pulling the corners of the mouth towards the ears and makes the Orbicularis oculi lift up the cheek and create wrinkles around the corner of the eye. Most people cannot control the outer part of Orbicularis oculi deliberately, it is easier to control the inner parts of Orbicularis oculi, but it is a simple act to control the Zygomatic major (Ekman, 2007; Planalp, 1999). Hence, it is possible to detect in a person's facial expression whether the smile is true (a congruent smile) or if it is false (a non-congruent smile). This doesn't mean that the false smile is of no importance or lacks function. The false smile can still function as a friendly smile and is thus important as a social marker. It is also possible that the false smile is used to mask a non-congruent emotion or mask an intention that is not supposed to be known to others.

2.2.4 Time Measurements and Variance

The length of true smiles and other kinds of smiles have been time measured (Frank, Ekman, & Friesen, 1993). All smiles in the study were produced in face-to-face situations. They were in some sense social in nature. It was found that true smiles are shorter (mean time=3.32 seconds) than false smiles that typically are longer than three seconds or in some cases very short (less than one second). True smiles vary less in length (0.5 to 4.0 seconds) than other kinds of smiles (0.25 to over 4 seconds). If the true smile is short, the false smile may compensate the intensity with a longer duration. True smiles also vary less in the ways they are expressed; they seem to be more stylized or uniform (Frank, Ekman, & Friesen, 1993; Schmidt, Cohn, & Tian, 2003). It may also be the case that they are supposed to be different because they have different functions.

Another kind of smile has been time measured. It is the play smile. The play smile is expressed during play activities like role play (one child pretends to be a teacher and the other children are pupils) or play fighting (rough and tumble). The primary function is probably to signal friendliness and that the participants are having a good time together in order to make the situation relaxed and safe (Cohen, 2006). It is assumed that the smile is one marker among others to indicate that the activity is a play activity (pretence) and not a real activity (Bateson, 1955/2000). The play smile is evidently longer than the true smile. It is typically longer than four seconds (Lillard, 2006). One possible reason can be found in the specificity of the play situation. In order not to misunderstand or misinterpret the situation the markers need to be clear, maybe exaggerated. The participants are not fighting for real or take the role as a teacher for real. They just pretend to be threatening and pretend to be teachers. The distinction between reality and pretence is emphasised by the long smile, maybe especially long to make sure that it is noticed.

Frances (1979) arranged five minute sessions for strangers where they were supposed to communicate (face-to-face) with one another. The measurements showed that the participants smiled for 35.20 seconds, which was the total mean time per person. It was also found that the participants laughed 3.77 times per person during the whole session.

2.3 Smile and Laughter as Feedback Expressions

It is more or less broadly accepted that smiles are used as feedback expressions (Brunner, 1979; Duncan, Brunner, & Fiske, 1979; Argyle, 1988). According to Brunner (1979), smiles were used by the listener in the same way as head nods or sounds like “m-hm”. Argyle (1988) argues that smiles are used as interpersonal reward or giving pleasure and thus encouraging the speaker to talk (about a particular topic). Duncan et al. (1979) rather suggest that it is the speaker that elicits smiles from the listener. They found that the more the speaker smiles the more the listener produces smiles as feedback expressions. If the speaker smiled within his/her turn and the listener smiled as a feedback response, it was counted. It is not clear, though, if the smiles they counted are mirroring smiles or not. It can be an immediate response (mirroring) or several seconds apart. Laughter has not been studied as a feedback expression per se but is acknowledged as part of the turn management (Brock, 2010).

Ekman (2007) suggests that smiles produced by the listener support the speaker with a sign of understanding and/or agreement. On the other hand, it may be hypothesized that a feedback smile is primarily a way for the listener to express a willingness to continue the conversation without interrupting the speaker’s turn and most of all to signal a positive attitude towards the speaker and the current conversation (Argyle, 1988; Brunner, 1979). The positive attitude may not be true but is still important for the listener to express.

Feedback expressions are usually short. This would imply that feedback smiles are short but it has not been investigated yet (until now, see below). A short feedback smile would seem less obtrusive than a long smile. A smile would probably seem less obtrusive than laughter. It may also be hypothesized that a feedback expression is supposed to draw a low degree of attention to it. Rather it is used just gain notice. If it draws too much attention to itself it will probably be perceived as a signalled attempt to take the turn. Laughter may in a similar way draw too much attention to the listener if it is too long and too loud. It makes the speaker lose concentration on his/her own train of thought. Questions like: “Did I say something funny?”; “Why is he/she laughing at me?”; “Should I be embarrassed?” may arise in the speaker’s mind. Strong expressions from the listener followed by a broken train of thought within the speaker will probably disrupt the whole conversation. Feedback expressions appear to have a smoothing function and at the same time show that both participants in the conversation are involved.

Feedback smiles and laughter are probably masking an incongruent emotion (e.g., worry, fear, anxiety, or sorrow) or simulating a positive emotion like happiness. This suggests that feedback smiles and laughter are used as social signs and hence only employ the Zygomatic major to indicate friendliness or social compliance. This background ends up in two hypotheses that will be tested.

Hypothesis 1: smiles and laughter that are used as feedback expressions while listening are shorter than other types of smiles/laughter in order to be unobtrusive.

Hypothesis 2: smiles and laughter that are used as feedback expressions while listening are simple in the way they are displayed and therefore not varied in kind or degree to seem less obtrusive, more polite and just gain notice.

3. Methods

In this study a “get acquainted” or “meet a stranger” context was created. Students from different parts of the university were asked to participate. They were mixed in pairs with one student from one department with one student from another department. No one at this stage knew their partner before the study. Every meeting was recorded on video using three DV-cameras. The recordings were coded and the result was analysed statistically.

3.1 The Participants

Every participant chose freely to take part in the study. They signed a list after they had been informed about the purpose of the study. This was done at the beginning of a lecture. They were also told that they would receive a cinema ticket following the video recording. In total, there are 35 video recordings of strangers communicating. More than a third are gender mixed pairs, that is, a female and a male participant. The rest of the pairs are male-male and female-female. Three pairs were randomly selected from the group of mixed pairs. This study is thus based on three recordings of university students who had met for the first time.

The female participants’ age range was from 20 years old to 23 years old. The male participants’ age range was from 21 years old to 28 years old. They were all Swedish university students and spoke Swedish during the interaction.

3.2 The Procedure

The meeting took place in a small lecture room that had been rearranged (e.g., furniture had been moved) for this particular purpose. The background wall was light and an area of approximately 6 m² was free from furniture. Beyond that area there were tables and chairs and cameras on tripods. The recordings were carried out during the day. Light came in to the room through the windows. No additional lightning was used.

The participants were asked to stand within the free area and not move around in the room but stay within the frame of the camera. They were not allowed to sit down. The instructions also included a timeframe. Before the participants could start communicating they were informed that they would have approximately 7 minutes to get to know each other.

3.3 Instruments Used

Three DV-cameras were used. One camera, placed centre back, captured both participants in full body length. The camera on the left captured the upper body of the participant on the right hand side. The camera on the right captured the upper body of the participant on the left hand side.

3.3.1 The Coding

A code scheme was developed for this particular study. All the available 35 recordings were observed to find every possible way to express a smile, laughter or a combination of the two. Over 20 variations of smiles and laughter were labelled. In the three selected recordings 16 of them appeared.

The special expression in focus for this study is feedback smile (and laughter) as a listener's response. If the smile or laughter was judged to be a feedback smile or laughter it was coded with a "yes". If the smile or laughter was judged to be some other kind of smile or laughter it was coded "no". If the participant smiled or laughed during the initial greeting it was coded "contact". If it was not possible to decide whether it was a feedback smile or not it was coded "?".

The length of the smiles and laughter were measured. In a coding list every smile or laughter got a starting time and an ending time. In this way it was possible to find out how long every coded smile or laughter was and also to find out the amount of overlap between the two participants. The starting time was set when the muscle Zygomatic major pulled the corner of the mouth outward/upward. The ending time was set when the Zygomatic major went back to neutral position.

The coding list had columns for both participants. It was therefore possible to write what kind of expression the participant performed: if it was a feedback cue or not, the length of the smile/laughter, and if it was an overlap or not. Smiles or laughter that had multiple functions were avoided. It is easier to study the characteristics of smile and laughter as feedback expressions if that is the only function. Expressions with multiple functions can have other characteristics.

Smiles and laughter that were not coded as feedback expressions:

- Smile and laughter expressed by the speaker (see Duncan et al., 1979),
- Smile and laughter as a response to something funny or amusing,
- Smile and laughter as mirroring (responding smiles and laughter that starts within half a second (Note) from the initiating, speakers, smile or laughter),
- The greeting smile/laughter (all of the participants smiled when they greeted each other).

Smile and laughter that were coded as feedback expressions (cf., Brunner, 1979):

- Smile and laughter expressed by the listener with no attempt to take the turn,
- Smile and laughter that may express an intention to stay in contact with the speaker, that is to keep the conversation going on,
- Smile and laughter that may express that the listener has received information from the speaker.

It is not easy to state that a smile or laughter is expressing understanding or agreement. Therefore no such statements are made. The function and reason for the listener to smile or laugh may still have been to express understanding or agreement in some cases but it was not possible within this design to code according to a function of a more abstract kind.

The coding was done by one coder. The coders list, including starting time and stopping time, was double-checked by an independent checker. Twenty percent of the dialogue, randomly selected, were coded all over again. No differences were found.

3.4 Data Analysis

The code list was transferred to an SPSS data document. SPSS 17.1 was used to count expressions and calculate mean time of the feedback smiles/laughter and the non feedback smiles/laughter. T-tests and Chi²-tests were used to control for significance.

4. Results

The six participants together produced 152 smiles and laughter during a time of 22 minutes in total. That is, approximately seven smiles/laughter per minute. There were 109 smiles, 18 laughter and 25 smiles combined with laughter. Pair one produced 32 smiles/laughter, pair two 70 smiles/laughter and pair three 50 smiles/laughter. All participants smiled during greetings. The first feedback expression, a smile, appeared at the end of the first minute of the conversation in all three pairs.

Approximately 50 % of the smiles and laughter were produced by the speaker. Forty-three out of 152 smiles and laughter were coded as feedback expressions. That is, 28.3 %, and two smiles/laughter per minute. The rest of the smiles and laughter were greetings, mirroring or expressions of amusement/joy. Four cases could not be coded the above were. They seemed to be feedback smiles but were not possible to determine as feedback expressions. Therefore they have been excluded from the group of feedback signals but included in the group of non-feedback expressions. This has not affected the results presented below.

Thirty-five of 105 (33.3 %) smiles were feedback smiles and eight of 43 (18.6 %) expressions of laughter (pure laughter or laughter in combination with a smile) was feedback laughter. Smiles are more typical or at least more common as feedback expressions.

4.1 Time Measurement

The length of the smiles and laughter was measured. The mean time of the 43 feedback expressions was compared with the mean time of the non-feedback expressions. The mean time of the feedback expressions was 2,785 seconds. The mean time of the non-feedback expressions was 3.682 seconds. The feedback smiles and laughter were almost one second shorter than the non-feedback smiles and laughter. Equal variances were not assumed ($F=3.981$, $p=0.048$) and the t-tested difference was significant ($t=-2.155$, $df=125.56$, $p=0.033$). It can thus be assumed that feedback smiles and laughter in general are shorter than non-feedback smiles and laughter.

The mean of the smiles alone was calculated. The mean time of the 35 feedback smiles was 2.362 seconds. The mean time of the 70 non-feedback smiles was 3.217. Once again the difference is almost one second. Equal variances were not assumed ($F=2.989$, $p=0.087$) and the t-tested difference was significant ($t=-2.047$, $df=102.28$, $p=0.043$). There are good reasons to believe that feedback smiles in general are shorter than non-feedback smiles.

4.2 The Variance of Expressions

In the cases used in this study there were 16 ways to code the smiles and the laughter. All 16 versions were represented by the non-feedback expressions. Eleven of 16 were represented by feedback expressions (see Table 1). The lesser variance among feedback expressions can be explained by the lower number of feedback expressions (43) compared to the higher number of non-feedback expressions (105). It is therefore more interesting to look closer at the distribution of the different ways of smiling and laughing.

There are two ways to express a feedback smile that dominates the distribution: simple smiles (only pulling the corners of the mouth slightly upwards) and simple smiles with displayed teeth. The actual count of the simple smile as a feedback expression is 100 percent higher than expected. The actual count of the simple smile with displayed teeth is 33 percent higher than expected. All other ways to express a feedback smile or laughter is lower than expected except one smile that has the actual count of 1 and the expected count of 0.6 and another smile that has the actual count of 2 and the expected count of 1.2. Two out of 11 versions of feedback expressions have a count of five or higher. Nine out of 16 versions of non-feedback expressions have a count of five or higher.

Table 1. Smile and laughter * feedback cross tabulation

		Feedback			
		Yes	No	Total	
Smile and laughter	Simple smile	Count	11	8	19
		Expected Count	5.5	13.5	19.0
	Smile with teeth	Count	17	27	44
		Expected Count	12.8	31.2	44.0
	Smile with wrinkle around eyes	Count	0	2	2
		Expected Count	.6	1.4	2.0
	Smile with dimples	Count	0	9	9
		Expected Count	2.6	6.4	9.0
	Smile with lines outside corner of mouth	Count	1	1	2
		Expected Count	.6	1.4	2.0
	Smile with teeth and wrinkle around eyes	Count	1	3	4
		Expected Count	1.2	2.8	4.0
	Smile with teeth and dimples or lines outside corner of mouth	Count	2	11	13
		Expected Count	3.8	9.2	13.0
	Smile with teeth and exhaling sound from nose	Count	2	2	4
		Expected Count	1.2	2.8	4.0
	Smile with teeth and lines outside corner of mouth and wrinkles around eyes	Count	0	1	1
		Expected Count	.3	.7	1.0
	Smile with teeth and wrinkle around eyes and exhaling sound from nose	Count	0	1	1
		Expected Count	.3	.7	1.0
	Smile with teeth and asymmetry	Count	1	5	6
		Expected Count	1.7	4.3	6.0
	Laughter with sound from mouth	Count	4	13	17
		Expected Count	4.9	12.1	17.0
	Laughter with sound from mouth and teeth and wrinkles around eyes	Count	0	1	1
		Expected Count	.3	.7	1.0
	Comb. smile plus laughter	Count	1	10	11
		Expected Count	3.2	7.8	11.0
Comb. laughter plus smile	Count	2	6	8	
	Expected Count	2.3	5.7	8.0	
Comb. smile plus laughter plus smile	Count	1	5	6	
	Expected Count	1.7	4.3	6.0	
Total	Count	43	105	148	
	Expected Count	43.0	105.0	148.0	

There are a lot of versions of smiles that have a low count except for the simple smile and the simple smile with displayed teeth and only seven counts distributed to five versions. When the additional versions of smiles are grouped together we get only three versions of smiles (see Table 2).

Table 2. Smile (condensed) * feedback cross tabulation

			Feedback		Total
			Yes	No	
Smile	Simple smile	Count	11	8	19
		Expected Count	6.3	12.7	19.0
	Smile with teeth	Count	17	27	44
		Expected Count	14.7	29.3	44.0
	Additional Smiles	Count	7	35	42
		Expected Count	14.0	28.0	42.0
Total	Count		35	70	105
	Expected Count		35.0	70.0	105.0

It becomes clear that feedback smiles and non-feedback smiles differ in their ways and variation of expression. A Pearson Chi-Square test confirms this ($p=0.004$).

Eight out of 43 (18.6%) feedback expressions were versions of laughter. Four of them, all plain laughter, plus three combined laughter/smiles were produced by one participant. The eighth feedback expression produced by a second participant started as a smile and developed into laughter. The laughter seemed to be caused by the content of the speaker's message rather than an intention to express feedback. Hence, the smile had a feedback function to begin with but the latter part, the laughter, did not have a feedback function. Thirty-five out of 105 (33.3%) non-feedback expressions were versions of laughter. That is almost double the amount compared to the feedback laughter.

When the laughter was grouped together as plain laughter and laughter combined with smile a total of five categories were shown.

Table 3. Smile and laughter (condensed) * feedback crosstabulation

			Feedback		Total
			Yes	No	
Smile and laughter	Simple smile	Count	11	8	19
		Expected Count	5.5	13.5	19.0
	Smile with teeth	Count	17	27	44
		Expected Count	12.8	31.2	44.0
	Additional smiles	Count	7	35	42
		Expected Count	12.2	29.8	42.0
	Laughter	Count	4	14	18
		Expected Count	5.2	12.8	18.0
	Comb. laughter plus smile	Count	4	21	25
		Expected Count	7.3	17.7	25.0
Total	Count		43	105	148
	Expected Count		43.0	105.0	148.0

In Table 3 it is even clearer that the variation within feedback expressions is small compared to the non-feedback expressions. The laughter is especially low in number among feedback expressions. A Pearson Chi-Square test again indicates ($p=0.004$) that there is a difference between feedback expressions and non-feedback expressions when it comes to ways and variations of expression.

5. Discussion

The play smile is said to be long, over four seconds (Lillard, 2006). The length gives it one of its characteristics and probably one of its functions. The Duchenne smile is said to be short (3.32 seconds) and stable (Frank, Ekman, & Friesen, 1993). This study has provided measurements and calculations that suggest that the feedback smile is even shorter than the Duchenne smile, that is 2.36 seconds. The feedback smile is probably stable too but for another reason. Duchenne smiles can not be deliberately controlled and are thus an expression of a felt emotion that peaks for a short time producing a congruent expression. Feedback smiles are most likely learned and culturally influenced (cf., Chovil & Fridlund, 1991). In cultures where feedback expressions are supposed to be short and unobtrusive it may be expected to find short stable feedback smiles. Stable, in this case, means to avoid deviation from the cultural standard. Feedback smiles according to this study in this particular cultural and social setting are short and stable.

Another aspect of stability is the low degree of variance. Duchenne smiles are also described as low variance smiles meaning that they have a narrow range of possible ways to be expressed (Frank, Ekman, & Friesen, 1993). Compared to non-feedback smiles in this study the feedback smile is concentrated to two very similar ways of expression: a simple smile (the Zygomatic major is activated but nothing else is visible) and a simple smile displaying the teeth (11+17=28 out of 35). The second kind of smile is just a version of the first (Argyle, 1988). Seven out of 35 (20%) smiles are additional ways to perform a feedback smile. That amount is relatively low compared to 35 out of 70 (50%) among non-feedback smiles. In only one case is it evident that Orbicularis oculi (the outer part) has been employed in a feedback smile. It was coded with occurring wrinkles around the subjects' eyes. Maybe the inner part of Orbicularis oculi is activated in a few cases when the cheeks are raised (it was coded as dimples but none of the participants had real dimples but a tendency towards small dimples when they produced a big smile). In almost all cases feedback smiles are only produced by the Zygomatic major and just like the Duchenne smile it seems to be stylized in a way that most non-feedback smiles are not.

Both smiles and laughter occurred as feedback expressions. In total, approximately 28 percent of all smiles and laughter produced by the participants were feedback expressions. If there were three categories (Duchenne smiles and laughter, feedback smiles and laughter and additional smiles and laughter) it would be expected for the feedback expressions to make up one third of the total. This is almost what we found. And when we look at smiles and laughter separately we find that feedback smiles are exactly one third (33.3%) of the total sum of smiles while feedback laughter is less than one fifth (18.6%) of the total sum of laughter. Feedback laughter are also less than one fifth (18.6%) of the feedback expressions in total. Feedback smiles are more than five times more common than feedback laughter. There may be some good reasons for this as suggested above. Smiles are less obtrusive than laughter and therefore function better as feedback expressions. Most of the feedback laughter was produced by one participant alone. It may be the result of sub-cultural differences within the general culture or just a personal communicative style. In cultures where the members strive to be obtrusive at a low level they will probably prefer short smiles than laughter and in cultures where the members accept listeners to be obtrusive at a high level laughter may be more frequent as feedback expressions.

5.1 Conclusions

In this study feedback smiles were more common than feedback laughter. Feedback smiles and laughter in general are shorter than non-feedback smiles and laughter. Feedback smiles are short, shorter than Duchenne smiles, and stylized like the Duchenne smiles. This is probably an effect of the best possible way of expressing an unobtrusive smile when listening to somebody. Both hypothesis 1 and hypothesis 2 are therefore supported and verified.

Larger studies and intercultural studies are needed. Nonetheless this study can be used to better understand the nature and use of feedback smiles in cultures similar to the Swedish culture. Feedback smiles are expected to be short and simple (displaying teeth or no teeth). Laughter should, when produced, be short and simple.

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Note

Note 1. A mirroring response is fast. According to Elisabeth Ahlsén, professor in neurolinguistics (personal communication), the mirror systems responds within 0.25 seconds. Dimberg and Thunberg (1998) have found that Zygomatic major normally responds within 0.3 to 0.4 seconds if it is a mirroring smile.

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